

Decision 07-10-017

October 4, 2007

## BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Application of Hal Tyvoll for Rehearing  
of Resolution E-4067.

Application 07-03-009

**ORDER MODIFYING RESOLUTION E-4067 AND  
DENYING REHEARING OF RESOLUTION, AS MODIFIED****I. INTRODUCTION**

San Diego Gas & Electric Company (SDG&E) filed Advice Letter 1853-E (“Advice Letter”) on December 18, 2006. SDG&E stated the subject of the advice letter as: Notice of Proposed Construction to Convert Existing 138 kV transmission Line from Overhead to Underground in the City of San Diego Community of Greater Golden Hill and Southeastern San Diego. The advice letter described construction to convert a 2.4-mile section of existing 138 kV transmission line from overhead to underground, pursuant to the City of San Diego’s surcharge program. The proposed construction was referred to as Phase II, because an earlier phase of the project had previously converted 1.4 miles of the line. (Advice Letter, pp. 1 - 2.)

The advice letter noted that the Commission requires utilities to employ “no-cost” and “low-cost” magnetic field management techniques on projects to reduce public exposure to magnetic fields and stated that SDG&E would:

consider and implement magnetic field management techniques on this project, as appropriate, in accordance with SDG&E’s “EMF Design Guidelines for Electrical Facilities,” as filed with the CPUC in

compliance with D.93-11-013<sup>1</sup> and updated in compliance with D.06-01-042.

(Advice Letter, p. 4.) (As used in Commission decisions, the acronym, “EMF” refers to “Electric and Magnetic Field”(D.93-11-013) and to “Electromagnetic Field.” (D.06-01-042).) The advice letter also stated that SDG&E’s Magnetic Field Management Plan for the project was available upon request. (Advice Letter, p. 4.)

Hal Tyvoll (“Tyvoll”) filed a timely protest to the advice letter. (*Protest of Proposed Construction of Phase 2 of the 30<sup>th</sup> Street Underground Utility District, to be constructed by the San Diego Gas & Electric Company*, filed December 28, 2006, (“Protest”).) In relevant part, Tyvoll argued that the proposed underground lines would pass within 15 to 25 feet of an elementary school and a preschool/kindergarten facility and within 50 to 75 feet of a Head Start center. Tyvoll also stated that “the EMF exposure levels at the Einstein Charter School place it within the top two-tenths of one percent of all California schools.” (Protest, p. 6.) The protest cites Decision (D.) 06-01-042 for its policy statement regarding underground lines that “special circumstances” may warrant additional cost, and argues that the decision held that schools and licensed day care facilities are in the first priority group with regard to finding special circumstances. (Protest, p. 6, referencing, *Opinion on Commission Policies Addressing Electromagnetic Fields Emanating from Regulated Utility Facilities* (“EMF Policy Decision”) [D.06-01-042] (2006) \_\_ Cal.P.U.C.3d \_\_, pp. 7, 12 (slip op.).)

SDG&E filed a letter in reply to the protest. (Letter titled *Re: Protest to SDG&E Advice Letter No. 1853-E* (“Reply to Protest”), filed January 12, 2007.) SDG&E claims that Tyvoll “essentially recycles arguments that he raised

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<sup>1</sup> *Re Potential Health Effects of Electric and Magnetic Fields of Utility Facilities* (“Decision on Effects of EMF”) [D.93-11-013] (1993) 52 Cal.P.U.C.2d 1.

in connection with the Phase I Project.” (Reply to Protest, p. 2.) In its letter, SDG&E responds to a number of specific issues. In relevant part, SDG&E addresses Tyvoll’s special circumstances argument saying the Commission “left the door open for doing and spending a little more in special circumstances but only if the 15% field-reduction requirement is achieved,” and claiming that in this case “use of greater trench depth would have little effect on magnetic field levels at the property lines.” (Reply to Protest, pp. 4 - 5.) SDG&E also states that the trench line placement adjacent to the schools is “in keeping with the Commission’s ‘prudent avoidance’ concept” and that it complies with the California Department of Education’s required distances. (Reply to Protest, p. 7, citing *EMF Policy Decision D.06-01-042*, *supra*, p. 17 (slip op.) regarding “prudent avoidance.”) SDG&E asserts that its “modeling demonstrates significant reductions from 40% to 95% in the magnetic fields at the property lines near the school sites.” (Reply to Protest, p. 7.)

Resolution E-4067 approves the advice letter. It summarizes issues from the protest, but does not mention the protest’s school-related arguments other than the claim of proximity. The Resolution characterizes that issue as, “the Phase II project is too close to various schools,” and finds that, “the EMF issues in this Protest are the same issues the Commission considered and rejected in D.06-04-047 and other relevant Commission decisions.” (Resolution E-4067, p. 6 [Finding of Fact (“FOF”) 25], citing *California Alliance for Utility Safety v. SDG&E* [D.06-04-047] (2006) \_\_\_ Cal.P.U.C.3d \_\_\_.)

Tyvoll filed a timely application for rehearing of Resolution E-4067, asserting that the Resolution fails to discuss or rule on the question of special circumstances related to school facilities. (*Application for Rehearing of*

*Resolution No. E-4067* (“Rehearing Application”) pp. 1 – 3.)<sup>2</sup> Regarding the special circumstances argument, Tyvoll alleges specifically that: (1) nothing in the Phase I litigation bears on the Phase II special circumstances argument; (2) D.06-04-047 does not support the Resolution’s outcome on the special circumstances issue; (3) D.06-04-047 has nothing to do with an assertion of special circumstances related to the Phase II facilities because that phase was still in the planning stages when the Phase I complaint proceeding was tried and submitted; and (4) the Commission acknowledged in D.06-04-047 that the City of San Diego had determined the two phases of the project were separate.

SDG&E filed a response to the Rehearing Application. (*San Diego Gas & Electric Company Response to Application for Rehearing of Resolution No. E-4067* (“Response to Application for Rehearing”), filed March 27, 2007.)

We have reviewed each and every allegation set forth in the application for rehearing and are of the opinion that Tyvoll has not demonstrated grounds for granting rehearing. However, we note that the Resolution will be modified to address certain EMF concerns raised in the protest of Hal Tyvoll, to correct and clarify references to the protest and to add clarifying findings of fact regarding Commission policy on EMF mitigation. Accordingly, we deny Tyvoll’s application for rehearing of Resolution E-4067, as modified.

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<sup>2</sup> Pages 2 and 3 of the Rehearing Application are reversed and incorrectly numbered. For the sake of consistency, this discussion refers to the actual hand-lettered page number written on each page, rather than correcting the order and the pagination.

## II. DISCUSSION

### A. Resolution E-4067 is modified to acknowledge and address the protest's arguments about schools.

In the application for rehearing, Tyvoll alleges that Resolution E-4067 fails to discuss or rule on arguments made in his protest, regarding schools near the project route and the concept of “special circumstances,” pursuant to D.06-01-042. (Rehearing Application, p. 1.) Although the application for rehearing asserts new arguments that did not appear in the protest, and mischaracterizes certain arguments that were in the protest, it is true that the Resolution fails to acknowledge or consider certain school-related arguments that were included.

The protest reports distance measurements from power lines to three schools and reports EMF measurements for one school, asserting that it was within the top two-tenths of one percent of all California schools. (Protest, pp. 4 -6.) The protest also asserts a policy statement involving the Commission's holding that “special circumstances” may warrant some additional cost for mitigation of a transmission line placed underground. (Protest, p. 6, citing EMF Policy Decision [D.06-01-042] *supra*, at p. 12 (slip op.).)

The Resolution's summary statement of the protest's issues in the text and as Finding of Fact 20, includes only one reference to schools, characterizing the issue as: “the Phase II project is too close to various schools.” (Resolution, pp. 3, 6, FOF 20.) We will modify this statement because the protest actually asserted that the overhead lines and the proposed location of the underground lines pass, “very close” to two schools. (Protest, p. 5.) The protest does not assert these measurements as grounds for protest or for denying the advice letter.

The protest provides EMF measurements for one school, asserting the measured EMF levels are within the top “two-tenths of one percent of all California schools” and that “4% mitigation is insufficient.” (Protest, p. 6.) The

Resolution is silent regarding the reported EMF levels and we modify it to address the arguments.

The Resolution finds that “the Protestant previously raised the above arguments in connection with the Phase I Project,” and that the EMF issues had been considered and rejected in previous Commission decisions. (Resolution E-4067, p. 6, FOF 20, 21, 25.) Resolution E-4067 is silent on the special circumstance argument. We modify Resolution E-4067 to address the special circumstance argument and to clarify statements about issues being “considered and rejected” in previous decisions.

The application for rehearing has identified certain omissions and misstatements in Resolution E-4067 that warrant correcting. The protest did not claim that the Phase II project would violate any law, order or requirement or that granting the advice letter would represent legal error. The errors alleged in the application for rehearing involve the Resolution’s failure to address the special circumstances and other school-related issues. As set forth in the ordering paragraphs of today’s decision, we modify the Resolution to address these issues.

**B. The argument that mitigation decisions should be based on EMF measurements is contrary to the Commission’s EMF Policy.**

The protest reports that EMF measurements taken in 1990, “of the overhead lines in Phase [II],” adjacent to the Einstein Charter School, “found EMF levels up to 15 to 17 milligauss (mG) in classrooms nearest the power lines.”<sup>3</sup> (Protest, p. 4.) It also reports that measurements taken in 2006 showed levels of 12 mG in one classroom and 26 mG in another.<sup>4</sup> (Protest, p. 5.)

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<sup>3</sup> The protest states the 1990 measurements were conducted by Dr. Stellan Knoos, a Swedish physicist. (Protest, p. 4.)

<sup>4</sup> The pleadings do not say who conducted the 2006 measurements.

The protest asserts that, when compared to EMF exposure levels of all California schools, the exposure levels of Einstein Charter School “easily place it within the top two-tenths of one percent of all California schools” and concludes that because of the reported classroom EMF levels, “4% mitigation is clearly insufficient.” (Protest, p. 5, citing Attachment L, Electric and Magnetic Field Exposure Assessment of Powerline and Non-Powerline Sources for California Public School Environments, Executive Summary.) The protest does not state that the EMF measurements at the Einstein Charter School create a “special circumstance,” although the application for rehearing says it does. (The arguments raised only in the application for rehearing are discussed in section F, below.)

The protest’s argument that mitigation decisions should be based on measurements of EMF emissions is contrary to our EMF policy rulings. We have not adopted numerical standards for EMF exposure and we have explained that it is not appropriate to do so until we have a firm scientific basis for adopting a particular value. (Decision on Effects of EMF [D.93-11-013] *supra*, 52 Cal.P.U.C.2d at p. 28 [Conclusion of Law (“COL”) 3].) Further, in addressing a previous claim that EMF exposure in the vicinity of the Phase I project was too high, we held:

We have established no standards for EMF exposure and none have been established by any other California agency. Therefore, CAUSE<sup>5</sup> cannot show that any particular level of EMF exposure is in violation of “any provision of law or of any order or rule of the [C]ommission . . . .

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<sup>5</sup> California Alliance for Utility Safety and Education (CAUSE) brought the complaint case, C.04-12-012 against SDG&E for issues related to Phase I of the project that is the subject of the rehearing application. Hal Tyvoll, protestant and applicant for rehearing in the instant matter, represented CAUSE in the earlier proceeding.

(*California Alliance for Utility Safety v. SDG&E* [D.06-04-047], *supra*, at pp. 12 - 13 (slip op.)) Rather than basing EMF mitigation on numeric values, we have adopted a mitigation approach based on modeling that is intended to compare differences between alternative EMF mitigation measures and not to determine actual EMF amounts. (*EMF Policy Decision* [D.06-01-042] *supra*, at p. 20 [Finding of Fact (“FOF”) 14] (slip op.))

We have noted that it is difficult to eliminate other EMF sources when measuring EMF levels in the field. (*EMF Policy Decision* [D.06-01-042] *supra*, at p. 11 (slip op.), *California Alliance for Utility Safety v. SDG&E* [D.06-04-047], *supra*, at p. 5 (slip op.)) However, even assuming that the numerical measurements stated in the protest are representative and accurate, there are no adopted California standards against which to measure the reported levels.

Arguments that EMF mitigation decisions should be based on EMF measurements advocate an approach that we have rejected and, therefore, do not identify error in the Resolution’s outcome or grounds for denying the advice letter. As set forth in the ordering paragraphs, we modify the Resolution to address this issue.

### **C. Measurement of Post-Construction EMF Emissions**

The protest reports EMF measurements taken at the Phase I underground line and compares them to measurements taken at the Phase II overhead lines. Based on the comparison of these measurements, the protest argues:

EMF levels from underground were found to be much higher than from overhead within the first 20 feet and from 25’ to 100’ were virtually the same as from overhead.

(Protest, p. 4.) The application for rehearing argues that the school facilities “will continue to be exposed to high levels of EMF radiation by the proposed

underground line in its present design configuration.” (Rehearing Application, p. 1.)

Consistent with our previous discussion, we do not require the post-construction measurement of EMF in the field. (EMF Policy Decision [D.06-01-042], *supra*, at p. 11 (slip op.)) Thus, arguments based on comparing EMF measurements from the post-construction Phase I underground lines with the Phase II overhead lines are not consistent with Commission policy and are without merit.

**D. Arguments Regarding Health Risk Related to Specific EMF Levels**

The protest argues, “[m]any studies show the threshold of risk for childhood leukemia is about 2 mG, and the risk is doubled above 4 mG.” (Protest, p. 5, citing a 2002 Department of Health Services Report to the Commission and testimony that was submitted to the Connecticut Siting Council in 2004, attached to the protest as Attachment N.) The protest concludes, related to the above statement, “substantial EMF mitigation should be required for all Phase [II] facilities.” (Protest, p. 5.) As discussed above, we have adopted the approach of basing EMF mitigation decisions on differences between alternative EMF mitigation measures and have not adopted numeric standards for exposure. We have stated that we remain vigilant regarding new scientific research on EMF, and are prepared to open a new rulemaking if warranted. (*EMF Policy Decision* [D.06-01-042] *supra*, at p. 18, (slip op.))

For the above reasons, it would be contrary to our EMF policy to weigh the mitigation measures for the Phase II project against Tyvoll’s claims about specific emission levels. Arguments that mitigation measures for the Phase II project should be determined based on claims related to the health effects of certain EMF levels are contrary to Commission policy and are, therefore, without merit.

**E. Special Circumstances Claim Based on “Top Priority” Classification of Schools and Day Care Facilities**

The protest characterizes our 2006 policy statement about special circumstances related to underground transmission line projects, as follows:

The Commission emphasized that special circumstances may warrant additional cost (in addition to no-cost and low-cost requirements) in order to achieve significant EMF mitigation for underground lines, with top priority being given for schools and licensed day care facilities, and next residential.

(Protest, p. 6.)

This passage is not an accurate statement of Commission policy because it combines two separate holdings as if they were one. In D.06-04-042 we affirmed a group prioritization for land use categories in determining how mitigation costs will be applied to projects where low-cost mitigation is required. The first category is “schools and licensed day care.” (EMF Policy Decision [D.06-01-042], *supra*, at p. 7 (slip op.)) Projects to place transmission lines underground are addressed in a subsequent section of the decision, titled, “Should Underground Lines be Considered for Additional Mitigation?” On that topic we said:

Although we expect that placing a transmission line underground should normally provide sufficient mitigation we will not adopt a policy that totally excludes additional mitigation for underground lines should special circumstances warrant some additional cost in order to achieve significant further EMF mitigation.

(*Id.* at p.12 (slip op.))

In this discussion of underground lines we reserved for our discretion finding special circumstances related to an undergrounding project, and did not adopt priority categories or criteria for identifying such a case. The protest combined two separate holdings as though they comprised one statement, thereby

creating an incorrect statement of our policy. There is no support in D.06-01-042 for applying the priority categories in this manner.

Neither the protest nor the application for rehearing argues that we were legally required to find that the Phase II project constitutes a special circumstance. Accordingly, these arguments regarding special circumstance have no merit, and are denied.<sup>6</sup>

#### **F. Proximity of Schools to Power Lines**

The protest raises the question of distance between the overhead lines and the schools. It states as follows:

phase [II] overhead lines (as well as the proposed location of the underground lines) pass very close (within 15 to 25 feet) to the former Brooklyn Elementary School (now the Einstein Charter School) in . . . and to the McGill Preschool and Kindergarten . . . . The lines are about 50 to 75 feet from the . . . Brooklyn Elementary Head Start Center . . . .<sup>7</sup>

(Protest, p. 5.) Contrary to summary statements in SDG&E’s reply to the protest and in the Resolution, the protest does not assert that the Phase II project is “too close to various schools.” (Resolution E-4067, p. 6; Response to Protest, p. 2.) Further, the protest does not assert grounds for protesting the advice letter based on the distances from the overhead line to the schools.

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<sup>6</sup> The application for rehearing makes a number of arguments to support the claim that the school-related arguments in the Protest are related to schools adjacent to the Phase II project and were not addressed or resolved in previous decisions. Because today’s order determines that the issues specific to Phase II were not previously addressed, we find these arguments are moot.

<sup>7</sup> In its reply to the protest SDG&E argued that the distances from the underground trench to the schools are greater than the California Department of Education requirement for a new school to qualify for an exemption for citing near an existing transmission line. (Reply to Protest, p. 7, citing California Department of Education’s Criteria for Siting New Schools Adjacent to Electric Power Lines Rated 50 kV and Above, Included in EMF Guidelines (July 21, 2006) p. 16.)

As set forth in the ordering paragraphs, the Resolution is modified to correct the misstatement that the protest claims the line is, “too close to various schools” and to include a finding that the protest does not state any recommendation or conclusion related to the reported distances.

**G. Arguments Raised Only in the Application for Rehearing**

The application for rehearing claims that the Resolution fails to address the special circumstances claim made in the protest and also makes the following statement:

The primary ground of protest is that exposure of schoolchildren to unusually high levels of EMF radiation from this power line (up to 20 mG), constitute special circumstances under the ruling in D.06-01-042, which require additional measures in mitigation, in addition to no-cost and low-cost measures.

(Rehearing Application, p. 1.) The application for rehearing appears to claim that this argument was included in the protest. However, the above passage is actually a new policy argument that does not appear in the protest. The only mention of special circumstances in the protest is the claim, discussed previously, that special circumstances may warrant additional cost, “with top priority being given to schools and licensed day care facilities.” (Protest, p. 6.)

The argument in the application for rehearing, that the reported levels of EMFs should be used to determine “special circumstances” and, therefore, to require additional mitigation measures, is essentially a policy recommendation. It does not assert an error in the Resolution or any underlying violation of law or order related to the advice letter or the project. Regarding the substance of this special circumstances argument, the application for rehearing does not “set forth specifically the ground or grounds on which appellant considers the [Resolution] to be unlawful,” as required by Public Utilities Code section 1732, and it is, therefore, without merit as a basis for granting rehearing. The only allegations of

error regarding the special circumstances argument assert the Resolution's failure to acknowledge the issue and to address it. We modify the Resolution to acknowledge these concerns and to address them.

As discussed in section B, above, we have not adopted numerical standards upon which to base a finding that measured EMF levels are high enough to require additional mitigation measures. Characterizing the levels as "unusually high," rather than "too high," does not significantly alter the argument which, in either case, seeks to base mitigation decisions on measured EMF levels. Similarly, the argument that measured EMF levels constitute "special circumstances," pursuant to the concept addressed in D.06-01-042, is simply another argument in favor of basing EMF mitigation decisions on EMF measurements. Because we have considered and rejected this approach, the Resolution does not err in failing to adopt EMF measurements as the basis for mitigation decisions.

The application for rehearing also includes a summary paragraph on the matter of measured EMF emissions. It states:

The 6-page protest in this matter . . . concerns the high levels of EMF emitted by a double 138kv overhead powerline sited in close proximity to a charter elementary school and preschool facilities. These facilities will continue to be exposed to high levels of EMF radiation by the proposed underground line in its present design configuration.

(Rehearing Application, p. 1.) This assertion of continuing high levels of EMF radiation, like assertions about current high levels of emissions, is based on EMF measurements of the existing overhead power line. As discussed above, basing mitigation decisions on such measurements is inconsistent with adopted Commission policy.

The arguments in the application for rehearing regarding measured EMF levels and continuing high levels do not assert an error in the Resolution or

an underlying violation of law or order related to the advice letter or the project. Therefore, the argument is without merit.

### III. CONCLUSION

For the reasons discussed above, Resolution E-4067 is modified as specified herein. Rehearing of Resolution E-4067, as modified, is denied.

#### **THEREFORE, IT IS ORDERED that:**

1. Resolution E-4067 is modified in the manner set forth below.
  - a. Item (3) in the last full paragraph on page 3 is modified to read as follows:

“(3) the lines are very close to two schools and measured EMF levels of one school require additional mitigation.”
  - b. A sentence is added to the last full paragraph on page 3 to read as follows:

“The Protest also asserts that schools and licensed day care centers are a top priority for determining special circumstances.”
  - c. The first sentence in the paragraph that starts on page 3 and continues onto page 4 is modified to read as follows:

“The Protestant previously raised arguments about EMF emissions in connection with the Phase I Project, C.04-12-026, which resulted in issuance of D.06-04-047.”
  - d. The second sentence in the paragraph that starts on page 3 and continues on to page 4 is deleted.
  - e. The last sentence in the paragraph that starts on page 3 and continues on to page 4 is deleted.
  - f. A new sentence is added as the last sentence in the paragraph that starts on page 3 and continues onto page 4 to read as follows:

“Some of the issues raised in the Protest have been addressed in previous Commission decisions, D.93-11-013, D.06-01-042 and D.06-04-047.”

- g. Finding of Fact 20, section (3) is modified to read as follows:

“(3) the lines are very close to two schools and measured EMF levels of one school require additional mitigation.”

- h. Finding of Fact 21 is modified to read as follows:

“The Protest asserts that schools and licensed day care centers are a top priority for determining special circumstances.”

- i. Finding of Fact 22 is deleted.

- j. Finding of Fact 25 is modified to read as follows:

“Some of the issues in the Protest have been addressed in previous Commission decisions, D.93-11-013, D.06-01-042 and D.06-04-047.”

- k. The following new findings of fact are added to Resolution E-4067, as Findings of Facts 26 through 36:

“26. The Protestant does not state grounds for protest or claim that the Advice Letter should be denied or that any other action is required due to the project’s proximity to schools.

27. Protestant argues that additional mitigation should be required because of measured EMF levels.

28. The Protestant claims that EMF levels from the underground Phase I line were found to be higher than from the Phase II overhead line at certain distances and to be virtually the same at other distances.

29. The application for rehearing does not allege a violation of the EMF Guidelines.

30. Commission policy regarding underground construction of transmission lines is addressed in D.06-01-042.
31. The Protest's argument about special circumstances misstates Commission policy as stated in D.06-01-042 and is without merit.
32. The Commission has directed that utility modeling methodology is intended to compare differences between alternative EMF mitigation measures and not to determine actual EMF amounts.
33. As a matter of policy, the Commission has declined to set numerical standards for EMF emissions because scientific information on the effects of EMF exposure is uncertain.
34. It is Commission policy to base mitigation decisions on modeling of relative EMF emission levels, consistent with EMF Guidelines that have been adopted in accordance with Commission decisions.
35. The Commission does not require measurements of post-construction EMF levels.
36. This Resolution conforms to the Commission's policy regarding EMF mitigation practices, as stated in D.06-01-042."

2. Rehearing of Resolution E-4067, as modified, is denied.
3. Application (A.) 07-03-009 is closed.

This order is effective today.

Dated October 4, 2007, at San Francisco, California.

MICHAEL R. PEEVEY  
President  
DIAN M. GRUENEICH  
JOHN A. BOHN  
RACHELLE B. CHONG  
TIMOTHY ALAN SIMON  
Commissioners