

**PUBLIC UTILITIES COMMISSION**505 VAN NESS AVENUE
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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.

A.07-06-031 MP1/XJV/jt2

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.

Decision **ALTERNATE PROPOSED DECISION OF
COMMISSIONER PEEVEY (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
(U 338-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 GRANTING THE CITY OF CHINO HILLS' PETITION FOR
MODIFICATION OF DECISION 09-12-044 AND REQUIRING
UNDERGROUNDING OF SEGMENT 8A OF THE TEHACHAPI RENEWABLE
TRANSMISSION PROJECT**

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Attachment A - Service List

**DECISION GRANTING THE CITY OF CHINO HILLS' PETITION FOR
MODIFICATION OF DECISION 09-12-044 AND REQUIRING
UNDERGROUNDING OF SEGMENT 8A OF THE TEHACHAPI RENEWABLE
TRANSMISSION PROJECT**

1. Summary

Today's decision grants the petition for modification of Decision (D.) 09-12-044, filed October 28, 2011, in which the City of Chino Hills (Chino Hills) reasonably seeks undergrounding of a 500 kilovolt transmission line for 3.5 miles in a City right of way (ROW) 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 conclude that the design of the aboveground line, with its massive, new transmission towers reaching 195-198 feet tall (more than double the height of the prior, 75 foot structures) and set in a narrow, 150-foot ROW, effectively ignores community values and places an unfair and unreasonable burden on the residents of Chino Hills. Today's decision rectifies that disproportionate burden and finds that it is in the public interest to construct an underground alternative based on a single circuit, two cables per phase design using cross linked polyethylene (XLPE) cable. Underground construction of UG5 in Segment 8A is feasible, can be completed on a timely basis and can be built at a reasonable cost. After accounting for multiple factors, we estimate the costs of undergrounding in Chino Hills to be approximately \$224 million, including offset for Chino Hills' financial contribution of real property, which we value at about \$17 million. This sum adjusts Southern California Edison Company's (SCE's) estimate to exclude reactive compensation, reduce the environmental multiplier to 10% from 26% and reduce the contingency from 35% to 15%, the same contingency applied to

the Project overall. On a per mile basis, this is approximately \$64 million per mile. To the extent that undergrounding costs elsewhere provide a benchmark of sorts, the cost to underground UG5 is comparable and reasonable.

At present, construction of much of Segment 8A, the portion of Segment 8 that passes through Chino Hills, is stayed. Because this decision grants Chino Hills' petition, we release the stay and order SCE to underground UG5 in Segment 8A.

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

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 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

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 October 17 petition, which we anticipate will be resolved shortly, once the related 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 very tall 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 part of the Project and asks the Commission to reopen the record to reconsider alternatives.

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).

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:

[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

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 since 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.)

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 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

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).

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 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,

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

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.

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 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 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 received a limited amount of confidential, commercially sensitive documentary evidence under seal after 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.)

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 argue that Chino Hills has failed to meet the procedural requirements of Rule 16.4 and that we should deny Chino Hills’ petition on those procedural grounds. DRA 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

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).

record and the parties' post-hearing briefs to assess the facts and consider applicable law and controlling policy.

3.3. Other Governing Law

Other 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 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. 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 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. Chino Hills counters that "[t]he issue of potential curtailment of renewable generators due to a delay...because of Commission consideration of an underground circuit is an enormous red herring, conjured by SCE in an effort to induce ... generators to lobby the Commission ..." (Chino Hills opening brief at 31.)

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.

4. Analysis of the Evidence

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 review the visual impacts on the City together with 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 issues necessarily requires a multi-faceted review of the entire record: evidence and argument, governing law and applicable public policy. We begin with a review of community values.

4.1. Community Values

Section 1002 requires explicit consideration of how a proposed project comports with community values. While the photographic simulations in the FEIR's Maps & Figures Series Volume contain a number of photographs that represent the new poles and towers in Segment 8A as very tall indeed, the photographs in Attachment B to Exhibit (Ex.) CH-86 provide additional visual aspects that illustrate how the new poles and towers dwarf the adjacent homes. These new photographs provide compelling images, taken from the vantage point of the backyard fences, patios and front driveways of the homes along the ROW.

Moreover, Chino Hills' evidence and briefs do not pursue its more attenuated arguments (economic blight, etc.) but continue to focus on the enormous burden of the visual impacts on City residents, particularly those who live along the ROW.

We must ask whether Chino Hills' situation is unique in ways that require a special design approach. D.09-12-044 observes "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.) This fact remains uncontested. The decision also observes,

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.

“... 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.) Chino Hills suggests that the towers have a far greater impact when viewed in person and we must agree, as each of the five Commissioners now sitting has visited the site (though the ALJ has not). Chino Hills describes the lines in the narrow ROW as an “eyesore” and “jarring”; we must agree. (Chino Hills opening brief at 9.)

Our task, however, 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 Duarte, Chino/Ontario and Chino Hills are instructive; we summarize them in Table 1.

	Chino Hills	Duarte	Chino	Ontario
Segment	8A	7	8A, 8B	
ROW Width (feet)	150	200-212	150-200	
Transmission lines	500kV	220kV, 500kV	500kV	
Center line of tubular steel pole tower from ROW edge	75 feet ¹²	50-60 feet from W side of ROW ¹³	50-85 feet from S side of ROW ¹⁴	
Center line of lattice tower from ROW edge	75 feet ¹⁵	55 feet from W side of ROW ¹⁶	50-85 feet from S side of ROW	
Height, tubular steel pole	150-195 feet	195-200 feet	180-195 feet	
Height, lattice tower	153.5-198.5 feet	186-198.5 feet	183-198 feet	
Location (mile post)	19.2-26.8	1.0-1.7	29.4-29.7	33.3-33.8
No. of residential structures	220 ¹⁷	94 (approx. half on W side of ROW) ¹⁸	22 (along S side of ROW) ¹⁹	36 (along N side of ROW)

The ROW in Chino Hills is the narrowest anywhere along the entire Project route. Because it is so narrow, the transmission lines and the ends of their cross arms come very close to the residential structures along the ROW, which intensifies the visual impact of the transmission lines. Moreover, the affected

¹² FEIR, Vol. 1, Figures 2.2-41, 2.2-42.

¹³ FEIR Vol. 1, Figures 2.2-20.

¹⁴ FEIR Vol. 1, Figures 2.2-47.

¹⁵ FEIR, Vol. 1, Figures 2.2-40.

¹⁶ FEIR Vol. 1, Figures 2.2-19.

¹⁷ See FEIR, road story workpapers, pages 10-17 (of 21).

¹⁸ FEIR, road story workpapers, pages 1-5 (of 36).

¹⁹ See FEIR, road story workpapers, respectively pages 3-6 (of 36) and 23-24 (of 26).

section in Chino Hills is longer than elsewhere at 3.5 miles and a large number of residences border the ROW (220 houses).

TURN, raising social policy and environmental justice concerns, cautions us to be cognizant of the impact of our review on other communities besides Chino Hill. TURN underscores that the Chino Hills city council has appropriated significant sums to file and litigate the petition: 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. (TURN opening brief at 8 (unnumbered).) While we take TURN's caution seriously, we conclude it is misplaced here. Rather, the action taken by the City on behalf of its residents registers just how intensely Chino Hills opposes the aboveground Project in Segment 8A. It seems to us that this action represents the community defending its values from what it perceives to be an intolerable threat.

We are also mindful that the large number of properties affected in Chino Hills will have a proportionately large impact on local tax revenues, given the diminution in value of so many individual residential parcels in a single community. This impact concerns us because of its detrimental implications for local community values but it also reflects the disproportionate burden the aboveground transmission line places on a single community that happens to be located along 3.5 miles of the Project route.

We conclude here, on balance, that fundamental fairness requires that the costs of undergrounding should be spread among all CAISO ratepayers, at a minor cost to each, since the completed TRTP will benefit all. The landscape of California has changed over the last decade, becoming more urbanized in many areas, just as the state's goals for renewable energy and the need to transmit that to urban areas has become more ambitious. These changes necessitate a change

in the Commission's policy for transmission planning. Going forward, if the Commission is to avoid repeating the injustice visited upon Chino Hills, it must carefully balance the requirements under §399.2.5 (that the cost of a line is appropriate to economically rational RPS compliance) with the requirement under § 1002 to consider community values. Infrastructure necessary to fulfill the state's energy goals should not disproportionately burden one community for the benefit of the larger population.

4.2. Feasibility

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 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 2, below.²⁰

²⁰ 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 2:					
Options for XLPE Cable Underground in Conduit in Chino Hills ROW <i>(Cost Estimates as Developed by SCE and Chino Hills²¹)</i>					
Option Name	Circuits	Cables/Phase	Other Components	SCE Cost Estimate²²	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 ²³
UG5	1	2		\$372M	\$147M ²⁴

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

²¹ 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.

²² 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).

²³ See Ex. CH-91 at 58 (Table 9, UG4-4000 kcmil segmental copper conductor 3 cables/phase). Chino Hills includes 20% contingency.

²⁴ 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 (see Section 4.2.2, 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.

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.

4.2.1. 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 such as access to urban zones or river crossings. 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 Section 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 (a total of nine cables), in effect to provide a spare cable set, which would permit two cables per phase (a total of six cables) operation to continue should one cable set (a total of three cables) or its attendant splice joints fail. Chino Hills' opening brief argues that with UG5 or two cables per phase (a total of six cables) when one cable fails the remaining intact cables can continue to carry the normal system load until repairs are made. Chino Hills is persuasive that option UG5 is feasible for maintaining adequate reliability.

4.2.2. 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.²⁵ Though

²⁵ 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: 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 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

Footnote continued on next page

CAISO prefers a double circuit line to avoid the need for future expansion, it does state that “... a minimum of two cables per phase could provide sufficient capacity to meet the needs forecasted when TRTP was originally studied”.

(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 dictate the threshold decision. Given the inevitable uncertainty in long-term planning it is difficult to find some underground options more prudent than others. 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 design in Segment 8A?

While SCE includes 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, SCE

goals in an expedited manner (i.e., 20 percent renewable energy by year 2010 per California Senate Bill 107).

- Further address the reliability needs of the CAISO-controlled grid due to projected load growth in the Antelope Valley.

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.)

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 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 load 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, though not necessary, 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.²⁶ 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

²⁶ 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.)

[through Segment 8A] would have to be included in to the CPCN licensing process for the Mesa 500 kV substation conversion.” (Tr. Vol. 13:2049-2050.) We note that this decision does not pre-judge any future CPCN application for the upgrade of the Mesa Substation.

Chino Hills witness Shirmohammadi, of Shir Power Engineering Consultants, Inc., in countering SCE’s bottleneck risks, referred to the overhead double circuit design as a “pig in a python” given the single circuit on either side of Segment 8A. (Tr. Vol. 16:2645.) 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.

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, but we also note that while it is *prudent* to consider many possibilities, we are not *required* to consider these unknowns. For example, (1) is not current state policy and (3) is in opposition to current state policy to reduce load through energy efficiency and demand response programs.

Ampacity

Ampacity refers to the load a transmission cable can carry safely without overheating during either normal operating conditions or emergency operating conditions, the latter 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

decision making. Both parties ultimately concede that a single circuit line could carry at least 2000 amps.²⁷

Curtailement 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 the parties voice 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 coarsest 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 TTRP without Segment 8; it does not consider any scenarios where either 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

²⁷ 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.)

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 impractical for consideration, but they do not demonstrate the absence of curtailment risk.

SCE witness Chacon sponsored a nomogram²⁸ 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 approved by D.09-12-044, if all generation in the CAISO queue up through Queue Cluster 4 should come online.²⁹ The nomogram analysis does not

²⁸ 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.)

²⁹ "A queue cluster represents a group of generation projects seeking interconnection that submitted their interconnection requests with the timeframe open for a particular

Footnote continued on next page

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. 13:1963.)

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.”³⁰ (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. 13:1960.)

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.³¹ Chacon testified that the scatter points were developed by extrapolating to the over 9,500 MW of

queue ... queue clusters are sequential; for example, Queue Cluster 4 follows Queue Cluster 3. (Ex. SCE 103 at 14, fn 17.)

³⁰ 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.)

³¹ See SCE 104-R, Figure 7 at 31.

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. 13:1967.) 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.) While Chino Hills does bear the burden of proof, we find the studies by SCE not practical for consideration and discount them accordingly.

Chino Hills offers the most sophisticated study in the record. Sponsored by Chino Hills witness Kulkarni, of Nexant, this third analysis is a production cost 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 2022.³²

³² 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.)

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 2016.³³

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 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.³⁴

³³ See CH-92, attached Nexant study at Tables 8 and 9.

³⁴ See CH-92, attached Nexant study at Tables 13 and 14.

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. The record does not contain, given the compressed schedule, an actual showing on what results would change in the model, if any, if corrected for these alleged flaws.³⁵

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 study 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 in the Tehachapi area but does not divulge the reasons. Asked about curtailments mentioned in Ex. SCE-127,³⁶ Chino Hills witness Shirmohammadi responded:

³⁵ 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.

³⁶ 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

Footnote continued on next page

Curtailement 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: 2625-2626.)

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 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 4.3). While the record does not persuasively answer how long a single

that "... recent congestion in 2012 has caused over \$28 million in curtailment losses for Terra-Gen's Alta projects alone."

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.

4.3. 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 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 2016.³⁷ 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 2012 or later, as needed." (Ex. SCE-104R at 98, 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

³⁷ See Ex. SCE-104R, Attachments NN.

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 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.

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

4.4. Cost

4.4.1. 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.

For underground costs, Table 2 in Section 4.2, above, lists 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.³⁸

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.

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. 14: 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

³⁸ 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.

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 – low enough to make an underground option reasonable. We first examine specific costs and then consider other cost estimates developed as a percentage of the base costs for labor and materials, such as the estimates for environmental costs and overall contingency.

The cost for reactive compensation a major area of disagreement between SCE and Chino Hills. 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. 13:2053.) 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.) The record is not conclusive on this point but leaves need at issue.

Without greater substantiation, we will not approve a cost cap component that approaches \$23 million. Because the burden of producing additional

evidence is on SCE, if SCE wishes us to amend the cost cap to include a reasonable sum for BIL in the design of UG5 (or for reactive compensation, if BIL is shown to be impracticable), SCE must file and serve a petition for modification of today's decision within 60 days of the date of today's decision. Such petition must include a report on the cost and timeline for developing an appropriate BIL standard for Segment 8A and for implementing it. The report shall contain the level of detail that the Commission's Energy Division may reasonably specify and shall be supported by one or more declarations executed by knowledgeable persons under penalty of perjury, as provided by California law.

SCE's management and overhead adders seem extreme. They amount to more than \$51 million for UG5, not including corporate overhead estimates by SCE of \$22.7 million (Ex. SCE-104C, Attachment EE; Ex. SCE-106R, Table 2.) In addition to the costs of project-specific support groups, SCE includes costs for two groups that support capital projects: division overheads and corporate overheads. (Ex. SCE-106R at 84.) Lacking a definitive and persuasive response from SCE, we share Chino Hills' query whether "SCE is adding layer upon existing layer of duplicative construction and project management costs to its estimate." (Chino Hills opening brief at 84.) We conclude that contractor overhead and risk costs of almost \$10 million should be reduced to zero since SCE's bid specifications provided to both cable manufacturers and civil contractors for this project required the bidders to include these costs within their scope of work.

With respect to environmental compliance costs, 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: 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. However, Chino Hills persuades that 26% is excessive, “given the comparability of the area of environmental impacts for both the underground and overhead configurations (i.e., the same right-of-way), the mitigation measures should be very similar. Moreover most of the survey work for biological and other impacts should already have been done.” (Chino Hills opening brief at 82). 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 a multiplier. For these reasons we conclude that a factor of 10% should be adequate.

Chino Hills is persuasive that SCE’s use of a 35% contingency factor is too high, much greater than the 15% that D.09-12-044 authorizes for the Project. Chino Hills argues that since SCE’s competitive solicitation has resulted in fixed-price bids, good for 180 days, without qualification, “the prices provided by the bidders are the actual project costs.” (Chino Hills opening brief at 95.) In response, SCE argues that “‘bids’ are not what drive the estimate classification; rather, the project definition is the primary driver...engineering and project design are preliminary, supporting a Class 4 estimate classification [contingency].” (SCE reply brief at 128.) Footnote 634 of SCE’s reply brief

explains that project definition “includes the schedule durations and the associated project support costs, and execution plans, environmental mitigation measures, permits, and many other sets of deliverables...” (SCE reply brief, footnote 634 at 128.)

We find the 15% factor for overall contingency approved in D.09-12-044 is reasonable and should be used for undergrounding UG5, given the pre-construction activities SCE has already conducted following D.13-02-035. These include SCE’s advanced engineering and costing efforts on viable underground designs, solicitation and receipt of binding bids from the market to refine cost estimates, advanced contracting efforts on construction activities, materials, and equipment, and attained construction and environmental mitigation experience in the ROW. We decline to adopt Chino Hills’ assertion that the contingency factor should not be applied to management, overhead, and support items, since we have reduced contractor overhead and risk costs to zero, as discussed above.

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 land for the two transition stations and in two-thirds of the ROW. In Section 4.3.2 we discuss appropriate reductions to this cost along with an appropriate offset for real property that Chino Hills’ includes as part of its proposed financial contributions.

Applying all of the adjustments described above--for reactive compensation, contractor overhead and risk, environmental, and contingency costs-- to SCE’s UG5 estimate reduces that estimate from \$350 million to approximately \$241 million. These sums do not include an allowance for corporate overhead (which would be approximately \$15.7.7 million, using SCE’s

factor of 6.5%). Again, \$241 million is not our final, total cost estimate for UG. Next, we consider Chino Hills' financial contributions.

4.4.2. 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;
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. As we discuss below, the actual economic offset against undergrounding costs is smaller. The first three items are likely to reduce the capital costs to ratepayers of undergrounding Segment 8A in some amount. 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, but because they would not reduce the cost of the UG5, we need not review them further here. Chino Hills does not establish why the economic consequences to the City of establishing a new corporation yard should be a ratepayer concern.

Chino Hills and SCE differ in their estimates of the value of proposed real property contributions from the City to the utility. Chino Hills judges the total value of its capital contributions to be \$34,023,667, while SCE values it at \$2,206,666. (Ex. CH-93 at 1.)

Chino Hills bases its valuation of the Western Transition Station and ROW properties on comparisons to residential properties, despite the current designation of these parcels as Open Space in the Chino Hills General Plan. (Ex. CH-97 at 20; Ex. SCE-113.) Open Space properties are appraised at a lower value, on average, than residential properties and while the Chino Hills maintains that SCE can easily rezone and sell the properties as residential, the City's estimate does not take into account the continued burden of an SCE transmission easement on the properties. Chino Hills concedes "there are no residential [units] built on the right-of-way." (Tr. Vol. 15:2395.) Further, part of the reason for the proposed transfers of these specific parcels is to facilitate construction of the needed infrastructure associated with UG5. For example, it is highly unlikely that SCE would rezone the Western Transition Station acreage as residential and then sell it, since construction of UG5 requires a transmission station in that approximate location. In the case of the ROW parcels, EMF safety concerns likely would preclude building residences there, as well. We conclude that Chino Hills' valuations rely upon valuations of real property that are not comparable and consequently, produce an inflated result. While there is

uncertainty in quantifying the various factors discussed above due to limited empirical evidence in the record, we conclude Chino Hills' valuation of both the Western Transition Station and ROW properties must be adjusted downward and we discount both estimates by 20%.

In addition, Chino Hills bases its valuations for the Western Transition Station and ROW properties on data that reflects listing prices of its selected "comparable" properties, as opposed to closing prices. Ex. SC-106R shows that between January 2008 and March 2013, listing prices were, on average, 6-28% higher than closing prices for single family residences, condominiums, and townhouses in Chino Hills. While Chino Hills witness Joann Lombardo, the City Community Development Director, testified that recently this trend has reversed, Chino Hills presented no empirical evidence to this effect. (Tr. Vol. 15:2363.) Based on data as recent as March 2013, Chino Hills' estimates for both the Western Transition Station and ROW properties should be discounted an additional 10% (for a total of 30%), to reflect lower closing prices.

Taking these factors into account, we conclude the Western Transition Station property should be valued at \$512,144. As we discuss below, the ROW property is subject to additional discounting.

SCE already owns a substantial portion of the "bundle of rights" in each parcel in the ROW, estimated by SCE to be as much as 75% of the unencumbered fee value. (Ex. SCE-106R at 102.) In addition, Chino Hills valued the ROW property at \$7.8 million one year prior, significantly below its current \$30 million valuation, though the record does not clearly explain the rationale for the change. (Tr. Vol. 15:2364.) We conclude the Chino Hills valuation of the ROW property should be discounted an additional 20% to account for the rights already

possessed through the easement, resulting in a total discount of 50%, or \$14,864,840.

Chino Hills estimates the value of the Eastern Transmission Station property to be \$3,562,353. Before transferring title to the Utility, the City would first need to purchase the property from San Bernadino County. While the record shows San Bernadino County has offered to sell the property for \$500,000, the City stresses that this number does not represent the assessed value of the property, but is merely one step in an ongoing negotiation. However the City confirms it would ultimately pay less than its valuation of the property. (Tr. Vol. 15:2683.) SCE values the property at \$1.5 million based on the estimation of a “state certified property appraiser.” (Ex. SCE-106R at 105.) We conclude the 2.7 acre industrial parcel, with a structure of nominal value – worth the cost of demolition and clean-up – is more accurately valued at \$2 million.

We conclude the total valuation of Chino Hills’ three real property contributions to be \$17,376,986. This sum this offsets the estimated cost of \$241 million from the previous section to a final cost cap of \$224 million.

4.4.3. Conclusion on Cost

Evaluating the record developed on cost items and the differences between parties’ estimates, we conclude that neither \$147 million nor \$372 million are credible estimates for undergrounding option, UG5. A more credible cost estimate is \$224 million, which excludes reactive compensation and contractor overhead and risk costs, reduces environmental and contingency costs to 10% and 15%, respectively, and incorporates the financial contributions of Chino Hills valued at about \$14 million.

This sum does not include an allowance for SCE’s corporate overhead. On a per mile basis, this total cost of \$224 million is approximately \$65 per mile. To

the extent that undergrounding costs elsewhere provide a benchmark of sorts, the cost to underground UG5 is not much higher.

As Chino Hills points out, in D.08-12-058 the Commission approved approximately \$45.38 million per mile to underground 8 miles of the Sunrise Powerlink.³⁹ Though SCE has not yet filed its advice letter for an adjustment to true up the cost cap approved for the TRTP in D.09-12-044, the record here reflects that costs have increased, perhaps to as much \$1.7-2.1 billion. At \$224 million, the cost of UG5 represents 9.9% to 12% of the total TRTP cost – a much smaller percentage than for Sunrise.

While the aboveground double circuit line can be finished for about \$4 million, adding \$224 million to the total cost of the Project does not raise concern about whether it could continue to meet the streamlined need standard codified by §399.2.5(a). As noted in Section 3.3, above, 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 contribution to economically rational RPS compliance.” Undergrounding Segment 8A would not significantly increase the costs of the Project.

We conclude that it is reasonable and in the public interest to underground Segment 8A on the cost record developed here.

³⁹ 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.) The original cost cap for Sunrise was 1.883 billion.

5. CEQA

Under CEQA Guidelines §15162, when an EIR has been certified for a project, no subsequent EIR shall be prepared for that project unless the lead agency determines, on the basis of substantial evidence in light of the whole record, one or more of the following:

1. Substantial changes are proposed in the project which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; (CEQA Guidelines §15162(a)(1))
2. Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; (CEQA Guidelines §15162(a)(2))
3. New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the negative declaration was adopted, shows any of the following:
 - a. The project will have one or more significant effects not discussed in the previous EIR or negative declaration;
 - b. Significant effects previously examined will be substantially more severe than shown in the previous EIR;
 - c. Mitigation measures or alternatives previously found not to be feasible would in fact be feasible and would substantially reduce one or more significant effects of

the project, but the project proponents decline to adopt the mitigation measure or alternative; or

- d. Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative. (CEQA Guidelines §15162(a)(3).)

Under CEQA, an agency may not require a further EIR, unless it finds, based on substantial evidence in light of the whole record that one of these three exceptions to the rule against requiring a further EIR exists.

Commission staff and the environmental consultant have prepared an Addendum to the FEIR for the Project to document the decision that a subsequent EIR is not required for any decision that considered, and ultimately approved, construction of underground options UG1, UG2, UG3, UG4 or UG5 in Segment 8A. The Addendum is available at: ftp://ftp.cpuc.ca.gov/gopher-ta/environ/tehachapi_renewables/EnvironmentalReview_ALL.pdf

The Addendum contains a detailed and comprehensive review of the changes to the Project that would occur if we approved any one of the underground options, UG through UG5, and concludes that the proposed changes would not trigger any of the conditions set forth in CEQA Guideline §15162. Based on this detailed and comprehensive review, we confirm the determination that the proposed changes would not trigger any of the conditions set forth in CEQA Guidelines §15162, and therefore that an Addendum is appropriate pursuant to CEQA Guidelines §15164.

We approve the Addendum and, 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 undergrounding the 3.5 mile section of Segment 8A of the Project at ratepayer expense is reasonable and should be ordered to rectify the disproportionate burden the aboveground design places on Chino Hills and its residents. Therefore, we grant Chino Hills' petition, filed October 28, 2011, to the extent consistent with this today's decision, and we release the stay of construction on Segment 8A. We order Southern California Edison to resume construction and to underground Segment 8A to construct UG5, a single circuit cross-linked polyethylene (XLPE) system with two cables per phase.. Because we grant this petition, Chino Hills' additional request for a stay (the petition for modification of D.09-12-044 filed October 31, 2011), is rendered moot.

7. Comments on the Alternate Proposed Decision

The alternate proposed decision of Commissioner Peevey in this matter was mailed to the parties in accordance with Section 311 of the Public Utilities Code and comments were allowed under Rule 14.3 of the Commission's Rules of Practice and Procedure. Comments were filed on ___ and reply comments were filed on _____ by _____.

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 the longest and affects the most residential structures. Housing density is greater elsewhere and likewise, the tower cross arms are closer to the edge of the ROW.

4. The Chino Hills’ community has been extremely vocal in its opposition to the approved Project design in Segment 8A. To defend the community from what it perceives to be an intolerable threat, the city council has appropriated significant sums to file and litigate the petition (approximately \$2 million in addition to about \$1.8 million filed in the CPCN proceeding) .

5. Given that approximately 220 houses border the Segment 8A ROW in Chino Hills, it is reasonable to construe a proportionately large impact on local tax revenues, given the diminution in value of so many individual residential parcels in a single community.

6. 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).

7. 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.

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

9. 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 appear to have been built to solve specific locational problems (river crossings, access to urban zones, etc.)

10. 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.

11. 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.

12. On balance, the evidence establishes that the double circuit 500 kV aboveground 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.

13. 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.

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

15. 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.

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

17. 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.

18. 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.

19. 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.

20. 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.

21. SCE concedes that an appropriate BIL, based on a BIL standard for Segment 8A, could be used instead of reactive compensation (which it costs at

close to a \$23 million) at the transition station; however, SCE does not provide a timeline for developing the standard or implementing it as alternative. Without greater substantiation, we should not approve a cost cap component (for reactive compensation) that approaches \$23 million.

22. Any petition for modification that seeks an amendment to the cost cap for BIL or reactive compensation (if BIL is shown to be impracticable), must include a report on the cost and timeline for developing an appropriate BIL standard for Segment 8A and for implementing it, based on the level of detail that the Commission's Energy Division may reasonably specify and must be supported by one or more declarations executed by knowledgeable persons under penalty of perjury, as provided by California law.

23. SCE's contractor overhead and risk costs of almost \$10 million should be reduced to zero since SCE's bid specifications provided to both cable manufacturers and civil contractors for this project required the bidders to include these costs within their scope of work.

24. 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 10% should be adequate.

25. Chino Hills is persuasive that SCE's use of 35% contingency is too high and should be reduced to 15%, which is the same percentage approved for the Project as a whole.

26. 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.

27. Applying all of the adjustments for reactive compensation, contractor overhead and risk, environmental, and contingency costs to SCE's UG5 estimate reduces that estimate from \$350 million to approximately \$241 million. These sums do not include an allowance for corporate overhead (which would be approximately \$15.7.7 million, using SCE's factor of 6.5%).

28. Chino Hills' proposed financial contributions actually would offset undergrounding costs by a much smaller amount 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) would reduce the capital costs to ratepayers through an offset to the cost cap.

29. The reasonable value of the Chino Hills' contribution of real property to SCE in fee is \$17,376,986, which values the three properties as follows: for the Western Transition Station property, \$512,144; for the ROW property, \$14,864,840; and for the Eastern Transmission Station, \$2 million.

30. The reasonable maximum cost for construction of UG5 in the Chino Hills Row is \$224 million, which includes an offset for Chino Hills' contribution of real property to SCE in fee.

31. On per mile basis, the total cost of \$224 million is approximately \$64 per mile. To the extent that undergrounding costs elsewhere in California provide a benchmark of sorts, the cost to underground UG5 is not much higher.

32. On the cost record developed, it is reasonable and in the public interest to underground Segment 8A using UG5.

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

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.

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. D.09-12-044 effectively ignores community values and places an unfair and unreasonable burden on the residents of Chino Hills by requiring construction of an aboveground double circuit 500 kV transmission line through Segment 8A; that disproportionate burden should be rectified to require the underground construction of UG5.

5. Because Chino Hills has met its burden of proof, Chino Hills' petition, filed October 28, 2011, should be granted. Because we grant the October 28, 2011,

petition, Chino Hills' subsequent petition (the additional request for a stay), filed October 31, 2011, should be denied so that construction of UG5 may commence.

6. The construction stay on Segment 8A should be released so that construction of UG5 may commence.

7. Having conceded that BIL could be used on Segment a8A instead of reactive compensation, the burden of producing additional evidence on BIL and a Segment 8A BIL standard is on SCE.

8. Within 60 days of the date of today's decision, SCE should file and serve a petition for modification of today's decision if it wishes the cost cap adopted by today's decision to be amended to include a reasonable sum for development and implementation of a BIL standard in the design of UG5 (or for reactive compensation, if BIL is shown to be impracticable). Such petition must include a report on the cost and timeline for developing an appropriate BIL standard and for implementing it, based on the level of detail that the Commission's Energy Division may reasonably specify and, must be supported by one or more declarations executed by knowledgeable persons under penalty of perjury, as provided by California law.

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

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

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 by on October 28, 2011, is granted to the extent consistent with these Ordering Paragraphs.
2. Decision 09-12-044 is modified to require construction in Segment 8A of the Tehachapi Renewable Transmission Project (Segments 4-11) the underground option referred to in the body of this decision as UG5, which is a single circuit, two cables per phase design using 5000 kcmil, cross linked polyethylene (XLPE) cable.
3. We adopt \$224 million (in 2013 dollars) as a reasonable maximum cost for UG5, excluding allowance for funds used during construction, and Decision 09-12-044 is modified to increase the reasonable maximum cost of the Tehachapi Renewable Transmission Project (Segments 4-11) by that amount.
4. All Findings of Fact, Conclusions of Law and Ordering Paragraphs adopted by Decision 09-12-044 that are inconsistent with these Ordering Paragraphs are hereby deemed to be modified to comport with these Ordering Paragraphs and shall be so construed.
5. If Southern California Edison Company (SCE) wishes the Commission to amend the cost cap adopted in Ordering Paragraph 4, above, to include a reasonable sum for development and implementation of a Basic Insulation Level (BIL) standard in the design of UG5 (or for reactive compensation, if BIL is shown to be impracticable), SCE shall file and serve a petition for modification of this decision within 60 days of the date of this decision. Such petition must include a report on the cost and timeline for developing an appropriate BIL

standard and for implementing it, based on the level of detail that the Commission's Energy Division may reasonably specify and, shall be supported by one or more declarations executed by knowledgeable persons under penalty of perjury, as provided by California law.

6. 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 as moot.

7. 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 these Ordering Paragraphs.

8. The Addendum to the Final Environmental Impact Report for the Tehachapi Renewable Transmission Project, October 2009, is approved and received as Reference Exhibit C.

This order is effective today.

Dated _____, at San Francisco, California.

Attachment A

Service List

***** SERVICE LIST A0706031*****

Last Updated on 07-JUN-2013 by: JVG

***** PARTIES *****

Jacqueline Ayer
2010 WEST AVENUE K, NO. 701
LANCASTER CA 93536
(949) 278-8460
AirSpecial@aol.com
For: On behalf of The Acton Town Council

Sara Feldman
CALIFORNIA STATE PARKS FOUNDATION
448 SOUTH HILL STREET, STE. 601
LOS ANGELES CA 90013
(213) 542-2450
sara@calparks.org
For: California State Parks Foundation

Michael E. Boyd, President
CALIFORNIANS FOR RENEWABLE ENERGY, INC.
5439 SOQUEL DRIVE
SOQUEL CA 95073-2659
(408) 891-9677
MichaelBoyd@sbcglobal.net
For: Californians for Renewable Energy, Inc.

Brent Arnold, Deputy Director Of Community Development
CITY OF CHINO
PO BOX 667
CHINO CA 91708-0667
(909) 591-9811
barnold@cityofchino.org
For: City of Chino

Edward H. Comer, Vp / Gen. Counsel / Corporate Sec.
EDISON ELECTRIC INSTITUTE
701 PENNSYLVANIA AVENUE, NW
WASHINGTON DC 20004
(202) 508-5615
ecomer@eei.org
For: Edison Electric Institute (EEI)

Mark Tholke
ENXCO DEVELOPMENT CORP.
4000 EXECUTIVE PARKWAY, SUITE 100
SAN RAMON CA 94583
(925) 365-3738
mark.tholke@enxco.com
For: Enxco Development Corp.

Jeanne B. Armstrong
MICHAEL B. DAY
Attorney
GOODIN MACBRIDE SQUERI DAY & LAMPREY LLP
505 SANSOME STREET, SUITE 900
SAN FRANCISCO CA 94111
(415) 392-7900
jarmstrong@goodinmacbride.com
For: City of Chino Hills

James D. Squeri
Attorney At Law
GOODIN, MACBRIDE, SQUERI, DAY & LAMPREY
505 SANSOME STREET, SUITE 900
SAN FRANCISCO CA 94111
(415) 392-7900
jsqueri@goodinmacbride.com
For: STG Communities II, LLC and Richland Communities, Inc.

Brian T. Cragg
Attorney
GOODIN, MACBRIDE, SQUERI, DAY & LAMPREY,
505 SANSOME ST., STE 900
SAN FRANCISCO CA 94111
(415) 392-7900
BCragg@goodinMacBride.com
For: Independent Energy Producers Association/ Alta
Windpower Development, LLC

T. Alana Steele
Attorney At Law
HANNA AND MORTON, LLP
444 S. FLOWER STREET, STE.1500
LOS ANGELES CA 90071
(213) 430-2502
tastele@hanmor.com
For: AERO ENERGY

Kevin K. Johnson
JOHNSON & HANSON LLP
600 WEST BROADWAY, SUITE 225
SAN DIEGO CA 92101
(619) 696-6211
kkj@johnsonandhanson.com
For: Puente Hills Landfill Habitat Preservation Authority

***** SERVICE LIST A0706031*****

Last Updated on 07-JUN-2013 by: JVG

Thomas Donnelly
JONES DAY
555 CALIFORNIA ST, 26TH FLOOR
SAN FRANCISCO CA 94104
(415) 875-5880
tmdonnelly@jonesday.com
For: Aerojet General Corp

Erica Schroeder
KEYES FOX & WIEDMAN, LLP
436 14TH ST., STE. 1305
OAKLAND CA 94612
(510) 314-8206
eschroeder@kfwlaw.com
For: Silverado Power LLC

Rachel Gold
LARGE SCALE SOLAR ASSOCIATION
2501 PORTOLA WAY
SACRAMENTO CA 95818
(510) 629-1024
Rachel@consciousventuresgroup.com
For: Large Scale Solar Association

Laura Godfrey
LATHAM & WATKINS
600 WEST BROADWAY, STE. 1800
SAN DIEGO CA 92101-3375
(619) 236-2967
laura.godfrey@lw.com
For: Southern California Edison Company

Bradly Torgan
LAW OFFICES OF BRADLEY S. TORGAN
927 KINGS ROAD, STE. 220
WEST HOLLYWOOD CA 90069-3235
(323) 574-7554
btorgan@ix.netcom.com
For: California State Parks Foundation

Sara Steck Myers
Attorney At Law
122 28TH AVENUE
SAN FRANCISCO CA 94121
(415) 387-1904
ssmyers@att.net
For: The Center for Energy Efficiency and Renewable
Technologies (CEERT)

Harrison M. Pollak
OFFICE OF THE ATTORNEY GENERAL
1515 CLAY STREET, 20TH FLOOR
PO BOX 70550
OAKLAND CA 94612-0550
(510) 622-2183
harrison.pollak@doj.ca.gov
For: Department of Parks & Recreation, Office of Col. Attorney
General

Noel Obiora
Legal Division
505 Van Ness Avenue, RM. 5121
San Francisco CA 94102 3298
(415) 703-5987
nao@cpuc.ca.gov
For: DRA

Rachel B. Hooper
SHUTE, MIHALY & WEINBERGER LLP
396 HAYES STREET
SAN FRANCISCO CA 94102
(415) 552-7272
hooper@smwlaw.com
For: Hills for Everyone

Gustavo E. Luna
TERRA-GEN POWER, LLC
11512 EL CAMINO REAL, SUITE 100
SAN DIEGO CA 92130
(562) 896-8300
gluna@tgpnyc.com
For: Terra-Gen Power, LLC

Robert Finkelstein, General Counsel
THE UTILITY REFORM NETWORK
115 SANSOME STREET, SUITE 900
SAN FRANCISCO CA 94104
(415) 929-8876 X-307
bfinkelstein@turn.org
For: The Utility Reform Network

Lisa A. Cottle, Attorney
WINSTON & STRAWN LLP
101 CALIFORNIA ST., STE. 3900
SAN FRANCISCO CA 94111-5894
(415) 591-1579
LCottle@Winston.com
For: NextEra Energy Resources, LLC

***** SERVICE LIST A0706031*****

Last Updated on 07-JUN-2013 by: JVG

***** STATE EMPLOYEE *****

Traci Bone
Legal Division
RM. 5027
505 Van Ness Avenue
San Francisco CA 94102 3298
(415) 703-2048
tbo@cpuc.ca.gov

Carol A. Brown
Executive Division
RM. 5300
505 Van Ness Avenue
San Francisco CA 94102 3298
(415) 703-2971
cab@cpuc.ca.gov

Clare Laufenber Gallardo
Strategic Transmission Investmnt Program
CALIFORNIA ENERGY COMMISSION
EMAIL ONLY
EMAIL ONLY CA 00000
(916) 654-4859
claufenb@energy.state.ca.us

Elizabeth Dorman
CALIFORNIA PUBLIC UTILITIES COMMISSION
EMAIL ONLY
EMAIL ONLY CA 00000
(415) 703-1415
elizabeth.dorman@cpuc.ca.gov

Niki Bawa
CALIFORNIA PUBLIC UTILITIES COMMISSION
EMAIL ONLY
EMAIL ONLY CA 00000
(415) 703-1990
nb2@cpuc.ca.gov

William Dietrich
CALIFORNIA PUBLIC UTILITIES COMMISSION
EMAIL ONLY
EMAIL ONLY CA 00000
(415) 703-1146
dietrichlaw2@earthlink.net

Enrique Arroyo
CALIFORNIA STATE PARKS
INLAND EMPIRE DISTRICT
17801 LAKE PERRIS DRIVE
PERRIS CA 95271
(951) 443-2423
earroyo@parks.ca.gov

Ron Krueper
CALIFORNIA STATE PARKS
INLAND EMPIRE DISTRICT
17801 LAKE PERRIS DRIVE
PERRIS CA 92571
(951) 443-2423
RKrueper@parks.ca.gov

Ke Hao Ouyang
Regulatory Analyst - Dra
CPUC
EMAIL ONLY CA 00000
(415) 703-1235
kho@cpuc.ca.gov

Gregory Heiden
Legal Division
505 Van Ness Avenue, RM. 5039
San Francisco CA 94102 3298
(415) 355-5539
gxh@cpuc.ca.gov

Andrew Kotch
Executive Division
505 Van Ness Avenue, RM. 5301
San Francisco CA 94102 3298
(415) 703-1072
ako@cpuc.ca.gov

Audrey Lee
Executive Division
RM. 5307
505 Van Ness Avenue
San Francisco CA 94102 3298
(415) 703-1175
al4@cpuc.ca.gov

Frank Lindh
Legal Division
RM. 5138
505 Van Ness Avenue
San Francisco CA 94102 3298
(415) 703-2015
frl@cpuc.ca.gov

Scott Logan
Division of Ratepayer Advocates
RM. 4108
505 Van Ness Avenue
San Francisco CA 94102 3298
(415) 703-1418
sjl@cpuc.ca.gov

***** SERVICE LIST A0706031*****

Last Updated on 07-JUN-2013 by: JVG

Charles Mee
Division of Ratepayer Advocates
RM. 4102
505 Van Ness Avenue
San Francisco CA 94102 3298
(415) 703-1147
cqm@cpuc.ca.gov

Rahmon Momoh
Safety and Enforcement Division
AREA 2-E
505 Van Ness Avenue
San Francisco CA 94102 3298
(415) 703-1725
rmm@cpuc.ca.gov

David Peck
Division of Ratepayer Advocates
RM. 4108
505 Van Ness Avenue
San Francisco CA 94102 3298
(415) 703-1213
dbp@cpuc.ca.gov

Marion Peleo
Legal Division
RM. 4107
505 Van Ness Avenue
San Francisco CA 94102 3298
(415) 703-2130
map@cpuc.ca.gov

Marcelo Poirier
Executive Division
RM. 5025
505 Van Ness Avenue
San Francisco CA 94102 3298
(415) 703-2913
mpo@cpuc.ca.gov

Jean Vieth
Administrative Law Judge Division
RM. 5009
505 Van Ness Avenue
San Francisco CA 94102 3298
(415) 703-2194
xjv@cpuc.ca.gov

***** INFORMATION ONLY *****

Rodney L. Dees
AERO ENERGY LLC, VP OF CONSTRUCTION
785 TUCKER ROAD, SUITE G, PMB 422
TEHACHAPI CA 93561
(661) 821-1420

C. Scott Goulart
AEROJER GENERAL CORP.
PO BOX 13222
SACRAMENTO CA 95813-6000
(916) 355-5454
charles.goulart@aerojet.com

Michael Flood
ANTELOPE VALLEY-EAST KERN WATER AGENCY
6500 WEST AVENUE N
PALMDALE CA 93551
(661) 943-3201
mflood@avek.org

Jon Davidson
Vice President
ASPEN ENVIRONMENTAL GROUP
5020 CHESEBRO ROAD, STE. 200
AGOURA HILLS CA 91301
(818) 597-3407
j davidson@aspeneq.com

Michael Riddell
BEST BEST & KRIEGER LLP
3390 UNIVERSITY AVE., FLR. 5
RIVERSIDE CA 92501-3369
(951) 686-1450
michael.riddell@bbklaw.com
For: Antelope Valley-East Kern Water Agency

Louis Bouwer
28520 WOOD CANYON DR., APT. 163
ALISO VIEJO CA 92656-5273
lbouwer@verizon.net

Karen Bryan
10715 LEONA AVENUE
LEONA VALLEY CA 93551
(661) 270-0261
karen@hdeci.com

Matt Strathman
C/O EMPIRE COMPANIES
1150 S. VINEYARD AVENUE
ONTARIO CA 91761-7753
(909) 481-1276
mstrathman@empirecos.com

***** SERVICE LIST A0706031*****

Last Updated on 07-JUN-2013 by: JVG

Judith Sanders
CAL. INDEPENDENT SYSTEM OPERATOR CORP.
EMAIL ONLY CA 00000-0000
(916) 608-7130
jsanders@caiso.com

Hilary Corrigan
CALIFORNIA ENERGY MARKETS
425 DIVISADERO ST. SUITE 303
SAN FRANCISCO CA 94117-2242
(415) 963-4439 X-303
cem@newsdata.com

Law & Regulatory Department
CALIFORNIA ISO
EMAIL ONLY CA 00000
(916) 608-7147
e-recipient@caiso.com

Nancy Rader
Executive Director
CALIFORNIA WIND ENERGY ASSOCIATION
EMAIL ONLY
EMAIL ONLY CA 00000-0000
(510) 845-5077
nrader@calwea.org

Martin Homec
CALIFORNIANS FOR RENEWABLE ENERGY, INC.
EMAIL ONLY
EMAIL ONLY CA 00000-0000
(530) 867-1850
martinhomec@gmail.com

Albert Chan
2669 PASEO DEL PALACIO
CHINO HILLS CA 91709
(951) 271-1560
albertchan92845@yahoo.com

Debra Hernandez
CITIZENS FOR ALTERNATE ROUTING OF ELECT
2597 PASEO TORTUGA
CHINO HILLS CA 91709
(310) 468-7991
debi_hernandez@toyota.com

Jeanette Short
CITIZENS FOR ALTERNATE ROUTING OF ELECT
3674 GARDEN COURT
CHINO HILLS CA 91709
(909) 228-8361
jshort1@aqmd.gov

Joanne Genis
CITIZENS FOR ALTERNATE ROUTING OF ELECT
3766 GARDEN COURT
CHINO HILLS CA 91709
(909) 597-0449
jgenis3833@aol.com

Gregory C. Devereaux
CITY OF ONTARIO
CIVIC CENTER
303 EAST B STREET
ONTARIO CA 91764-4105
(909) 395-2000

Kathryn J. Tobias
Legal Office
DEPARTMENT OF PARKS AND RECREATION
1416 9TH STREET, ROOM 1404-6
SACRAMENTO CA 95814
(916) 651-8772
ktobias@parks.ca.gov

Anjani Vedula
DEUTSCHE BANK
60 WALL STREET
NEW YORK NY 10005
(215) 300-3328
anjani.vedula@db.com

Donald C. Liddell
DOUGLASS & LIDDELL
EMAIL ONLY
EMAIL ONLY CA 00000
(619) 993-9096
liddell@energyattorney.com

Juliana Gerber-Miller
EDGAR & ASSOCIATES, INC.
1822 21ST STREET
SACRAMENTO CA 95811
(916) 739-1200
juliana@edgarinc.org

Henri Bartholomot
Associate General Counsel
EDISON ELECTRIC INSITITUTE
701 PENNSYLVANIA AVE., N.W.
WASHINGTON DC 20004
(202) 508-5622
hbartholomot@eei.org

***** SERVICE LIST A0706031*****

Last Updated on 07-JUN-2013 by: JVG

Ross Boomer
EDISON INTERNATIONAL
2244 WALNUT GROVE AVE.
ROSEMEAD CA 91770
(626) 302-3548
ross.boomer@edisonintl.com

Andrew Brown
Attorney At Law
ELLISON SCHNEIDER & HARRIS LLP
2600 CAPITOL AVENUE, SUITE 400
SACRAMENTO CA 95816-5905
(916) 447-2166
abb@eslawfirm.com

Bob Hoffman
ENERGY DYNAMIX CORPORATION
306 VISTA DEL MAR, SUITE B
REDONDO BEACH CA 90277
(310) 373-8222
bob@energydynamix.net

Hilda B. Wahhab
Sr. Regulatory Specialist
GOLDEN STATE WATER COMPANY
630 E FOOTHILL BLVD
SAN DIMAS CA 91773-9016
(909) 394-3600 X684
hbwahhab@gswater.com

Michael B. Day
GOODIN MACBRIDE SQUERI DAY & LAMPREY LLP
505 SANSOME STREET, SUITE 900
SAN FRANCISCO CA 94111-3133
(415) 392-7900
mday@goodinmacbride.com
For: City of Chino Hills

Scott Guiou
3523 GARDEN COURT
CHINO HILLS CA 91709
Guiou4@aol.com

Robin Smutny-Jones
IBERDROLA RENEWABLES, LLC
3009 E. PINTAIL WAY
ELK GROVE CA 95757
(916) 802-5298
robin.smutny-jones@iberdrolaren.com

Steven Kelly
Policy Director
INDEPENDENT ENERGY PRODUCERS ASSOCIATION
1215 K STREET, STE. 900
SACRAMENTO CA 95814
(916) 448-9499
steven@iepa.com

Belinda V. Faustinos
IRVERS AND MOUNTAINS CONSERVANCY
PO BOX 1460
900 S. FREMONT AVE., ANNEX, 2ND FLOOR
ALHAMBRA CA 91802-1460
(626) 458-4315
bfaustinos@rmc.ca.gov

Andrew Yancey
LAHAN & WATKINS LLP
600 WEST BROADWAY, STE. 1800
SAN DIEGO CA 92101-3375
(619) 236-1234
andrew.yancey@lw.com

Shannon Eddy
Executive Director
LARGE SCALE SOLAR ASSOCIATION
2501 PORTOLA WAY
SACRAMENTO CA 95818
(916) 731-8371
eddyconsulting@gmail.com

Anne B. Beaumont
LATHAM & WATKINS
600 WEST BROADWAY, SUITE 1800
SAN DIEGO CA 92101-3375
(619) 236-1234
anne.beaumont@lw.com

John Heintz
LATHAM & WATKINS
355 S. GRAND AVENUE
LOS NAGELES CA 90071
(213) 485-1234
john.heintz@lw.com

Benjamin Gibson
LATHAM & WATKINS LLP
60 WEST BROADWAY, SUITE 1800
SAN DIEGO CA 92101-3375
(619) 236-1234
benjamin.gibson@lw.com

***** SERVICE LIST A0706031*****

Last Updated on 07-JUN-2013 by: JVG

Jennifer K. Roy
LATHAM & WATKINS LLP
600 W. BROADWAY, STE. 1800
SAN DIEGO CA 92101
(619) 236-1234
jennifer.roy@lw.com

Karin Sanders
LATHAM & WATKINS LLP
600 WEST BROADWAY, SUITE 1800
SAN DIEGO CA 92101-3375
(619) 236-1234
karin.sanders@lw.com

Buck B. Endemann
LATHAM & WATKINS, LLP
600 W. BROADWAY, STE. 1800
SAN DIEGO CA 92101
(619) 236-1234
buck.endemann@lw.com

Janice Schneider
LATHAM & WATKINS, LLP
555 11TH STREET NW, STE 1000
WASHINGTON DC 20004-1304
(202) 637-2200
janice.schneider@lw.com

Megan M. Myers
LAW OFFICES OF SARA STECK MYERS
122 - 28TH AVENUE
SAN FRANCISCO CA 94121
(415) 994-1616
meganmyers@yahoo.com

Brendan Naeve
LEVIN CAPITAL STRATEGIES
595 MADISON AVENUE, 17TH FLR
NEW YORK NY 10022
(212) 259-0841
bnaeve@levincap.com

Carolyn Lumakang-Go
33288 ALVARADO NILES ROAD
UNION CITY CA 94587

Rachel McMahon
EMAIL ONLY
EMAIL ONLY CA 00000
mcmahon.rachel@gmail.com

MRW & ASSOCIATES, LLC
EMAIL ONLY CA 00000
(510) 834-1999
mrw@mrwassoc.com

Judi Tamasi
MTNS. RECREATION & CONSERVATION AUTH.
5810 RAMIREZ CANYON ROAD
MALIBU CA 90265
(310) 589-3230 X-121
judi.tamasi@mrca.ca.gov

Marianne Napoles
13179 NINTH STREET
CHINO CA 91709
(909) 628-5501
MNapoles@ChampionNewspapers.com

Kerry Hattevik, Director Of West Market Affairs
NEXT ERA ENERGY RESOURCES LLC
829 ARLINGTON BLVD.
EL CERRITO CA 94530
(510) 898-1847
kerry.hattevik@nee.com

Diane I. Fellman
Director, Regulatory & Gov'T Affairs
NRG WEST & SOLAR
EMAIL ONLY CA 00000
(415) 601-2025
Diane.Fellman@nrgenergy.com

Case Coordination
PACIFIC GAS AND ELECTRIC COMPANY
PO BOX 770000; MC B9A
SAN FRANCISCO CA 94177
(415) 973-4744
regrelcuccases@pge.com

Edward Heyn
POINTSTATE CAPITAL
40 WEST 57TH STREET, 25TH FL.
NEW YORK NY 10019
(212) 830-7061
ted@PointState.com

William E. Powers
POWERS ENGINEERING
4452 PARK BLVD., STE. 209
SAN DIEGO CA 92116
(619) 295-2072
bpowers@powersengineering.com

***** SERVICE LIST A0706031*****

Last Updated on 07-JUN-2013 by: JVG

James B. Prindiville
2444 PASEO DEL PALACIO
CHINO HILLS CA 91709
jprindiville@pachorizon.com

Robert Sarvey
RACE
501 W. GRANTLINE RD
TRACY CA 95376
(209) 835-7162
sarveybob@aol.com

Rebecca Giles
SDG&E AND SOCALGAS
8330 CENTURY PARK COURT - CP32D
SAN DIEGO CA 92123
(858) 636-6876
RGiles@semprautilities.com

Dean A. Kinports
SEMPRA ENERGY UTILITIES
555 W. 5TH STREET, GT-14D6
LOS ANGELES CA 90013-1011
(213) 244-3697
DAKinports@SempraUtilities.com

Gabriel M.B. Ross
Attorney
SHUTE, MIHALY & WEINBERGER LLP
396 HAYES STREET
SAN FRANCISCO CA 94102
(415) 552-7272
ross@smwlaw.com
For: Hills for Everyone

Adam Foltz
SILVERADO POWER LLC
44 MONTGOMERY STREET, STE. 3065
SAN FRANCISCO CA 94104
(415) 692-7740
reg@silveradopower.com

Hans Isern
SILVERADO POWER LLC
44 MONTGOMERY ST., STE. 3065
SAN FRANCISCO CA 94104
(415) 692-7740
reg@silveradopower.com

Kevin Fallon
SIR CAPITAL MANAGEMENT
EMAIL ONLY
EMAIL ONLY NY 00000
(212) 993-7104
kfallon@sirfunds.com

Shawn Smallwood, Ph.D.
3108 FINCH STREET
DAVIS CA 95616
(530) 756-4598

Angela Whatley
Attorney
SOUTHERN CALIFORNIA EDISON COMPANY
2244 WALNUT GROVE AVE. / PO BOX 800
ROSEMEAD CA 91770
(626) 302-3618
angela.whatley@sce.com

Beth A. Gaylord
SOUTHERN CALIFORNIA EDISON COMPANY
2244 WALNUT GROVE AVE./PO BOX 800
ROSEMEAD CA 91770
(626) 302-1915
Beth.Gaylord@sce.com

Case Administration
SOUTHERN CALIFORNIA EDISON COMPANY
LAW DEPT., ROOM 370
2244 WALNUT GROVE AVE., RM 370
ROSEMEAD CA 91770
(626) 302-4875
case.admin@sce.com

Les Starck
SOUTHERN CALIFORNIA EDISON COMPANY
601 VAN NESS AVE., STE. 2030
SAN FRANCISCO CA 94102
(202) 256-7159
les.starck@sce.com

Magdi Demian
Project Controls
TECHNIP LOS ANGELES USA
3551 GARDEN COURT
CHINO HILLS CA 91709
(909) 447-3327
magdi_demian@hotmail.com

***** SERVICE LIST A0706031*****

Last Updated on 07-JUN-2013 by: JVG

Joe Greco
TERRA-GEN POWER LLC
9590 PROTOTYPE COURT, SUITE 200
RENO NV 89521-5916
(775) 850-2245
jgreco@terra-genpower.com

Nina Suetake
Staff Attorney
THE UTILITY REFORM NETWORK
115 SANSOME STREET, SUITE 900
SAN FRANCISCO CA 94104
(415) 929-8876 X 308
nsuetake@turn.org

Carl C. Lower
UTILITY SPECIALISTS
717 LAW STREET
SAN DIEGO CA 92109-2436
(619) 987-0355
clower@earthlink.net
For: STG Communities & Richland Communities

Katherine Sky Tucker
VINCENT HILL COMMUNITY ALLIANCE
32239 ANGELES FOREST HWY.
PALMDALE CA 93550
(661) 274-9794

Naaz Khumawala
Utilities & Power Research
WOLFE TRAHAN
420 LEXINGTON, SUITE 648
NEW YORK NY 10170
(646) 582-9243
NKhumawala@WolfeTrahan.com

(End of Service List)