



Supreme Court of California.

SAN DIEGO GAS AND ELECTRIC COMPANY,  
Petitioner,

v.

The SUPERIOR COURT of Orange County,  
Respondent;  
Martin COVALT et al., Real Parties in Interest.

**No. S045854.**

Aug. 22, 1996.

After the Superior Court, Orange County, No. 722284, [John M. Watson](#), J., overruled electric utility's demurrer, in homeowners' action against utility, alleging that electric and magnetic fields (EMF) emitted from electric power lines had caused them emotional distress, made their home uninhabitable, and destroyed its market value, utility petitioned for writ of prohibition or mandate to compel trial court to sustain demurrer and dismiss complaint on ground that Public Utilities Commission (PUC) had exclusive jurisdiction over issues raised by complaint. The Court of Appeal issued writ of mandate. Review was granted, superseding the opinion of the Court of Appeal. The Supreme Court, [Mosk](#), J., held that: (1) PUC has authority to adopt policy on whether electric and magnetic fields arising from power lines of regulated utilities are public health risk and what action, if any, utilities should take to minimize that risk; (2) PUC had exercised that authority; (3) homeowners failed to state cause of action for trespass; (4) homeowners could not bring private nuisance action, as award of damages would impermissibly interfere with PUC's policy on power-line electric and magnetic fields; (5) homeowners did not state inverse condemnation cause of action; (6) homeowners could not bring negligence cause of action against utility, as award of damages on that theory would undermine PUC's policy on power-line electric and magnetic fields; and (7) homeowners were not entitled under due process to notice and opportunity to be heard in proceedings in which PUC adopted its policy on electric power-line electric and magnetic fields.

Affirmed.

Opinion, [38 Cal.Rptr.2d 811](#), vacated.

West Headnotes

**[1] Appeal and Error** **102**  
[30k102 Most Cited Cases](#)

**[1] Appeal and Error** **870(5)**  
[30k870\(5\) Most Cited Cases](#)

Order overruling demurrer is not directly appealable, but may be reviewed on appeal from final judgment. [West's Ann.Cal.C.C.P. § § 904.1, 906.](#)

**[2] Courts** **207.1**  
[106k207.1 Most Cited Cases](#)

For purposes of review of order overruling demurrer, review on appeal from final judgment is normally presumed to be adequate remedy at law, thus barring immediate review by extraordinary writ. [West's Ann.Cal.C.C.P. § § 1086, 1103.](#)

**[3] Public Utilities** **146**  
[317Ak146 Most Cited Cases](#)

Public Utilities Commission's (PUC) authority includes not only administrative but also legislative and judicial powers. [West's Ann.Cal.Pub.Util.Code § § 201 et seq., 701.](#)

**[4] Public Utilities** **194**  
[317Ak194 Most Cited Cases](#)

Public Utilities Act article governing judicial review of Public Utilities Commission (PUC) decisions prescribes method of judicial review that is narrow in both manner and scope. [West's Ann.Cal.Pub.Util.Code § 1756 et seq.](#)

**[5] Public Utilities** **148**  
[317Ak148 Most Cited Cases](#)

Private action for damages against public utility pursuant to Public Utilities Act provision governing such actions is barred by Act provision governing jurisdiction to review Public Utilities Commission (PUC) order not only when award of damages would directly contravene specific order or decision of PUC, i.e., when it would reverse, correct, or annul that order or decision, but also when award of damages would simply have effect of undermining general supervisory or regulatory policy of PUC, i.e., when it would hinder, frustrate, interfere with, or obstruct that policy. [West's Ann.Cal.Pub.Util.Code § § 1759, 2106.](#)

**[6] Electricity** **9(5)**  
[145k9\(5\) Most Cited Cases](#)

(Cite as: 13 Cal.4th 893, 920 P.2d 669, 55 Cal.Rptr.2d 724)

(Formerly 145k8.5(1))


Public Utilities Commission (PUC) has authority to adopt policy on whether electric and magnetic fields (EMF) arising from power lines of regulated utilities are public health risk and what action, if any, utilities should take to minimize that risk. [West's Ann.Cal. Const. Art. 12, § § 1-6](#); [West's Ann.Cal.Pub.Util.Code § § 451, 701, 762, 768, 1001](#); [West's Ann.Cal.Pub.Res.Code § § 25107, 25120, 25501](#).

**[7] Public Utilities** 145.1[317Ak145.1 Most Cited Cases](#)

Public Utilities Commission (PUC) has broad authority to determine whether service or equipment of any public utility poses any danger to health or safety of public, and if so, to prescribe corrective measures and order them into effect. [West's Ann.Cal.Pub.Util.Code § 451](#).

**[8] Public Utilities** 148[317Ak148 Most Cited Cases](#)

Public Utilities Commission (PUC) has comprehensive jurisdiction over questions of public health and safety arising from utility operations. [West's Ann.Cal.Pub.Util.Code § § 701, 768](#).

**[9] Electricity** 19(.5)[145k19\(.5\) Most Cited Cases](#)

For purposes of determining whether homeowners could assert claims in their private action against electric utility arising from electric and magnetic fields (EMF) emitted from electric power lines, Public Service Commission (PSC) had exercised its authority to adopt general policy on whether such fields arising from power lines of regulated utilities are public health risk and what steps, if any, utilities should take to minimize that risk, where PSC had addressed issue in proceeding for approval of transmission line construction and in subsequent proceeding in which PSC adopted interim policy on subject. [West's Ann.Cal. Const. Art. 12, § § 1-6](#); [West's Ann.Cal.Pub.Util.Code § § 451, 701, 762, 768, 1001, 1759, 2106](#); [West's Ann.Cal.Pub.Res.Code § § 25107, 25120, 25501](#).

**[10] Trespass** 14[386k14 Most Cited Cases](#)**[10] Trespass** 40(4)[386k40\(4\) Most Cited Cases](#)

Homeowners failed to state cause of action for trespass against electric utility, arising from electric and magnetic fields (EMF) emitted from electric power lines; such fields were wholly intangible phenomena, homeowners did not and could not allege that fields caused any physical damage to their property, and diminution in property value was not

type of physical damage to property itself but, rather, was element of measure of damages when such damage was otherwise proved.

**[11] Trespass** 14[386k14 Most Cited Cases](#)

For trespass purposes, diminution in property value is not type of physical damage to property itself but, rather, is element of measure of damages when such damage is otherwise proved.

**[12] Nuisance** 1[279k1 Most Cited Cases](#)

"Private nuisance" is nontrespassory interference with private use and enjoyment of land. [West's Ann.Cal.Civ.Code § § 3479-3481](#).

**[13] Nuisance** 3(1)[279k3\(1\) Most Cited Cases](#)

In distinction to trespass, liability for nuisance does not require proof of damage to plaintiff's property; proof of interference with plaintiff's use and enjoyment of that property is sufficient. [West's Ann.Cal.Civ.Code § § 3479-3481](#).

**[14] Nuisance** 4[279k4 Most Cited Cases](#)

For purposes of nuisance, liability for damages is imposed in those cases in which harm or risk to one is greater than he ought to be required to bear under the circumstances, at least without compensation. [West's Ann.Cal.Civ.Code § § 3479-3481](#); [Restatement \(Second\) of Torts § 822](#) comment.

**[15] Nuisance** 33[279k33 Most Cited Cases](#)

For recovery of damages on nuisance theory, in addition to proving interference with plaintiff's use and enjoyment of plaintiff's property, plaintiff must prove that invasion of plaintiff's interest in use and enjoyment of land was "substantial," i.e., that it caused plaintiff to suffer substantial actual damage, and that interference with protected interest is "unreasonable," i.e., it must be of such nature, duration, or amount as to constitute unreasonable interference with use and enjoyment of land. [West's Ann.Cal.Civ.Code § § 3479-3481](#); [Restatement \(Second\) of Torts § § 821F, 821F](#) comment, 822.

**[16] Nuisance** 4[279k4 Most Cited Cases](#)

For purposes of nuisance, degree of harm is to be judged by objective standard, i.e., what effect invasion would have on persons of normal health and sensibilities living in same community. [West's Ann.Cal.Civ.Code § § 3479-3481](#).

**[17] Nuisance** 4

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[279k4 Most Cited Cases](#)

For purposes of nuisance, if normal persons in subject locality would not be substantially annoyed or disturbed by situation, then invasion is not significant one, even though idiosyncracies of particular plaintiff may make it unendurable to him. [West's Ann.Cal.Civ.Code § § 3479-3481](#); [Restatement \(Second\) of Torts § 821F](#) comment.

[\[18\] Nuisance](#) [279k4 Most Cited Cases](#)

For purposes of nuisance, degree of harm is question of fact that turns on circumstances of each case. [West's Ann.Cal.Civ.Code § § 3479-3481](#); [Restatement \(Second\) of Torts § 821F](#) comment.

[\[19\] Nuisance](#) [279k4 Most Cited Cases](#)

For purposes of nuisance, primary test for determining whether invasion is unreasonable is whether gravity of harm outweighs social utility of defendant's conduct, taking a number of factors into account. [West's Ann.Cal.Civ.Code § § 3479-3481](#); [Restatement \(Second\) of Torts § § 826-831](#).

[\[20\] Nuisance](#) [279k4 Most Cited Cases](#)

For purposes of nuisance, standard for determining whether invasion is unreasonable is objective: question is not whether particular plaintiff found invasion unreasonable but, rather, whether reasonable persons generally, looking at whole situation impartially and objectively, would consider it unreasonable. [West's Ann.Cal.Civ.Code § § 3479-3481](#); [Restatement \(Second\) of Torts § 826](#) comment.

[\[21\] Nuisance](#) [279k4 Most Cited Cases](#)[\[21\] Nuisance](#) [279k34 Most Cited Cases](#)

For purposes of nuisance, whether invasion is unreasonable is question of fact: fundamentally, unreasonableness of intentional invasions is problem of relative values to be determined by trier of fact in each case in light of all circumstances of that case. [West's Ann.Cal.Civ.Code § § 3479-3481](#); [Restatement \(Second\) of Torts § 826](#) comment.

[\[22\] Nuisance](#) [279k6 Most Cited Cases](#)

Homeowners could not bring private nuisance action against electric utility, alleging that electric and magnetic fields (EMF) caused by electric power lines impaired their use and enjoyment of property due to fear that fields would cause them physical harm, as award of damages on that basis would impermissibly interfere with Public Utilities Commission's (PUC)

policy on power-line electric and magnetic fields; findings required for award of damages would be inconsistent with PUC's conclusion that evidence did not support reasonable belief that such fields presented substantial risk of physical harm and that, unless and until evidence supported such belief, utilities need take no action to reduce field levels from existing power lines. [West's Ann.Cal.Civ.Code § § 3479-3481](#); [West's Ann.Cal.Pub.Util.Code § 1759](#).

[\[23\] Eminent Domain](#) [148k293\(1\) Most Cited Cases](#)

Homeowners did not state inverse condemnation cause of action against electric utility arising from electric and magnetic fields (EMF) emitted from electric power lines, as homeowners could not allege sufficient "taking or damaging"; homeowners did not and could not allege that fields caused physical damage to their property, such fields were wholly intangible phenomena that occupied no space and could not be perceived by the senses, and homeowners were unable to allege that such fields caused direct and substantial burden on their property. [U.S.C.A. Const.Amend. 5](#); [West's Ann.Cal. Const. Art. 1, § 19](#).

[\[24\] Eminent Domain](#) [148k266 Most Cited Cases](#)

In inverse condemnation action, property owner must first clear hurdle of establishing that public entity has, in fact, taken or damaged his or her property before he or she can reach issue of just compensation. [U.S.C.A. Const.Amend. 5](#); [West's Ann.Cal. Const. Art. 1, § 19](#).

[\[25\] Eminent Domain](#) [148k2.1 Most Cited Cases](#)

(Formerly 148k2(1))

For purposes of inverse condemnation, public entity "takes or damages" private property when it causes physical damage to that property without physically invading it. [U.S.C.A. Const.Amend. 5](#); [West's Ann.Cal. Const. Art. 1, § 19](#).

[\[26\] Eminent Domain](#) [148k2.1 Most Cited Cases](#)

(Formerly 148k2(1))

For purposes of inverse condemnation, public entity "takes or damages" private property when it physically invades that property in any tangible manner. [U.S.C.A. Const.Amend. 5](#); [West's Ann.Cal. Const. Art. 1, § 19](#).

[\[27\] Eminent Domain](#) 

(Cite as: 13 Cal.4th 893, 920 P.2d 669, 55 Cal.Rptr.2d 724)

[148k2.1 Most Cited Cases](#)

(Formerly 148k2(1))

For inverse condemnation purposes, permanent physical invasions of property are "takings" even if they occupy only relatively insubstantial amounts of space and do not seriously interfere with landowner's use of rest of his land. [U.S.C.A. Const.Amend. 5](#); [West's Ann.Cal. Const. Art. 1, § 19](#).

[\[28\] Eminent Domain 293\(1\)](#)[148k293\(1\) Most Cited Cases](#)

For inverse condemnation purposes, when conduct of public entity results in intangible intrusion onto plaintiff's property that does not physically damage property, plaintiff must allege that intrusion has resulted in burden on property that is direct, substantial, and peculiar to property itself. [U.S.C.A. Const.Amend. 5](#); [West's Ann.Cal. Const. Art. 1, § 19](#).

[\[29\] Eminent Domain 2.12](#)[148k2.12 Most Cited Cases](#)

(Formerly 148k2(1.1))

It is not true that there is liability for inverse condemnation merely because utility improves property for public use; such liability arises only if, in doing so, utility takes or damages private property within meaning of constitutional provisions on eminent domain. [U.S.C.A. Const.Amend. 5](#); [West's Ann.Cal. Const. Art. 1, § 19](#).

[\[30\] Eminent Domain 2.1](#)[148k2.1 Most Cited Cases](#)

(Formerly 148k2(1))

[\[30\] Eminent Domain 141\(1\)](#)[148k141\(1\) Most Cited Cases](#)

For inverse condemnation purposes, diminution in property value is not "taking or damaging" of property but, rather, is element of measure of just compensation when such taking or damaging is otherwise proved. [U.S.C.A. Const.Amend. 5](#); [West's Ann.Cal. Const. Art. 1, § 19](#).

[\[31\] Courts 89](#)[106k89 Most Cited Cases](#)

Cases are not authority for issues not raised and resolved.

[\[32\] Electricity 16\(1\)](#)[145k16\(1\) Most Cited Cases](#)

Homeowners could not bring negligence cause of action against electric utility, arising from electric and magnetic fields (EMF) emitting from electric power lines, as award of damages on that theory would undermine Public Utilities Commission's (PUC) policy on power-line electric and magnetic

fields; such award of damages would hold utility liable for not doing what PUC had repeatedly determined that it and all similarly situated utilities were not required to do, i.e., take measures to mitigate effect of such fields from existing power lines. [West's Ann.Cal.Pub.Util.Code § 1759, 2106](#).

[\[33\] Electricity 9\(5\)](#)[145k9\(5\) Most Cited Cases](#)

(Formerly 145k8.5(1))

Homeowners were not entitled under due process to notice and opportunity to be heard in proceedings in which Public Utilities Commission (PUC) adopted its policy on electric power-line electric and magnetic fields (EMF), as those proceedings were quasi-legislative, rather than quasi-judicial, in character, designed not to adjudicate individual rights and obligations but, rather, to develop legislative record and adopt general policy or promulgate general regulations. [U.S.C.A. Const.Amend. 14](#).

[\[34\] Administrative Law and Procedure 394](#)[15Ak394 Most Cited Cases](#)[\[34\] Administrative Law and Procedure 400](#)[15Ak400 Most Cited Cases](#)

There is no constitutional requirement for any hearing in quasi-legislative proceeding; a fortiori, there is no constitutional requirement that all private parties who might conceivably be affected by outcome of such proceeding be given notice and opportunity to be heard. [U.S.C.A. Const.Amend. 14](#).

[\[35\] Jury 19\(11\)](#)[230k19\(11\) Most Cited Cases](#)

Right to jury trial applies in inverse condemnation actions, but that right is limited to question of damages. [U.S.C.A. Const.Amend. 5](#); [West's Ann.Cal. Const. Art. 1, § 19](#).

[\[36\] Jury 19\(11\)](#)[230k19\(11\) Most Cited Cases](#)

In inverse condemnation action, there is no right to jury trial on issue of whether there has been taking in the first instance. [U.S.C.A. Const.Amend. 5](#); [West's Ann.Cal. Const. Art. 1, § 19](#).

\*\*\*728 \*902 \*\*673 Palmieri, Tyler, Wiener, Wilhelm & Waldron, [Frank C. Rothrock](#), [Gary C. Weisberg](#), Irvine, Smith, Helms, Mulliss & Moore, [William L. Young](#), San Rafael, O'Connor, Cohn, Dillon & Barr, [Duncan Barr](#) and [Joel C. Lamp](#), San Francisco, for Petitioner.

[Fred J. Hiestand](#), Sacramento, [Catherine I. Hanson](#), San Francisco, Gregory M. Abrams, [Kirk B. Johnson](#), Michael L. Ile, Chicago, IL, [Martin S. Kaufman](#), Torrance, [J. Michael Reidenbach](#), San Francisco, [John Stuart Tinker](#), Rosemead, Horvitz &

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Levy, [Ellis J. Horvitz](#), Frederic D. Cohen, [Julie L. Woods](#), Encino, Spiegel & McDiarmid, [Daniel I. Davidson](#), [Scott H. Strauss](#), Washington, DC, De Cuir & Somach and [David S. Kaplan](#), Sacramento, as Amici Curiae on behalf of Petitioner.

No appearance for Respondent.

Casey, Gerry, Casey, Westbrook, Reed & Schenk, [Frederick Schenk](#), San Diego, Schroeter, Goldmark & Bender, [Michael E. Withey](#), Seattle, WA, Robinson & Phillips and [Mark R. Robinson](#), Tulsa, OK, for Real Parties in Interest.

Leslie Brueckner, La Jolla, [Wylie A. Aitken](#), Annee Della Donna, Santa Ana, Miller, Starr & Regalia, [Edmund L. Regalia](#) and [Arthur F. Coon](#), Oakland, as Amici Curiae on behalf of Real Parties in Interest.

[MOSK](#), Justice.

[Section 1759 of the Public Utilities Code](#) [\[FN1\]](#) declares that no court except this Supreme Court has jurisdiction to review any order or decision of the Public Utilities Commission (hereafter the commission) or to interfere with the commission in the performance of its duties. [Section 2106](#), however, authorizes an action in superior court for damages caused by any unlawful act of a public utility. In [Waters v. Pacific Telephone Co. \(1974\) 12 Cal.3d 1, 4, 114 Cal.Rptr. 753, 523 P.2d 1161](#), this court held that "in order to resolve the potential conflict between [sections 1759](#) and [2106](#), the latter section must be construed as limited to those situations in which an award of [\\*903](#) damages would not hinder or frustrate the commission's declared supervisory and regulatory policies." We granted review in this case to determine whether [section 1759](#) as construed in [Waters](#) bars a superior court action for property damage allegedly caused by the electric and magnetic fields arising from powerlines owned and operated by a public utility. We shall conclude that such an action would impermissibly interfere with a broad regulatory policy of the commission on this subject, and hence is barred by [section 1759](#) as construed in [Waters](#). We therefore affirm the judgment of the Court of Appeal so holding.

[FN1](#). All further unlabeled statutory references are to this code.

#### BACKGROUND

"Although 'electric and magnetic fields' may sound

mysterious or ominous to some people, scientists have had a good understanding of them since the nineteenth century." (U.S. Cong., Office of Technology Assessment, Biological Effects of Power Frequency Electric and Magnetic Fields (1989) p. 4 (hereafter OTA Report).) [\[FN2\]](#) To [\\*\\*729 \\*\\*674](#) begin with, "Electric and magnetic fields arise from many natural sources. They appear throughout nature and in all living things." (OTA Rep., [supra](#), at [p. 4](#).) The Earth has a strong magnetic field arising from the rotation of its inner core. Atmospheric forces cause large electric fields at the Earth's surface during thunderstorm activity. Certain minerals in the Earth's crust, particularly iron and its compounds, have magnetic properties and give rise to magnetic fields. And at the human level, the body itself is a strong source of internal electric fields: "all cells in the body maintain large natural electric fields across their outer membranes. These naturally occurring fields are at least 100 times more intense than those that can be induced by exposure to common power-frequency fields." ([Id.](#) at [p. 1](#).) Indeed, this phenomenon is essential to life: "cells, especially [\\*904](#) those in the nervous system, make use of complex electrochemical processes in their normal function." ([Id.](#) at [p. 2](#).) [\[FN3\]](#)

[FN2](#). The cited report is a background paper prepared for the congressional Office of Technology Assessment by the Department of Engineering and Public Policy of Carnegie Mellon University. This portion of our opinion is drawn from that report and from a second report by the same authors (Dept. Engineering & Pub. Policy, Carnegie Mellon U., Electric and Magnetic Fields from 60 Hertz Electric Power: What Do We Know About Possible Health Risks? (1989) (Carnegie Mellon Report)), as well as similar reports by the United States Environmental Protection Agency (U.S. Env'tl. Protection Agency, Questions and Answers About Electric and Magnetic Fields (1992) (EPA Q & A)) and by the California Department of Health Services (Cal. Dept. Health Services, Electric and Magnetic Fields: Measurements and Possible Effects on Human Health (1992) (DHS Report)). For the relevant basic science, the opinion also draws from a respected general source. (18 New Encyc. Britannica (15th ed. 1990) Electricity and Magnetism, p. 159; *id.*, Electromagnetic Radiation, p. 195.) The material we set

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forth is not in dispute and will be helpful in understanding the issues; our discussion is not intended, of course, to be a full scientific presentation of the subject of electric and magnetic fields.

[FN3](#). It is the natural electrical activity in the human body, for example, that makes possible such familiar diagnostic tools as the electrocardiograph and the electroencephalograph.

Since the development of commercial and domestic uses of electricity in the last century, many manmade sources of electric and magnetic fields have been added to the foregoing natural sources. They arise primarily from the electric power systems that generate and deliver electricity to factory, office, and home, and from the machinery, appliances, and lighting that electricity operates. The scientific explanation for all electric and magnetic fields, however, is the same.

Every constituent of matter has an *electric charge*, which is either positive or negative. Charges that are alike (two positive or two negative charges) repel each other, while opposite charges (one positive and one negative charge) attract; this is the *electric force*. The electric force acts along a line between the two charges, and its strength is inversely proportional to the square of the distance between them: e.g., if the distance between the two charges is doubled, the force of attraction or repulsion becomes weaker by a factor of four, decreasing to one-quarter of its original strength. Every charge has an *electric field*, which is the region of space in which the charge is capable of exerting, at a distance, an electric force of attraction or repulsion on any other charge. The electric field always begins on a positive charge and ends on a negative charge. Like the electric force, the strength of the electric field diminishes with distance from the source of the field.

When an electric charge is moving, however, it creates a different and additional force on any other charge in its vicinity, provided the second charge is also moving: this is the *magnetic force*. Like the electric force, the strength of the magnetic force diminishes with distance. Every moving charge likewise has a *magnetic field*, which is the region of space in which the charge is capable of exerting, at a distance, a magnetic force on any other moving charge. The magnetic field is more complex than the electric field: for example, the magnetic field does

not have a beginning or an end, but forms closed, continuous loops of force around the source of the field. [FN4](#) Like the electric field, however, the strength of the magnetic field also diminishes with distance.

[FN4](#). The "field lines" forming these loops are made visible in the well-known experiment in which an ordinary magnet is held underneath a sheet of paper on which iron filings are scattered.

An electric current is a group of charges moving in the same direction through a wire **\*\*\*730** or other conductor. *Voltage* is the difference in electric **\*905** potential that causes the charges to flow through the wire; it is analogous to the pressure in a water pipe before the faucet **\*\*675** is opened (e.g., in pounds per square inch), and is measured in volts (V) or, in the case of powerlines, in thousands of volts or kilovolts (kV). *Current* is the rate at which the charges flow through the wire; it is analogous to the rate at which water flows through a pipe after the faucet is opened (e.g., in gallons per minute), and is measured in amperes. The quantity of power (in watts) that a conducting wire transmits is thus the product of its voltage and its current. Power systems are designed to hold the voltage relatively constant but to meet fluctuating demand by allowing the current to rise and fall.

The *strength* or intensity of an electric field is proportional to its voltage, and is measured in volts per meter or in kilovolts per meter. The strength of a magnetic field is primarily proportional to its current; the most commonly used unit of measurement of the strength of a magnetic field--or more properly, of "magnetic flux density"--is the gauss. Because the gauss is a large unit, such fields are often measured in thousandths of a gauss or milligauss (mG). [FN5](#)

[FN5](#). Since magnetic fields depend on current but electric fields depend only on voltage, an appliance (e.g., an electric fan) that is plugged into an electric outlet but is not turned on generates an electric field because the voltage is always present, but it does not generate a magnetic field because there is no current; when the appliance is turned on, the current flows and a magnetic field arises as well. If the appliance is then operated at a higher current level (e.g., by increasing the fan speed), the strength of the magnetic field will increase but not that of

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the electric field, because the voltage remains constant.

Electric fields are affected by objects in the environment, especially objects that conduct electricity: some of the field lines will end on charges in the object. For example, buildings, tall fences, and even trees can partially block electric fields arising from nearby powerlines. [\[FN6\]](#) Magnetic fields, by contrast, pass through most objects and can be blocked only by special shielding materials.

[FN6.](#) Although the effect varies with the construction material, a typical house will block out about 90 percent of any electric field in which it is situated.

Electric and magnetic fields affect conducting objects in the environment by the dual processes of electric and magnetic *induction*. [\[FN7\]](#) Such fields cause charges to flow in conducting objects; the resulting currents are said to be *induced* by the fields. The human body is a conducting object because it contains free electric charges, largely in such fluids as the blood and the **\*906** lymph. When a human body is in an electric or a magnetic field, therefore, the field induces a current in the body. Electrically induced currents and magnetically induced currents flow in different patterns in the body and the strength of each depends on a variety of factors, but each is far weaker than the body's natural currents. [\[FN8\]](#)

[FN7.](#) The induction effect of electric fields, at least, has long been known to the commission (e.g., [Postal Tel.-Cable Co. v. Railroad Com. \(1925\) 197 Cal. 426, 241 P. 81](#)) and to this court (e.g., [Postal Tel.- Cable Co. v. Pacific G. & E. Co. \(1927\) 202 Cal. 382, 260 P. 1101](#)).

[FN8.](#) "The amount of this current, even if you are directly beneath a large transmission line, is extremely small (millionths of an ampere). The current is too weak to penetrate cell membranes; it is present mostly between the cells." (Nat.Inst.Envntl.Health Sciences & U.S. Dept. Energy, Questions and Answers About EMF, Electric and Magnetic Fields Associated With the Use of Electric Power (1995) p. 9 (NIEHS & USDE Q&A).)

Naturally occurring electric and magnetic fields,

such as the Earth's magnetic field, are *static*. Fields arising from powerlines *oscillate*, because the current in powerlines does not flow steadily in one direction (direct current) but flows alternately first in one direction and then in the other (alternating current). In the United States and Canada, the flow of current in electric powerlines reverses direction 60 times each second: the power is therefore said to have a *frequency* of 60 cycles per second, or 60 hertz (Hz). In turn, this oscillation causes the electric and magnetic fields arising from the powerlines **\*\*\*731** to likewise reverse their direction 60 times each second; they are therefore said to be *60-hertz fields* or *power-frequency fields*.

Sixty-hertz fields are also called *extremely low-frequency fields*, for the following reason. **\*\*676** Such fields are only one form of the energy known as *electromagnetic radiation*. That energy, which is both natural and manmade in origin, has a wide variety of effects on matter depending on its frequency: the higher the frequency, the shorter the wavelength and the greater the energy. The frequencies of different forms of electromagnetic energy extend over an enormous range, commonly represented as a spectrum. At one end of the electromagnetic spectrum are X-rays and gamma rays, which have extremely high frequencies (10<sup>16</sup> Hz to 10<sup>25</sup> Hz and above) and hence extremely high energy. [\[FN9\]](#) Next on the electromagnetic spectrum is ultraviolet light, which has somewhat lower frequencies (10<sup>15</sup> Hz to 10<sup>16</sup> Hz) and hence somewhat lower energy. Below it is the familiar spectrum of visible light, followed in sequence by infrared waves, microwaves (1 billion Hz to 300 billion Hz), and television and radio waves (500,000 Hz to 1 billion Hz). Although each of these has progressively lower frequencies and energy, even the lowest (AM radio) has a frequency range of 500,000 Hz (500 kHz) to 1.6 million Hz (1600 kHz). Lowest of all on the electromagnetic spectrum are electric and magnetic fields such as those arising from the powerlines in this case. When their frequency of a mere 60 Hz is compared with the frequency **\*907** of the other forms of electromagnetic energy, it is evident why they are called "extremely low frequency" fields.

[FN9.](#) A frequency of 10<sup>25</sup> Hz is thus a number of cycles *per second* of 1 followed by 25 zeros. The figures given in this paragraph, of course, are approximations.

An important consequence of the low frequency and

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resulting low energy of electric and magnetic fields is that they are *non-ionizing*. An atom or molecule is said to be ionized when one or more of its electrons is dislodged by an energetic outside force such as very high-frequency radiation. Gamma rays, X-rays, and high-frequency ultraviolet light are termed *ionizing radiation* because their energy is so great that they are capable of ionizing atoms or molecules of ordinary matter. When that matter is human tissue, ionization can damage the DNA molecules of the cells, causing mutations and various forms of cancer. "However, the energy carried in 60 Hz fields is *much* too small to break molecular or chemical bonds." (Carnegie Mellon Rep., [supra](#), at p. 9, italics in original.) Like visible light, infrared, microwaves, and television and radio waves, electric and magnetic fields are therefore termed *non-ionizing radiation*.

[\[FN10\]](#)

[FN10](#). Although 60 Hz fields are included in the general category of non-ionizing radiation because they are undoubtedly *non-ionizing*, they are not properly called "radiation": as the United States Environmental Protection Agency has observed, "electric and magnetic fields from 60 Hz exposures are not considered 'radiation' for various technical reasons, ..." (EPA Q&A, [supra](#), at p. 2.) One of those reasons is the distinction between *propagating* fields or waves, which can travel far from their source (e.g., visible light or radio waves), and *confined* fields, which diminish rapidly with distance from their source. "Because the power-frequency fields of public health concern are not of the propagating type, it is technically inappropriate to refer to them as 'radiation.'" (OTA Rep., [supra](#), at p. 6.) Indeed, in common usage even propagating waves such as visible light and radio waves are not spoken of as "radiation"; that term is generally reserved for *ionizing* radiation, such as X-rays and gamma rays.

One form of non-ionizing radiation--microwaves--can nevertheless cause biological damage by a different process: microwaves are absorbed by the water present in tissue, and can induce currents strong enough to heat the tissue. [\[FN11\]](#) But "While 60 Hz fields can also set up currents in tissue, these currents are much weaker. The amount of heat they generate is trivial compared to the natural heat that comes from the cells of the body. There is no reason

to believe that health effects can be caused by such minuscule amounts of heat." (Carnegie Mellon Rep., [supra](#), at p. 9; accord, OTA Rep., [supra](#), at p. 1; DHS Rep., [supra](#), at p. 3.)

[FN11](#). This is how a microwave oven heats food. The microwaves that it generates have a frequency of 2.45 billion Hz.

Because 60 Hz electric and magnetic fields are non-ionizing and cannot cause significant **\*\*\*732** tissue heating, it was long believed they could not have any effect on human health. Beginning in the mid-1970's, however, laboratory **\*\*677** studies, **tratory\*908** studies on cell cultures showed that these fields can affect certain activities of certain types of cells. Although the results were suggestive, several serious problems remained. First, there was no known mechanism to explain how these extremely weak fields could disturb the much stronger fields arising naturally from human cell activity. Second, disturbances at the cellular level do not necessarily extrapolate to adverse effects on the organism as a whole: the organism can tolerate some disturbances and compensate for others. Biological effects, in short, are not always harmful. Third, the dose-response relationship was unknown. With most environmental hazards, e.g., toxic chemicals, the higher the dose, the greater the response or effect. But this did not appear to be true of electric and magnetic fields: a number of the laboratory studies observed biological effects only in narrow ranges of field strength, frequency, or length of exposure; above and below those ranges there were no effects. Contrary to expectation, therefore, in such cases weaker fields would not necessarily be "safer" than stronger fields. (OTA Rep., [supra](#), at pp. 19- 20; Carnegie Mellon Rep., [supra](#), at pp. 21-23; DHS Rep., [supra](#), at p. 6; EPA Q&A, [supra](#), at pp. 3-4.)

In addition, beginning in the late 1970's the results of some epidemiological studies suggested a statistically significant relationship between 60 Hz electric and magnetic fields and certain forms of cancer in certain populations. [\[FN12\]](#) Again problems arose, however, as the design, execution, and interpretation of these studies were challenged on a number of grounds: e.g., the population samples were small and the types of cancer studied were relatively rare; the field strengths were not measured directly but were indirectly inferred from past proximity to powerlines or from the job titles or descriptions; and the studies did not control for exposure to other known or potential carcinogens. (See generally OTA Rep.,

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*supra*, at pp. 57- 66; Carnegie Mellon Rep., [supra](#), at pp. 16-18; DHS Rep., [supra](#), at pp. 4-5; EPA Q&A, [supra](#), at p. 2.)

**FN12.** The primary studies investigated the incidence of leukemia in children living in houses situated near powerlines, and the incidence of leukemia and other cancers in workers employed in occupations assumed to be heavily exposed to 60 Hz fields, e.g., electric utility and telephone workers and electricians.

In short, by the early 1980's the question whether powerline electric and magnetic fields pose a danger to health had become a matter of some public concern and a source of growing controversy in the scientific community. The stage was set for intervention by the commission; as will appear, that process began in earnest in 1988. (Pt. IV, *post.*)

Before continuing this history, however, we make two final preliminary points. First, it will be helpful to understand the basic components of the \*909 electric power "grid" or system. Power plant generators deliver electric power to the system at approximately 20 kV. "Step-up" transformers increase that voltage to higher levels for transmission purposes, because the higher the voltage, the less power lost in the wires. The power is then carried long distances over *transmission lines* at voltages that range between 50 kV and 765 kV. Transmission lines terminate at substations, where "step-down" transformers reduce the voltage for distribution purposes. The power is then carried shorter distances over various types of *distribution lines*, at various voltages below 50 kV, to the ultimate users. By the time the power is delivered to the residential user, its voltage has been reduced to the household level of 120/240 V.

Second, it is important to stress that electric and magnetic fields arise not only from powerlines but also from the distribution and use of that power inside the home, office, or factory. One common source of such fields is the wall and ceiling wiring of the building itself, which delivers the electricity to the individual rooms in which it is used for lighting, heating, or operating appliances. Although the magnetic fields of modern wall and ceiling wiring are small, older wiring "can make significant contributions to the average magnetic field in homes." (OTA Rep., [supra](#), at p. 15.) Another source, often overlooked, is the "ground currents"

that \*\*\*733 \*\*678 flow through the water pipes, gas lines, or steel framing typically used for grounding the wiring system of the building: "the magnetic fields that they produce can contribute substantially to the overall magnetic field in homes." (*Ibid.*)

A third common source of electric and magnetic fields is electric equipment and appliances. In the factory, this means all machines and tools powered by electricity--in other words, virtually all industrial machinery in use today. In the office, this means fluorescent light fixtures and all such equipment as computers, video display terminals, printers, copiers, typewriters, and fax machines. In the home, this means television sets, videocassette recorders, compact disc players, radios, table lamps, vacuum cleaners, power tools, portable heaters, electric blankets, electric shavers, hair dryers, clothes washers and dryers, irons, electric ovens and ranges, refrigerators and freezers, as well as toasters, coffeemakers, food processors, and all other small kitchen appliances. "The most intense magnetic fields in the home are found near appliances (particularly those with small motors or transformers such as hair dryers and fluorescent light fixtures)." (OTA Rep., [supra](#), at pp. 14-15.) Although they are probably not the main source of the magnetic background because their fields decrease rapidly with distance and users generally spend only brief periods of time operating such appliances (with \*910 the exception of electric blankets and television sets), they are ubiquitous in the modern home. [\[FN13\]](#)

**FN13.** Some examples will illustrate both points. The background magnetic field level in the typical home, away from appliances, ranges from 0.1 to 4 mG. (EPA Q&A, [supra](#), at p. 4.) In average usage, the maximum magnetic field on the right of way of a 115 kV transmission line is 30 mG; 50 feet away from the line, however, it has decreased to 7 mG; and 100 feet away it is less than 2 mG, and is therefore indistinguishable from background levels. (*Id.* at p. 8.)

The strength of appliance magnetic fields may initially be much higher, but it decreases even more rapidly. The following chart lists the magnetic fields (in mG) of some common appliances, measured at two distances from the source. In each case the figure is given as a range, because of such variations as the make and model of the appliance and the power level at which it

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is operated.

Appliance	At 1.2 Inches	At 12 Inches
Electric Blanket	2 to 80	not applicable
Clothes Washer	8 to 400	2 to 30
Television	25 to 500	0.4 to 20
Electric Range	60 to 2,000	4 to 40
Microwave Oven	750 to 2,000	40 to 80
Fluorescent Lamp	400 to 4,000	5 to 20
Electric Shaver	150 to 15,000	not applicable
Hair Dryer	60 to 20,000	1 to 70

(Adapted from [52 Cal.P.U.C.2d 1, 12, 1993 WL 561942 \(1993\)](#).)

To sum up, "There are electric and magnetic fields wherever there is electric power." (OTA Rep., [supra](#), at p. 1.) In the typical home, fields of various strengths arise from the wall and ceiling wiring, the ground currents, and all electric machinery, equipment, and appliances: "Keeping fields out of the home would mean keeping *any* electricity from coming into or being used in the home." (EPA Q&A, [supra](#), at p. 16, italics added.) And because the sources of electric and magnetic fields inside the home are so numerous, "Occupants of the average household are probably exposed to higher fields from their house wiring and appliances than from the outside wiring," i.e., from powerlines. (*Ibid.*)

With this background in mind, we turn to the facts of the case at bar.

## I

On December 16, 1993, plaintiffs Martin and Joyce Covalt filed the present action for damages and injunctive relief against San Diego Gas and Electric Company (SDG&E). The complaint alleges that plaintiffs own and occupy a single-family residence in San Clemente, California, and SDG&E \*911 owns an easement on the land adjacent to their property. The complaint further alleges that SDG&E runs electric currents through powerlines on that easement which are "in very close proximity to and placed upon plaintiffs' property, and because of this have continuously omitted [*sic*] high and unreasonably dangerous levels of electromagnetic radiation onto plaintiffs' property." The complaint also alleges that in February 1990 SDG&E "substantially increased

the number of Powerlines housed in the easement adjacent to plaintiffs' property. Such increase in Powerlines \*\*679 \*\*\*734 dramatically increased the dangerous levels of electromagnetic radiation flowing onto plaintiffs' property."

The complaint does not specify the voltage of the powerlines in question, nor their number, configuration, and electric and magnetic field levels before and after the 1990 upgrading. In their memorandum of points and authorities filed in support of their return, however, plaintiffs state additional facts taken from a letter sent to them by SDG&E on January 5, 1993, to wit, that prior to July 1990 the SDG&E easement adjacent to their property, dating from 1928, carried two 12 kV distribution circuits (requiring a total of 7 wires) on crossbars mounted on single poles; between February and July 1990 a third 12 kV distribution circuit (requiring 4 wires) was added in response to increased customer demand for power; to accommodate the third circuit, the single poles were replaced by double poles standing 12 feet apart and joined by longer crossbars. Exhibits attached to the SDG&E letter show that before July 1990 the crossbars extended 5 and 6 feet from the center line of the pole towards plaintiffs' property, and after July 1990 the crossbars extended 8.5 feet from the center line towards plaintiffs' property. Thus the effect of the reconfiguration was to move portions of the 3 circuits either 2.5 feet or 3.5 feet closer to plaintiffs' house. The closest point of plaintiffs' house, however, was 68 feet from the center line of either pole configuration. The SDG&E letter estimated that the average magnetic field level at that point was 5 mG before 1990 and was anticipated to be approximately 8.9 mG in 1993, for an average increase of approximately 3.9 mG. Plaintiffs furnish

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no figures for the electric field levels at that point.

In the same points and authorities plaintiffs state that they purchased the house in question in 1990, but do not specify when in that year they did so; they also state that they have since vacated the house and the property "has been foreclosed upon by the mortgagor." [\[FN14\]](#)

[FN14.](#) Plaintiffs do not allege the date of the foreclosure. We may infer that it took place before September 30, 1994, the date of the points and authorities in which they disclosed this fact.

\***912** The remaining factual allegations of the complaint do not pertain to the case at bar. [\[FN15\]](#)

[FN15.](#) Thus the complaint alleges that a certain "plaintiff McCartin" was told by SDG&E that "there was [*sic*] 'no adverse health affects [*sic*]' from such radiation"; that after investigating the matter "plaintiff McCartin" believed otherwise; and that "plaintiff McCartin" then requested SDG&E to relocate its powerlines in order to "decrease the risk of bodily injury" from such radiation, but SDG&E refused to do so. McCartin, however, is not in fact a plaintiff in the present action; rather, he was a plaintiff in a prior action filed by neighbors of the present plaintiffs (Covalts) against the same defendant (SDG&E). The McCartin action is not before us; it terminated in a judgment for SDG&E on June 17, 1994, and an appeal was dismissed by stipulation. The erroneous allegation, nevertheless, draws our attention to the fact that the present complaint is a verbatim copy of the complaint in the McCartin action, to the point that it reproduces each of the latter's mistakes of spelling and syntax, several of which are noted herein.

The complaint first alleges five causes of action for personal injury, seeking to recover damages for "medical monitoring" (count 1), intentional infliction of emotional distress (count 2), negligent infliction of emotional distress (count 3), strict product liability (count 4), and negligent product liability (count 5). The complaint next alleges three causes of action for property damage, i.e., trespass (count 6), nuisance (count 7), and inverse condemnation (count 8).

[\[FN16\]](#) Lastly, the complaint alleges a cause of

action for injunctive relief, seeking an order requiring SDG&E to "discontinue the admissions [*sic*] of electromagnetic radiation onto or adjacent to plaintiffs' property."

[FN16.](#) The complaint mistakenly numbers both counts 7 and 8 as "SEVENTH."

SDG&E demurred to the complaint on the ground that the court lacks subject-matter jurisdiction ([Code Civ. Proc., § 430.10](#), subd. (a)) because a judgment for plaintiffs on any count would hinder or frustrate a general regulatory policy of the commission and hence the action is barred by [section 1759](#) as construed in [Waters v. Pacific Telephone Co., supra, 12 Cal.3d 1, 114 Cal.Rptr. 753, 523 P.2d 1161](#), and related cases. SDG&E also demurred on the ground that on each of the counts the complaint failed to state facts \*\*\***735** \*\***680** sufficient to constitute a cause of action. ([Code Civ. Proc., § 430.10](#), subd. (e).) The demurrer was overruled.

SDG&E thereupon filed a petition for writ of prohibition or mandate in the Court of Appeal, seeking an order directing the trial court to sustain the demurrer and dismiss the complaint. The Court of Appeal granted an alternative writ and stayed all proceedings.

[\[1\]\[2\]](#) In its ensuing decision the Court of Appeal correctly observed at the outset that an order overruling a demurrer is not directly appealable but may \***913** be reviewed on an appeal from the final judgment ([Code Civ. Proc., § § 904.1, 906](#)), and that such an appeal is normally presumed to be an adequate remedy at law, thus barring immediate review by extraordinary writ (*id.*, [§ § 1086, 1103](#)). The Court of Appeal then held, however, that the case at bar falls within the exception to this rule that has been recognized when the demurrer raises an important question of subject-matter jurisdiction; in that event, courts have held it proper to review the order overruling the demurrer by means of extraordinary writ. (See, e.g., [County of Sacramento v. Superior Court \(1972\) 8 Cal.3d 479, 481, 105 Cal.Rptr. 374, 503 P.2d 1382](#) [prohibition]; [State of California v. Superior Court \(1984\) 150 Cal.App.3d 848, 853, fn. 4, 197 Cal.Rptr. 914](#) [mandate]; [County of Santa Barbara v. Superior Court \(1971\) 15 Cal.App.3d 751, 754-755, 93 Cal.Rptr. 406](#) [prohibition].) The parties do not question this holding. [\[FN17\]](#)

[FN17.](#) The Court of Appeal also relied on

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cases holding in other contexts that mandate may lie to review a ruling on the pleadings when it will prevent "needless and expensive trial and reversal" (*Taylor v. Superior Court* (1979) 24 Cal.3d 890, 894, 157 Cal.Rptr. 693, 598 P.2d 854) and when the issue presented is "of widespread interest" (*Brandt v. Superior Court* (1985) 37 Cal.3d 813, 816, 210 Cal.Rptr. 211, 693 P.2d 796). Because the parties do not question the Court of Appeal's reliance on these cases, we need not determine whether their holdings apply, as here, to review of an order overruling a demurrer. The cases cited in the text are directly in point and support the use of the extraordinary writ procedure in the case at bar.

Turning to the merits, the Court of Appeal first addressed the five personal injury causes of action of the complaint. The court observed that in these causes of action plaintiffs do not allege that they have been physically harmed by the electric and magnetic fields arising from SDG&E's powerlines, but only that they have experienced emotional distress because they *fear* that in the future they may contract cancer or other serious disease as a result of their exposure to such fields. In these circumstances the Court of Appeal relied on the holding of this court in *Potter v. Firestone Tire & Rubber Co.* (1993) 6 Cal.4th 965, 997, 25 Cal.Rptr.2d 550, 863 P.2d 795 (hereafter *Potter*) that "damages for fear of cancer may be recovered only if the plaintiff pleads and proves that (1) as a result of the defendant's negligent breach of a duty owed to the plaintiff, the plaintiff is exposed to a toxic substance which threatens cancer; and (2) the plaintiff's fear stems from a knowledge, corroborated by reliable medical or scientific opinion, that it is more likely than not that the plaintiff will develop the cancer in the future due to the toxic exposure." (First italics in original, second italics added.)

Applying this rule, the Court of Appeal held that plaintiffs failed to plead any facts to meet the second prong of the *Potter* test, i.e., that "reliable medical or scientific opinion" corroborates their belief that it is probable that \*914 they will in fact develop cancer in the future from exposure to the electric and magnetic fields arising from SDG&E's powerlines. For this reason the court held that the complaint failed to state a cause of action on the personal injury counts. [FN18]

[FN18]. The Court of Appeal also noted that plaintiffs' first cause of action for "medical monitoring" must fall in any event because it is not a separate tort but simply an item of damages that cannot be awarded until liability is established under a traditional tort theory. (*Potter, supra*, 6 Cal.4th at pp. 1006-1007, 25 Cal.Rptr.2d 550, 863 P.2d 795.)

The Court of Appeal then stressed that throughout their briefs plaintiffs concede they are no longer asserting that electric and magnetic fields are in fact harmful: in their return, for example, plaintiffs state that their claims "do not rest upon the assertion that EMF [electric and magnetic fields] is [*sic*] a \*\*\*736 \*\*681 scientifically proven health hazard," and in their accompanying points and authorities plaintiffs acknowledge they "do not claim that medical science has proven that EMF cause cancer and are thus hazardous to human beings." Rather, as will appear, plaintiffs contend primarily that a public *fear* of such fields--regardless of whether or not that fear is reasonable or scientifically supported--has diminished the value of their real property. For this reason the Court of Appeal held that plaintiffs cannot amend their complaint to sufficiently plead their causes of action for personal injury; as to those causes of action, therefore, the demurrer should have been sustained without leave to amend.

The Court of Appeal then addressed the three property damage causes of action of the complaint. The court began by recognizing the broad powers granted to the commission by Constitution and statute. From *section 1759* and *Waters v. Pacific Telephone Co.*, *supra*, 12 Cal.3d 1, 114 Cal.Rptr. 753, 523 P.2d 1161, the court drew the rule that if the Covalt action would conflict with a general regulatory policy of the commission regarding powerline electric and magnetic fields, the superior court would lack jurisdiction to proceed. The Court of Appeal then identified such a commission policy, expressed in several of its rulings and culminating in a decision on the specific question issued in 1993. Applying the *Waters* rule, the court concluded that a judgment on any of the three property damage causes of action would hinder and frustrate that commission policy. The court therefore issued a writ of mandate directing the trial court to vacate its order overruling the demurrer and to enter a new order sustaining the demurrer without leave to amend. We granted review.

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## II

"The commission is a state agency of constitutional origin with far-reaching duties, functions and powers. (Cal. Const., Art. XII, § § 1-6.) The \*915 Constitution confers broad authority on the commission to regulate utilities, including the power to fix rates, establish rules, hold various types of hearings, award reparation, and establish its own procedures. (*Id.*, § § 2, 4, 6.) The commission's powers, however, are not restricted to those expressly mentioned in the Constitution: "The Legislature has *plenary power, unlimited by the other provisions of this constitution* but consistent with this article, to confer additional authority and jurisdiction upon the commission..." (Cal. Const., Art. XII, § 5.)" (*Consumers Lobby Against Monopolies v. Public Utilities Com.* (1979) 25 Cal.3d 891, 905, 160 Cal.Rptr. 124, 603 P.2d 41, italics added.)

[3] Pursuant to this constitutional provision the Legislature enacted, inter alia, the Public Utilities Act. (§ 201 et seq.) That law vests the commission with broad authority to "supervise and regulate every public utility in the State" (§ 701) and grants the commission numerous specific powers for the purpose. Again, however, the commission's powers are not limited to those expressly conferred on it: the Legislature further authorized the commission to "*do all things, whether specifically designated in [the Public Utilities Act] or in addition thereto, which are necessary and convenient*" in the exercise of its jurisdiction over public utilities. (*Ibid.*, italics added.) Accordingly, "The commission's authority has been liberally construed" (*Consumers Lobby Against Monopolies v. Public Utilities Com., supra*, 25 Cal.3d 891, 905, 160 Cal.Rptr. 124, 603 P.2d 41, citing cases), and includes not only administrative but also legislative and judicial powers (*People v. Western Air Lines* (1954) 42 Cal.2d 621, 630, 268 P.2d 723).

[4] The Constitution also confers plenary power on the Legislature to "establish the manner and scope of review of commission action in a court of record" (Cal. Const., Art. XII, § 5). Pursuant to this constitutional provision the Legislature enacted article 3 of chapter 9 of the Public Utilities Act, entitled "Judicial Review." (§ 1756 et seq.) That article prescribes a method of judicial review that is narrow in both "manner and scope." It is narrow in manner because review of a commission decision may be obtained only by filing a petition for writ of review directly in this court-- bypassing the Court of Appeal--within 30 days after the commission denies

rehearing or issues a decision on rehearing. \*\*\*737 \*\*682 (§ § 1756, 1758.) And it is narrow in scope because such review is limited to determining the legal question "whether the commission has regularly pursued its authority" (§ 1757); except when a federal constitutional challenge is raised (§ 1760), the commission's findings and conclusions on questions of fact--including ultimate facts and determinations of reasonableness and discrimination--"shall be final and shall not be subject to review" (§ 1757).

\*916 Having thus vested this court with limited jurisdiction to review commission actions, the Legislature then made it clear in [section 1759 of the Public Utilities Act](#) that no other court has jurisdiction either to review or suspend the commission's decisions or to enjoin or otherwise "interfere" with the commission's performance of its duties: [section 1759](#) declares in relevant part that "*No court of this State, except the Supreme Court to the extent specified in this article, shall have jurisdiction to review, reverse, correct, or annul any order or decision of the commission or to suspend or delay the execution or operation thereof, or to enjoin, restrain, or interfere with the commission in the performance of its official duties, ...*" (Italics added.)

In the case at bar we are required once again to reconcile the foregoing provision of [section 1759](#) with another provision of the Public Utilities Act, [section 2106](#). The Legislature enacted [section 2106](#) as part of a different chapter of the act, chapter 11. (§ 2100 et seq.) That chapter, entitled "Violations," prescribes a wide variety of remedies designed to redress violations of commission decisions committed by public utilities. All but one of these are public remedies prosecuted in the name of the people of the state by commission counsel or by the Attorney General or the appropriate district attorney. (§ 2101.) They include: orders to common carriers to collect undercharges or unlawful rebates (§ 2100), actions for mandamus or injunction (§ § 2102-2103), actions to recover penalties (§ § 2104, 2107, 2111, 2115), imposition by the commission of fines with interest (§ 2107.5), criminal prosecutions (§ § 2110, 2112, 2114, 2119), and contempt proceedings (§ 2113).

The sole private remedy authorized by chapter 11 is found in [section 2106](#). That section supplements the foregoing public remedies by authorizing the traditional private remedy of an action for damages brought by the injured party in superior or municipal

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court against any public utility that does any act prohibited--or omits to do any act required--"by the Constitution, any law of this State, or any order or decision of the commission" (§ 2106). The supplemental nature of this remedy is further shown by the fact that the statute declares that no recovery of such private damages "shall in any manner affect a recovery by the State of the penalties provided in this part or the exercise by the commission of its power to punish for contempt." (*Ibid.*) [FN19]

FN19. Section 2106 provides in full: "Any public utility which does, causes to be done, or permits any act, matter, or thing prohibited or declared unlawful, or which omits to do any act, matter, or thing required to be done, either by the Constitution, any law of this State, or any order or decision of the commission, shall be liable to the persons or corporations affected thereby for all loss, damages, or injury caused thereby or resulting therefrom. If the court finds that the act or omission was wilful, it may, in addition to the actual damages, award exemplary damages. An action to recover for such loss, damage, or injury may be brought in any court of competent jurisdiction by any corporation or person."

"No recovery as provided in this section shall in any manner affect a recovery by the State of the penalties provided in this part or the exercise by the commission of its power to punish for contempt."

When sections 1759 and 2106 are thus seen in their respective statutory contexts, it is easier to understand how this court reconciled the potential \*917 conflict between them in the leading case of *Waters v. Pacific Telephone Co.*, *supra*, 12 Cal.3d 1, 114 Cal.Rptr. 753, 523 P.2d 1161 (hereafter *Waters*). There the plaintiff, a real estate broker, filed an action for damages in superior court against the defendant Pacific Telephone Company (Pacific) pursuant to section 2106. The plaintiff alleged that she had experienced a number of interruptions and failures of telephone service caused by a variety of negligent acts on the part of Pacific, including improper installation and removal of telephones, incompleting calls, and inadequate maintenance. Pacific's tariff, approved by \*\*\*738 \*\*683 the commission, limited its liability for interruptions and failures of service caused by acts of ordinary negligence to a credit allowance not exceeding the customer's total fixed charges for the billing period in question. Pacific

moved for partial summary judgment limiting its liability to that amount; the trial court granted the motion, and when the plaintiff waived her right to recover that amount, the court entered a nonsuit for Pacific.

This court affirmed the judgment, undertaking for the first time to reconcile sections 1759 and 2106. The court began by stressing the broad supervisory and regulatory powers of the commission. (*Waters, supra*, 12 Cal.3d 1, 6, 114 Cal.Rptr. 753, 523 P.2d 1161.) It then observed that the commission was authorized by law to require utilities to file tariffs and to regulate their contents. The court next emphasized that several years earlier the commission had conducted "an extensive investigation of the general question of [the] limitation of liability by telephone utilities, and in its subsequent decision the commission made it clear that the credit allowance device has always been considered to be a rule limiting the utility's liability." (*Id. at p. 8*, 114 Cal.Rptr. 753, 523 P.2d 1161.) In that decision the commission determined "as a matter of policy" (*ibid.*) that telephone utilities should be at least partially liable for gross negligence but that the rules limiting liability for ordinary negligence in respect to service were reasonable. Accordingly, the commission required all telephone utilities to incorporate into their tariffs a provision limiting their liability for service interruption to specified credit allowances, and the commission took such limitations into account in exercising its ratemaking functions. (*Id. at pp. 8-9*, 114 Cal.Rptr. 753, 523 P.2d 1161.)

Addressing the question of statutory construction, this court declared the primacy of section 1759 and the correspondingly limited role of section 2106. The court held that "in order to resolve the potential conflict between sections 1759 and 2106, the latter section must be construed as *limited* to \*918 those situations in which an award of damages would not hinder or frustrate the commission's declared supervisory and regulatory policies." (*Waters, supra*, 12 Cal.3d at p. 4, 114 Cal.Rptr. 753, 523 P.2d 1161, italics added.) The court reasoned (*id. at p. 11*, 114 Cal.Rptr. 753, 523 P.2d 1161) that "Plaintiff maintains that section 2106, in permitting damage actions against utilities for their unlawful acts, authorizes the instant action in spite of the language and policy underlying section 1759. Yet the two sections must be construed in a manner which harmonizes their language and avoids unnecessary conflict. Section 2106 reasonably may be interpreted as authorizing only those actions which would not

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interfere with or obstruct the commission in carrying out its own policies."

[5] Under the *Waters* rule, accordingly, an action for damages against a public utility pursuant to [section 2106](#) is barred by [section 1759](#) not only when an award of damages would directly contravene a specific order or decision of the commission, i.e., when it would "reverse, correct, or annul" that order or decision, but also when an award of damages would simply have the effect of undermining a general supervisory or regulatory policy of the commission, i.e., when it would "hinder" or "frustrate" or "interfere with" or "obstruct" that policy. [FN20]

[FN20. Other courts have used other synonyms to express the same idea: "The PUC has exclusive jurisdiction over the regulation and control of utilities, and once it has assumed jurisdiction, it cannot be *hindered*, *interfered with*, or *second-guessed* by a concurrent superior court action addressing the same issue." (*Barnett v. Delta Lines, Inc.* (1982) 137 Cal.App.3d 674, 681, 187 Cal.Rptr. 219, italics added.) Still other synonyms could be invoked, e.g., *impair*, *impede*, *inhibit*, or *encumber*. The point is clear.

This court applied the foregoing rule to affirm the judgment of nonsuit in *Waters, supra*, 12 Cal.3d 1, 114 Cal.Rptr. 753, 523 P.2d 1161, despite the fact that the plaintiff's action for damages for telephone service interruptions did not directly contravene any order or decision of the commission. Rather, the court reasoned that "It stands undisputed that the commission has approved a *general policy* of limiting the liability of telephone utilities for ordinary negligence to a specified credit allowance, and has relied \*\*\*739 \*\*684 upon the validity and effect of that policy in exercising its rate-making functions. [Citation.] It also appears clear that to entertain suits such as plaintiff's action herein and authorize a substantial recovery from Pacific would *thwart the foregoing policy*. That being so, the express language of [section 1759](#) [citation] bars plaintiff's action." (12 Cal.3d at p. 10, 114 Cal.Rptr. 753, 523 P.2d 1161, italics added.)

The *Waters* rule may be further understood by considering examples of how it has been applied by our Courts of Appeal. When the bar raised against a private damages action has been a ruling of the

commission on a single matter such as its approval of a tariff or a merger, the courts have \*919 tended to hold that the action would not "hinder" a "policy" of the commission within the meaning of *Waters* and hence may proceed. But when the relief sought would have interfered with a broad and continuing supervisory or regulatory program of the commission, the courts have found such a hindrance and barred the action under [section 1759](#). Two pairs of Court of Appeal decisions are illustrative.

First, in *Cellular Plus, Inc. v. Superior Court* (1993) 14 Cal.App.4th 1224, 18 Cal.Rptr.2d 308, a consumer of cellular telephone services filed an action seeking damages for price fixing in violation of the Cartwright Act ([Bus. & Prof.Code, § 16700](#) et seq.) against two cellular telephone service companies. The commission had previously granted both defendant companies certificates of convenience and necessity authorizing them to operate in the geographic area in question, and had approved the rates they proposed to charge. The defendant companies demurred on the ground that the commission has sole jurisdiction over rates charged for cellular telephone service. The trial court sustained the demurrers without leave to amend, but the Court of Appeal granted a writ vacating the order.

In the Court of Appeal the defendant companies conceded that the commission's jurisdiction over rates does not immunize them from a Cartwright Act claim, but argued that such a claim must first be brought before the commission under the "primary jurisdiction" doctrine. (See *Farmers Ins. Exchange v. Superior Court* (1992) 2 Cal.4th 377, 6 Cal.Rptr.2d 487, 826 P.2d 730.) In rejecting that contention the Court of Appeal stressed that the commission had determined only that the proposed rates of the defendant companies were reasonable, while "Under the Cartwright Act a court does not look at the economic reasonableness of the prices. Rather, a court looks at whether the prices were in fact artificially maintained at a uniform level, whether 'reasonable' or not." (*Cellular Plus, Inc. v. Superior Court, supra*, 14 Cal.App.4th at p. 1246, 18 Cal.Rptr.2d 308.) The court then applied the rule of *Waters, supra*, 12 Cal.3d 1, 4, 114 Cal.Rptr. 753, 523 P.2d 1161, reasoning that "We cannot conceive how a price fixing claim under the Cartwright Act could 'hinder or frustrate' the PUC's supervisory or regulatory policies. The only apparent policy of the PUC that could be affected is its regulation of rates charged by cellular telephone service providers. However, [plaintiff] does not dispute that the PUC

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has jurisdiction over rates, nor does it seek any relief requiring the PUC to change any rates it has approved." (*Cellular Plus, Inc. v. Superior Court, supra*, 14 Cal.App.4th at p. 1246, 18 Cal.Rptr.2d 308.)

Again, in *Stepak v. American Tel. & Tel. Co.* (1986) 186 Cal.App.3d 633, 231 Cal.Rptr. 37, a telephone utility (PT&T) applied to the commission for \*920 approval of its proposed merger with another utility (see § 854). A minority shareholder of PT&T filed a class action against PT&T alleging breaches of fiduciary duty in connection with the merger. The commission thereafter approved the merger. Citing that approval, PT&T successfully moved to dismiss the shareholder action on the ground that [section 1759](#) deprived the superior court of jurisdiction. The Court of Appeal reversed the judgment under *Waters*, reasoning that: "We are aware of no 'declared supervisory and regulatory policies' (*Waters v. Pacific Telephone Co., supra*, 12 Cal.3d 1, 4, 114 Cal.Rptr. 753, 523 P.2d 1161) ever formulated or relied on by the commission on the subject of safeguarding minority investor interests. Applying the *Waters* test of jurisdiction, we cannot conceive of how the superior court's award of \*\*\*740 \*\*685 damages or other relief to wronged minority shareholders would 'hinder or frustrate' (*ibid.*) declared commission policy. Appellant's class action suit is therefore authorized under [section 2106](#)." (*Stepak v. American Tel. & Tel. Co., supra*, 186 Cal.App.3d 633, 640-641, 231 Cal.Rptr. 37.)

By contrast, in *Brian T. v. Pacific Bell* (1989) 210 Cal.App.3d 894, 258 Cal.Rptr. 707, the superior court action would have interfered with a broad and continuing policy of the commission, and hence was barred by [section 1759](#). In the early to mid-1980's telephone utilities began offering "information access services" from numbers bearing the 976 prefix (hereafter 976 services). Concerned by the use of 976 services to disseminate sexually explicit material to minors, Congress prohibited the dissemination of such material generally but provided for a defense if access were restricted to adults. The Federal Communications Commission (FCC) thereafter considered three methods of achieving such a restriction: (1) blocking devices on the customer's premises, (2) blocking systems at the utility's central station, and (3) "customer access codes" issued on request to adult subscribers. The FCC ultimately promulgated regulations adopting the third of these methods.

In California the commission instituted an investigation into the same problem, acting both on its own motion and in response to a directive from the Legislature. The investigation resulted first in an interim decision adopted in January 1987, in which the commission expressed general approval of the central-station method of blocking sexually explicit messages, but ordered a delay in its implementation pending further study of the other two alternatives. The commission then conducted exhaustive hearings on the latter, and later in 1987 reaffirmed its decision in favor of central-station blocking.

In June 1987 a minor listened to sexually explicit messages on a 976 service and then engaged in unlawful sexual contacts with another minor. \*921 The parents of both minors filed an action against the telephone company (Pacific Bell) and the businesses that furnished the messages, seeking damages and a preliminary injunction to compel Pacific Bell, inter alia, to make available to its customers screening or blocking devices that would deny minors access to sexually explicit material.

The trial court denied the request for a preliminary injunction and granted Pacific Bell's motion to dismiss the action for lack of jurisdiction. The Court of Appeal affirmed. Addressing the request for an injunction, the court quoted the *Waters* rule and held that the requested relief would call in effect for commission action modifying its previous decisions regulating the 976 services. Such interference with a commission policy was prohibited by [section 1759](#). (*Brian T. v. Pacific Bell, supra*, 210 Cal.App.3d 894, 900-901, 258 Cal.Rptr. 707.)

The Court of Appeal further held that the trial court lacked jurisdiction to enjoin, in the alternative, violations of [Penal Code section 313.1](#), subdivision (a) (dissemination of harmful matter to minors), reasoning that such relief would amount to a disguised means of compelling Pacific Bell to adopt a particular blocking system--i.e., customer access codes--that the commission had considered but thus far had rejected in developing its policy regulating access by minors to 976 services. (*Brian T. v. Pacific Bell, supra*, 210 Cal.App.3d at p. 901, 258 Cal.Rptr. 707.)

Finally, the Court of Appeal also held that Pacific Bell could not be liable in damages for failing to disconnect subscribers who used the 976 services to disseminate sexually explicit messages, because at the time of the acts alleged in the complaint that

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remedy had been prohibited by the January 1987 decision of the commission, which approved instead the remedy of blocking such messages on customer request. (*Brian T. v. Pacific Bell, supra*, 210 Cal.App.3d at pp. 908-909, 258 Cal.Rptr. 707.)

Again, in *Schell v. Southern Cal. Edison Co. (1988)* 204 Cal.App.3d 1039, 251 Cal.Rptr. 667, the superior court action would likewise have interfered with an ongoing commission inquiry into a matter of regulatory policy. Section 739 directs the commission, in exercising its ratemaking functions, to determine a "baseline quantity" of gas and electricity necessary to supply "a significant portion of \*\*\*741 \*\*686 the reasonable energy needs of the average residential customer" (*id.*, subd. (a)), and to require utilities to establish "baseline rates" for supplying these baseline quantities to residential customers (*id.*, subd. (c)(1)). Section 739.5 directs the commission to require that a "master meter" customer who furnishes gas or electricity through submeters to tenants of "a mobile home park, apartment building, or similar residential \*922 complex" must charge each tenant the same residential rate--including the baseline rate--as would apply if the tenant were receiving the service directly from the utility. (*Id.*, subd. (a).)

Pursuant to these mandates, the commission designated baseline quantities of gas and electricity by an interim decision in 1976. In that decision the commission also determined that the term "residential customer" in section 739 included single-family houses, apartments, condominiums, and mobile homes, but excluded transient trailer parks, hotels and motels, and other places of temporary occupancy such as hospitals and college dormitories. The commission took no position on recreational vehicle parks (hereafter RV parks).

As required by the commission, gas and electric utilities undertook to establish rate schedules for master-metered facilities that incorporated the baseline rates structure. One such utility, Southern California Edison Company (Edison), adopted two residential rate schedules for such facilities: a general schedule for multifamily accommodations and a special schedule for mobile home parks only.

In September 1986 the owner of an RV park filed an action against Edison, alleging that his RV park was also a master-metered park with separate submeters for each tenant within the meaning of section 739.5, and hence was also entitled to residential baseline

allocations under section 739. For this alleged discrimination the complaint sought damages under [section 2106](#). By an amendment to the complaint the plaintiff added a cause of action for declaratory relief, asking for a ruling whether a person using a recreational vehicle as his residence was a residential customer under section 739 and therefore entitled to baseline allocations. Edison demurred on the grounds, inter alia, that the commission had exclusive jurisdiction and the issues were then pending in proceedings before the commission. The trial court sustained the demurrer without leave to amend, and the Court of Appeal affirmed the judgment of dismissal.

The Court of Appeal took judicial notice of three proceedings pending before the commission. In two, owners of other RV parks had asked the commission to order Edison to supply electric service to them under the special rate schedule for mobile home parks, while a mobile home association sought an order that a new rate schedule be designed for RV parks only. The Court of Appeal stressed that the two proceedings were awaiting decision by the commission.

The third commission proceeding was a recently decided, but not yet final, general rate case brought by Edison. In that decision the commission explicitly refused to apply the special rate schedule for mobile home parks to RV \*923 parks. The commission also concluded that it did not have sufficient evidence to determine whether a new rate schedule should be designed for RV parks only, and therefore ordered Edison to conduct a study of the need for and feasibility of such a schedule, including the development of objective standards for judging and monitoring the status of RV park tenants.

Although the plaintiff contended the superior court had jurisdiction under [section 2106](#) because Edison's refusal to give him the benefit of the mobile home park rate supported a claim for damages, the Court of Appeal observed that the fundamental issue in the case was the appropriate rate schedule for RV parks. The court then reasoned that "The decision as to whether or not master-metered residential recreational vehicle parks should be charged at the same rate as master-metered mobile home parks, or at another domestic or commercial rate, is clearly within the exclusive purview of the PUC as part of its continuing jurisdiction over rate making and rate regulation in provision of baseline service to residential customers of the electric and gas

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corporations." \*\*\*742\*\*687(*Schell v. Southern Cal. Edison Co., supra*, 204 Cal.App.3d 1039, 1046, 251 Cal.Rptr. 667.) The court concluded that because it was still an open question in the commission whether the special mobile home rate schedule applied to RV parks, "for the superior court to undertake to determine this issue would be a usurpation of the PUC's authority." (*Ibid.*, fn. omitted.)

In addition, the Court of Appeal emphasized that the question of the proper rate schedule for RV parks was pending in the three commission proceedings discussed above. Relying on the rule of *Waters, supra*, 12 Cal.3d 1, 114 Cal.Rptr. 753, 523 P.2d 1161, the court held that so long as the matter was before the commission as part of its ongoing inquiry into RV park rate schedules, the superior court had no jurisdiction over the matter pursuant to [section 2106](#). (*Schell v. Southern Cal. Edison Co., supra*, 204 Cal.App.3d at pp. 1046-1047, 251 Cal.Rptr. 667.)

We apply the rule of *Waters* and its progeny to the case at bar.

### III

[6] The first question is whether the commission has the *authority* to adopt a policy on (1) whether electric and magnetic fields arising from the powerlines of regulated utilities are a public health risk and (2) what action, if any, the utilities should take to minimize that risk. We conclude that it does.

[7] First, the commission has broad authority to determine whether the service or equipment of any public utility poses any danger to the health or safety of the public, and if so, to prescribe corrective measures and order them into \*924 effect. Every public utility is required to furnish and maintain such "service, instrumentalities, equipment, and facilities ... as are necessary to promote the *safety, health, comfort, and convenience* of its patrons, employees, and the public." (§ [451](#), italics added.) The Legislature has vested the commission with both general and specific powers to ensure that public utilities comply with that mandate.

[8] As noted above, the Legislature has declared that the commission "may do all things" necessary and convenient to supervising and regulating public utilities in this state. (§ [701](#).) In particular, the commission has comprehensive jurisdiction over questions of public health and safety arising from utility operations. Thus the commission is generally

authorized to require every public utility to "construct, maintain, and operate" its "plant, system, equipment, [or] apparatus" in such manner as to "safeguard the health and safety of its employees, ... customers, and the public...." (§ [768](#).) To this end, the commission is further empowered to prescribe the installation and use of "appropriate safety or other devices," and to require every utility to do "*any other act* which the health or safety of its employees, ... customers, or the public may demand." (*Ibid.*, italics added.)

More specifically, the Public Utilities Act provides in relevant part that whenever the commission finds that the "equipment, appliances, facilities, or service of any public utility, or the methods of manufacture, distribution, transmission, storage, or supply employed by it" are "unsafe," it shall prescribe the equipment, appliances, facilities, or service to be provided or used by the utility, and shall further prescribe "rules for the performance of any service or the furnishing of any commodity" by such utility. (§ 761.) And whenever the commission finds that the equipment, apparatus, or facilities of any utility should be changed or improved, or new structures be erected, in order to promote the "security" of its employees or the public, it shall order the utility to make such changes or erect such structures. (§ [762](#).)

Second, the commission has equally broad authority over the design and siting of electric powerlines. Its authority over design dates back to the early days of the commission and its predecessor, the California Railroad Commission (CRC). In 1911 the Legislature enacted a statute prescribing mandatory standards for the design and construction of overhead electric lines, poles, and wires. (Stats. 1911, ch. 499, § 1, p. 1037.) In 1915 the Legislature amended the statute by authorizing the CRC to permit certain deviations from those standards, and by adding a new section (§ 8) declaring that the CRC "is hereby instructed to inspect \*\*688 \*\*\*743 all work which is included in the provisions of this act, and to *make such further additions or changes as said \*925 commission may deem necessary for the purpose of safety to employees and the general public, ...*" (Stats. 1915, ch. 600, § 4, p. 1063, italics added.) The legislation is now found in [sections 8026 to 8038 of the Public Utilities Code](#).

Pursuant to this grant of power, the CRC issued regulations governing overhead electric lines in 1922 (Gen. Order No. 64), in 1928 (Gen. Order No. 64-A), and in 1941 (Gen. Order No. 95). The latter

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order is still in effect, having been frequently amended since its date of issuance. Its stated purpose is to prescribe uniform requirements for overhead electric line construction in order to "insure adequate service and secure safety" to those who work on such lines and to "the public in general." (Gen. Order No. 95, rule 11.) The order now comprises over 440 pages of highly detailed specifications for the design, construction, operation, and maintenance of overhead electric lines, including such matters as the number, spacing, material, strength, and shielding of conductor wires, and their minimum clearances from buildings, streets, and railroads. The order also regulates poles and towers, guy wires, insulators, transformers, voltage regulators, warning signs, and numerous other components of powerline design and construction.

The commission also has exclusive jurisdiction over the *siting* of the vast majority of electric powerlines in this state. This jurisdiction flows from the general requirement that every public utility, including every electric utility, must obtain a certificate of public convenience and necessity from the commission before beginning construction of any "line, plant, or system, or of any extension thereof" (§ 1001). The only exception to this requirement is the limited jurisdiction vested in the State Energy Resources Conservation and Development Commission (Energy Commission). [FN21] With that exception, the commission retains exclusive jurisdiction over the siting of all other electric powerlines in the state, including all preexisting lines (Pub. Resources Code, § § 25107, 25501), all lines in the interconnected transmission system (PUC v. Energy Com., supra, 150 Cal.App.3d 437, 197 Cal.Rptr. 866), all primary or radial lines emanating from hydroelectric, wind, or solar photovoltaic power plants (*id. at p. 452, 197 Cal.Rptr. 866*; Pub. Resources Code, § § 25107, 25120), and all lines emanating from out-of-state generating facilities (PUC v. Energy Com., supra, 150 Cal.App.3d at p. 452, 197 Cal.Rptr. 866; Pub. Resources Code, § 25107).

FN21. The Energy Commission has exclusive jurisdiction over the siting of thermal powerplants and "electric transmission lines," but the latter are limited to new "primary" or "radial" lines delivering electricity from thermal powerplants located in California to their first point of junction with the state's interconnected transmission system. (Pub. Resources Code, § § 25107, 25110, 25500; Public Utilities Com. v.

Energy Resources Conservation & Dev. Com. (1984) 150 Cal.App.3d 437, 197 Cal.Rptr. 866 (hereafter PUC v. Energy Com..)

#### \*926 IV

[9] The next question is whether the commission has *exercised* the foregoing authority to adopt a policy on powerline electric and magnetic fields. We conclude that it has.

Prior to 1988 the commission had addressed the issue of the potential public health effects of such fields only on a case-by-case basis. (See, e.g., *San Diego Gas & Electric Co.* (1981) Cal.P.U.C.Dec. No. 93785.) In 1988, however, the Legislature initiated a broad inquiry into the subject. It found, *inter alia*, that "A number of scientific studies are beginning to indicate that electromagnetic fields associated with electrical utility facilities may present a significant cancer risk." (Stats. 1988, ch. 1551, § 1, subd. (a)(2), p. 5565.) The Legislature then declared its intent to determine by further research "whether exposure to electromagnetic fields caused by electrical utility generating and transmission facilities presents an unreasonable cancer risk, and whether legislation is needed to reduce that risk." (*Id.*, subd.(b), p. 5566.)

To effectuate this intent the Legislature directed the commission and the State Department of Health Services (DHS) to prepare and submit a joint report (1) identifying \*\*\*744 \*\*689 any cancer or other medical risks found by any study to be associated with powerline electric and magnetic fields, and (2) listing further "high-priority research projects" that need to be undertaken to identify such risks. (Stats. 1988, ch. 1551, § 2, subd. (d), p. 5566.)

The legislation next directed the commission and DHS to jointly conduct the high-priority research projects thus listed, and to submit a further report within three years on the status of that research program and "on recommendations, if any, for legislation to limit exposure to electromagnetic fields." (Stats. 1988, ch. 1551, § 3, subd. (b), p. 5567.)

On September 15, 1989, the commission and DHS presented their first joint report to the Legislature in response to the foregoing statutory directive. (Rep. to Leg. by Cal.P.U.C. & Cal. Dept. Health Services, Potential Health Effects of Electric and Magnetic

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Fields from Electric Power Facilities (1989) (PUC & DHS Report).) The report summarized the existing studies on the topic and concluded, "the body of scientific evidence for electric and magnetic fields causing a significant health risk is not yet compelling, but it is worrisome." (*Id.* at p. B-3.) The report then identified a number of high-priority projects for future research and recommended a series of additional steps, e.g., engineering studies of ways to reduce field exposure if necessary, consideration of a statewide program to measure fields, coordination with research and regulatory programs of other states, and educational outreach.

\*927 The report next turned to the question whether statewide *regulation* of powerline electric and magnetic fields would be timely and appropriate. Seven states had adopted standards prescribing maximum allowable field levels in certain circumstances, but the commission and DHS rejected that step for California. Their report explained that "not enough is known yet to conclude whether or not these fields pose a significant health hazard. Setting field standards therefore might amount to addressing a problem that either does not exist or is insignificant relative to other societal hazards." (PUC & DHS Rep., *supra*, at p. C-20.)

Worse, the report observed, "not only are we unsure a significant health problem exists, we also do not know what action would be protective of public health, even if we wanted to take immediate action on the *chance* that there is a problem."

"The obvious protective approach--reducing society's overall level of exposure to electric and magnetic fields--could, based on a reading of the available science, conceivably make any existing problem worse, not better. For example, current scientific evidence suggests that there may be particular field strengths which activate biological responses, while fields either below *or* above such strengths may cause little or no effects. Regulatory actions aimed at reducing overall levels of exposure could therefore conceivably *increase* the number of people exposed to harmful fields." (PUC & DHS Rep., *supra*, at p. C-21, italics in original.)

Finally, the report explained, the major problem is not high-voltage transmission lines: "more people are exposed chronically to the fields from distribution lines, building wiring, and certain appliances (e.g., electric blankets) than they are to transmission-line fields. Based on the available science, it is

reasonable to speculate that transmission lines are a relatively *minor* component of any overall health problem that may be posed by exposure to power-frequency fields." (PUC & DHS Rep., *supra*, at p. C-22, italics in original.)

The commission and DHS concluded that "we are not only unsure whether [adverse health] effects exist, we also do not know--assuming for the moment that they do exist--what measures could be taken that would be protective of public health." (PUC & DHS Rep., *supra*, at p. C-22.)

Accordingly, the commission and DHS "recommended that *California take no action at the present to regulate electric and magnetic fields* around electric power facilities. Any such actions are premature given current scientific understanding of this public health issue. Too little is known \*928 presently to be able to determine where or what rules would provide useful protection. Existing research data are not sufficient for adequate accurate risk assessment. We do not know which components, *if any*, of electric power \*\*\*745 \*\*690 utility operations pose significant health hazards. Although biological effects are clearly established, the relationship of these effects to possible public health risks is not yet established." (PUC & DHS Rep., *supra*, at p. B-4, italics added.)

One year later, on September 12, 1990, the commission took its first step in developing a formal regulatory policy on powerline electric and magnetic fields when it issued the *Kramer-Victor* decision. (*Re Southern California Edison Company (1990) 37 Cal.P.U.C.2d 413* (hereafter *Kramer-Victor*)). The decision granted Southern California Edison Company a certificate of public convenience and necessity to construct a new 220 kV transmission line 38 miles long between its Kramer and Victor substations in San Bernardino County. [FN22] In discussing environmental considerations, the commission reiterated that "studies to date allow one to reach virtually any conclusion as to whether the electromagnetic fields emanating from transmission lines pose hazards to health.... All that is certain is that we do not know enough to dismiss the issue entirely." (*Id.* at pp. 452-453.)

[FN22]. The commission noted (*Kramer-Victor, supra*, 37 Cal.P.U.C.2d at pp. 463-464, fn. 2) that although its jurisdiction extended to all powerlines in the integrated utility system, it had chosen to limit its

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review to lines designed to operate at more than 200 kV (Gen.Order No. 131-C). As will appear, the commission has recently changed that policy.

Instead, the commission drew a distinction between new and existing powerlines. It reiterated its refusal to adopt standards prescribing maximum allowable field levels, and it declined to "requir[e] that any action be taken to change field exposure levels along existing transmission lines." (*Kramer-Victor, supra*, 37 Cal.P.U.C.2d at p. 453, italics added.) It ruled, however, that "while the jury is out on the question of transmission line-related health risks, the prudent response is to avoid unnecessary new exposure to electromagnetic fields." (*Ibid.*, italics added.) The commission explained that "We are no more able than any other governmental entity to make a final judgment based on current information about the potential for health risk stemming from exposure to electromagnetic fields. However, until the scientific findings are more definitive, we will require [the utility] to take responsible, low-cost steps to avoid unnecessarily exposing people to these fields." (*Ibid.*, italics added.) The commission concluded that "Because of the continuing scientific uncertainty, remedies should be fashioned so as to minimize impact on over-all project cost. Since no one has identified any particular exposure level as safe or unsafe, the chosen remedy must strive to maintain the status quo." (*Ibid.*)

\*929 Accordingly, the commission placed two conditions on the certificate of public convenience and necessity for construction of the new powerline: it ordered (1) that the utility give written information on the ongoing controversy about electric and magnetic fields to all persons living or working near the right of way, and (2) that the utility measure existing field levels at the edge of the right of way and "take reasonable steps to place the new line ... in such a way as to minimize any increase in field exposure levels" to persons living or working near the right of way. (*Kramer-Victor, supra*, 37 Cal.P.U.C.2d at p. 463, italics added.)

Only four months later, on January 15, 1991, the commission reopened and greatly enlarged its inquiry into this topic: on its own motion, the commission instituted a broad investigation "to develop policies and procedures for addressing the potential health effects of electric and magnetic fields of utility facilities." (Cal.P.U.C. Order Instituting Investigation No. 91-01-012 (1991) p. 1(OII).)

The order explained that the commission was "building upon" responses to its decision in *Kramer-Victor, supra*, 37 Cal.P.U.C.2d 413, and recited that an investigation into "the public concern over potential health effects of electric power frequency fields is necessary at this time to assure public confidence in the maintenance of safe, reliable, and reasonably-priced electricity service in California." (OII, *supra*, at p. 3.) The order listed the goals that the commission desired to achieve--primarily to "Develop a series of policy and regulatory approaches and programs" responding to the possible public \*\*\*746 \*\*691 health effects of electric and magnetic fields. (*Id.* at p. 7.) The order then invited proposals on a wide variety of issues of both policy and practice, named all California-regulated utilities respondents in the proceedings, and invited participation by all other interested parties. The order gave notice that as a result of the investigation the commission "may change its existing rules, regulations, and policies regarding the operation, design, construction, or siting of electric utility power facilities...." (*Id.* at p. 13.)

Thereafter the commission appointed an advisory panel (the Consensus Group) of 17 persons representing various state agencies, utility companies, electric workers unions, and consumer organizations concerned about possible health effects of electric and magnetic fields. On March 20, 1992, after five months of meetings and discussions, the Consensus Group issued its report to the commission. (Rep. by Cal. EMF Consensus Group to P.U.C., Issues and Recommendations for Interim Response and Policy Addressing Power Frequency Electric and Magnetic Fields (1992) (Consensus Group Report).)

\*930 The report recognized that "the scientific community has not concluded whether or not there is a health risk" from electric and magnetic fields (Consensus Group Rep., *supra*, at p. 1), and pending an answer to that question, the report made a number of recommendations for interim action by the commission. Its main policy recommendation was to urge the commission to "adopt an interim policy that authorizes utilities to implement no-cost or low-cost steps to reduce fields" because of public concern and scientific uncertainty. (*Id.* at p. 8.) It further recommended that utilities "take [such concerns] into account when siting new electric facilities." (*Id.* at p. 9.) And it recommended that the commission authorize utilities to measure fields at customers' homes on request and at workplaces if the employer

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agrees to give the results to the employees. The report also made numerous recommendations for further research and public education. Finally, the report set forth a number of "non-consensus proposals," i.e., recommendations supported by some but not all members of the panel.

The commission subsequently held public hearings on the recommendations of the Consensus Group, and the parties filed briefs. On November 2, 1993, the commission issued its decision responding to those recommendations and hearings. (*Re Potential Health Effects of Electric and Magnetic Fields of Utility Facilities (1993)* 52 Cal.P.U.C.2d 1, 1993 WL 561942 (*Electric and Magnetic Fields*.) The commission evidently did not intend the decision to be its last word on the subject: it entitled its order an "Interim Order" and its opinion an "Interim Opinion," and it began the latter by declaring that "By this order we are taking *interim* steps to address electric and magnetic fields (EMF) related to electric utility facilities and power lines." (*Id.* at p. 5, fns. omitted, italics added.)

The reason for the decision's interim status was quickly explained. The commission stated that "At the opening of this investigation the scientific community had not reached a consensus on the nature of any health impacts of EMF. As the evidentiary phase progressed, witnesses identified and testified on EMF studies which were released subsequent to the submittal of the [Consensus Group] report." (*Electric and Magnetic Fields, supra*, 52 Cal.P.U.C.2d at p. 7.) The commission noted that it had asked DHS to assess the scientific evidence concerning the potential dangers of such fields. The commission then stressed that the DHS witness and other scientific witnesses concluded that the studies released after the Consensus Group Report "had not led them to believe that an EMF health hazard actually existed or that there was a clear cause and effect relationship between utility property or operations and public health." (*Id.* at p. 8.)

Accordingly, the commission found that "the body of scientific evidence continues to evolve." \*931(*Electric and Magnetic Fields, supra*, 52 Cal.P.U.C.2d at p. 8.) It recognized, however, that "public concern and scientific uncertainty remain" regarding the potential health effects of such fields. (*Ibid.*) Citing its constitutional authority to make rules for the utilities it regulates (Cal. \*\*\*747 Const., Art. \*\*692 XII, § 6) and the statutory requirement that utilities provide service and facilities necessary

to promote the health and safety of their customers, employees, and the public (§ 451), the commission concluded that "it is reasonable to establish an EMF policy for electric utility facilities and power lines" (*Electric and Magnetic Fields, supra*, 52 Cal.P.U.C.2d at p. 8), and it proceeded to do so. We summarize the principal components of that policy.

First, the commission ordered the utilities to implement no-cost and low-cost steps to reduce or mitigate electric and magnetic fields. The commission defined "low cost" to mean approximately 4 percent of the total cost of a project, and ordered the utilities to use that 4 percent figure as a benchmark in developing their mitigation guidelines. (*Electric and Magnetic Fields, supra*, 52 Cal.P.U.C.2d at p. 9.) The commission limited its order, however, to new and upgraded facilities: "Absent testimony which conclusively demonstrates that exposure from electric utility EMF causes health risks, we will continue the EMF policy established in the *Kramer-Victor* transmission line decision. That policy provided that remedies applied to reduce human exposure to EMF must be determined within the constraints of each *new* construction project." (*Electric and Magnetic Fields, supra*, 52 Cal.P.U.C.2d at p. 9, fn. omitted, italics added.)

Second, the commission noted that the Consensus Group Report also made three non-consensus proposals relating to electric and magnetic fields from *existing* facilities. The commission expressed interest in developing a record on the issues presented by those proposals, in order to guide it in "the possible development of EMF policy for existing facilities" if future scientific research were to warrant such a step. (*Electric and Magnetic Fields, supra*, 52 Cal.P.U.C.2d at p. 9.) Accordingly, the commission invited the parties to file comments on the three non-consensus proposals thus identified, "as well as the broader question of what policy options we should be adopting at this time to address the concerns of ratepayers about EMFs at existing utility facilities. Following review of the comments, we may schedule hearings." (*Id.* at p. 10.)

Third, the utilities proposed to develop "design guidelines" to follow in designing and siting new powerline facilities, for the purpose of mitigating electric and magnetic fields. The commission agreed in principle, and ordered its own Commission Advisory and Compliance Division to conduct a \*932 public workshop on developing such guidelines. It directed that the guidelines incorporate the concepts

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and criteria adopted in the present order, engineering options for mitigating electric and magnetic fields, and criteria to justify exempting specific types of projects. The commission also invited electric utilities not subject to its jurisdiction to participate in the workshop and adopt similar guidelines.

Fourth, the commission declared a need for a uniform utility policy on measuring electric and magnetic fields in customers' homes and offices, and ordered that the topic be addressed in the foregoing workshop on design guidelines. The commission recognized that the utilities are legally responsible for electricity only up to the point of connection of the powerline with the customers' premises. [\[FN23\]](#) The commission also recognized that "EMFs come from many sources beyond the control of the electric utilities," that "The most often found source of magnetic fields in residential and commercial property is the grounding system," that "EMFs also come from electrical appliances and electronic equipment," and hence that "utility facilities may not be a major contributor to EMF exposure in the terms of field level." (*Electric and Magnetic Fields, supra*, [52 Cal.P.U.C.2d at p. 12.](#)) Nevertheless, the commission directed that the field measurement policy authorize the utilities to continue making measurements on the customers' premises beyond the connection point, because of the "educational value" of such measurements. (*Ibid.*) The commission also directed that the customers be given the results of such measurements in writing.

[FN23.](#) That is, up to the electric meter in the case of a residential or commercial customer, or in the case of an industrial customer with its own substation (i.e., transformer), up to that substation.

Fifth, the Consensus Group recommended that a "stakeholders advisory committee" \*\*\*748 \*\*693 composed of labor, industry, public, and governmental members be appointed to advise the commission on electric and magnetic field policy, education, and research. The commission adopted the recommendation, stressing that "involvement from stakeholders and the public is very important to the development of effective EMF policies in California." (*Electric and Magnetic Fields, supra*, [52 Cal.P.U.C.2d at p. 14.](#)) Although the commission deferred to DHS on the particular form that stakeholder and public involvement should take, it declared that "We will continue to work closely with DHS in the ongoing development of EMF policy in

California." (*Ibid.*, fn. omitted.) More specifically, the commission ordered the utilities to fund such stakeholder and public involvement activities up to the amount of \$100,000 over the four-year life of the education and research programs to be discussed next.

\*933 Sixth, the Consensus Group recognized that most of the electric utilities were already conducting public educational programs about the nature and possible risks of electric and magnetic fields. The Consensus Group recommended supplementing those individual utility programs with a coordinated statewide education program on the topic managed by DHS with input by the stakeholders advisory committee and designed to provide the public with credible and consistent information from a neutral source. The commission agreed, but limited the program to electric and magnetic fields arising from regulated utilities' facilities and powerlines. The commission ordered the utilities to participate in such a program and to fund it up to the amount of \$1.49 million over four years, recovering the cost from the ratepayers. In particular, as part of the program the commission directed the utilities to include a yearly bill insert identifying "what is known about EMFs, what is being done, and what options exist based on current knowledge about potential health risks." (*Electric and Magnetic Fields, supra*, [52 Cal.P.U.C.2d at p. 16.](#))

Seventh, the Consensus Group also recommended a coordinated statewide research program into electric and magnetic fields to supplement similar research programs currently conducted by individual utilities. Again it recommended that the program be managed by DHS with input by the stakeholders advisory committee, and proposed that it focus on six priority research topics (see Consensus Group Rep., [supra](#), at [p. 32](#)):(1) resolution of unanswered questions concerning the validity or applicability of leading epidemiological studies of electric and magnetic fields; (2) analysis of actual patterns of exposure to such fields in electricity-intensive occupations and locations; (3) engineering research to determine how such fields could be affected by utility design changes, and the costs thereof; (4) policy-options research to evaluate and increase the number of regulatory responses that could be adopted, depending on the results of the scientific research; (5) laboratory experiments on cells, animals, and humans, designed (a) to replicate the studies of different researchers reporting biological effects of such fields and (b) to systematically establish a dose-

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response relation; and (6) laboratory experiments attempting to understand the biophysical mechanism by which such fields affect cells.

The commission agreed, and ordered the utilities to participate in such a program. [\[FN24\]](#) The commission directed the utilities to fund the first four research topics listed above (the "non-experimental" research) up to the \*934 amount of \$5.6 million over four years, recovering the cost from the ratepayers. To fund the other two research topics (the "experimental" research), the commission authorized the utilities to participate in a research and risk assessment program conducted by the federal government pursuant to the National \*\*694 \*\*\*749 Energy Policy Act of 1992, supported by both governmental and nongovernmental sources.

[FN24.](#) The commission was less than sanguine about the prospect of such research reaching a definitive conclusion any time soon, agreeing that "Scientists have been unable to develop a consensus that there is a definite link between EMF and adverse health effects on humans after more than thirty years of research and thousands of studies." ([Electric and Magnetic Fields, supra, 52 Cal.P.U.C.2d at p. 20.](#)) But the commission also agreed that in the absence of further research, public policy on the issue would run the risk of being guided by popular perception rather than scientific analysis, "resulting in the adoption of reactive and expensive policies." ([Id. at p. 21.](#))

There is no doubt that the commission is still actively pursuing the broad policy inquiry into the potential health effects of powerline electric and magnetic fields that it initiated in 1991 (OII No. 91-01-012) and that produced its interim policy decision of 1993 ([Electric and Magnetic Fields, supra, 52 Cal.P.U.C.2d 1](#)). On June 8, 1994, the commission issued a decision adopting a new regulation (Gen. Order No. 131-D) imposing a permit-to-construct requirement on all transmission lines designed to operate between 50 kV and 200 kV. ([Re Rules, Procedures and Practices Applicable to Transmission Lines Not Exceeding 200 Kilovolts \(1994\) 55 Cal.P.U.C.2d 87, 1994 WL 388996 \(Rules Applicable to Transmission Lines \)](#)). In the course of that decision the commission addressed the issue of the potential health effects of electromagnetic fields arising from such transmission lines. The

commission recited that "In cooperation with the California Department of Health Services, the Commission *is currently studying* the potential health effects of electric power facilities in [OII No. 91-01-012]." ([Rules Applicable to Transmission Lines, supra, 55 Cal.P.U.C.2d at p. 100](#), italics added.) The commission then reaffirmed its interim policy decision of 1993: "On November 12, 1993, the Commission issued [[Electric and Magnetic Fields, supra, 52 Cal.P.U.C.2d 1](#)], which notes that the scientific community had not yet isolated the impact of utility-related exposure on public health. However, the Commission concluded that: (1) the policy established in the *Kramer-Victor* decision [[supra, 37 Cal.P.U.C.2d 413, 453](#)] to reduce Electromagnetic Fields (EMF) levels should be continued for new and upgraded facilities; and (2) the utilities should use 4% of total cost of a budgeted project as a benchmark in developing their EMF mitigation guidelines." ([Rules Applicable to Transmission Lines, supra, 55 Cal.P.U.C.2d at p. 100.](#))

"Accordingly," the commission concluded, "we require that *until such time as the Commission issues new guidelines*, the utilities shall implement low-cost EMF mitigation measures in new and upgraded projects unless exempted by the utility's design guidelines exemption criteria." ([Rules Applicable to Transmission Lines, supra, 55 Cal.P.U.C.2d at p. 100](#), italics added.)

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It follows that the commission has exercised--and is still exercising--its constitutional and statutory authority to adopt a general policy on whether electric and magnetic fields arising from the powerlines of regulated utilities are a public health risk and what steps, if any, the utilities should take to minimize that risk. The final question is whether the present superior court action would hinder or interfere with that policy within the meaning of [Waters, supra, 12 Cal.3d 1, 114 Cal.Rptr. 753, 523 P.2d 1161](#), and its progeny. We conclude that certain counts of the complaint must fall under [Waters](#), while the remainder fail to state causes of action under the governing rules of substantive law.

#### 1. *The Personal Injury Causes of Action*

As noted above (pt. I, *ante*), the Court of Appeal held that plaintiffs failed to state any personal injury cause of action for fear of cancer because they did

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not and could not allege, as required by [Potter, supra](#), 6 Cal.4th 965, 997, 25 Cal.Rptr.2d 550, 863 P.2d 795, that "reliable medical or scientific opinion" corroborates their belief that it is probable that they will in fact develop cancer in the future from exposure to the electric and magnetic fields arising from SDG&E's powerlines. Plaintiffs have now expressly abandoned this issue: in their opening brief on the merits they advise us that they "do not seek review of that portion of the court's opinion dealing with the Covalts' personal injury action." [\[FN25\]](#)

[FN25](#). The complaint also alleges a cause of action for injunctive relief, but in their opening brief plaintiffs concede that cause of action is now moot because they have vacated the premises and the mortgagor has foreclosed on the property.

**\*\*\*750 \*\*695 2. The Trespass Cause of Action**

[\[10\]](#) The complaint predicates the trespass cause of action on allegations that SDG&E "intended to and did emit electromagnetic radiation onto plaintiffs' property without plaintiffs' consent," and as a result of "this physical invasion" plaintiffs' property was "rendered unsafe and uninhabitable" and plaintiffs will be forced to sell it at a substantial loss or abandon it altogether.

Again plaintiffs do not and cannot state facts sufficient to constitute a cause of action for trespass under the substantive law of this state. That law was settled in [Wilson v. Interlake Steel Co. \(1982\) 32 Cal.3d 229, 185 Cal.Rptr. 280, 649 P.2d 922 \(Wilson\)](#). The plaintiffs in that case resided in homes adjacent to a steel fabricating plant. A previous owner had operated the plant on an 8-hour daytime basis, but in 1969 the defendants bought the \*936 plant and expanded it to a 24-hour, around the clock operation. Complaining of the high level of noise generated by the plant, particularly during late night and early morning hours, the plaintiffs filed an action for trespass. The parties stipulated that the plaintiffs' use and enjoyment of their property was substantially disrupted by the noise emanating from the plant; the noise was transmitted through the air but no physical or particulate matter passed over or onto the plaintiffs' property; the noise did not cause any physical damage to the property; but the plaintiffs, if called, would testify that the noise emissions had resulted in a diminution in the market value of their homes. On these facts the trial court entered judgment for the defendants, ruling that noise alone,

without physical damage to the property, does not support a trespass cause of action.

We agreed. In his unanimous opinion for the court, Justice Richardson reasoned that "Noise alone, without damage to the property, will not support a tort action for trespass. Recovery allowed in prior trespass actions predicated upon noise, gas emissions, or vibration intrusions has, in each instance, been predicated upon the deposit of particulate matter upon the plaintiffs' property or on actual physical damage thereto. [Citations.] [¶ ] All intangible intrusions, such as noise, odor, or light alone, are dealt with as nuisance cases, not trespass. [Citations.] [¶ ] Succinctly stated, the rule is that actionable trespass may not be predicated upon nondamaging noise, odor, or light intrusion; ..." ([32 Cal.3d at pp. 232-233, 185 Cal.Rptr. 280, 649 P.2d 922.](#)) Although we acknowledged that a certain overlap between the remedies has developed in the case law, we squarely declared that "we preserve that historical conceptual distinction between nuisance, whether public or private, and trespass." ([Id. at p. 234, 185 Cal.Rptr. 280, 649 P.2d 922.](#)) [\[FN26\]](#)

[FN26](#). We ultimately reversed the judgment to allow the trial court to determine whether a nuisance remedy was barred by adverse findings in a prior nuisance action between the same parties.

[Wilson](#) expresses the general rule (Prosser & Keeton, Torts (5th ed. 1984) pp. 71-72), and it is controlling here. First, electric and magnetic fields arising from powerlines are wholly intangible phenomena within the meaning of [Wilson](#). Indeed, unlike noise, odors, or light, they cannot be directly perceived by the senses. Instead, electric and magnetic fields are more akin to television and radio waves: as we explained in our background discussion, such fields are an extremely low frequency, non-ionizing form of electromagnetic energy.

[\[11\]](#) Second, plaintiffs do not allege--as they are required to do under [Wilson, supra, 32 Cal.3d 229, 185 Cal.Rptr. 280, 649 P.2d 922](#)--that the electric and magnetic fields at issue in this case caused any *physical* damage to their *property*. Nor can they so allege, \*937 given the low frequency and consequent low energy of such fields. Plaintiffs do allege that the fields in question made their property "unsafe and uninhabitable." But property is "unsafe and uninhabitable" only to the extent that it creates a risk

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of *personal* harm to its occupants, which is manifestly different from damage to the property itself. Plaintiffs further allege that the electric and magnetic fields on the property will force them to sell it at a substantial loss or abandon it altogether. A diminution in property *value*, however, is not a type of physical damage to the property itself, but an element of the measure of damages when such damage **\*\*696 \*\*\*751** is otherwise proved. Thus in *Wilson* we found no physical damage to the property--and hence no cause of action for trespass--even though the parties stipulated they would have testified that the noise emissions from the adjacent plant resulted in a "measurable diminution in the market value of their homes." (32 Cal.3d at p. 232, 185 Cal.Rptr. 280, 649 P.2d 922; accord, *Maddy v. Vulcan Materials Co.* (D.Kan.1990) 737 F.Supp. 1528, 1540-1541 [allegation of diminution in market value of property, held insufficient allegation of property damage to support a trespass cause of action for intangible intrusion of airborne gases from adjacent factory]; *Bradley v. American Smelting & Refining Co.* (W.D.Wash.1986) 635 F.Supp. 1154, 1157 [same; "this sort of evidence can serve only to quantify the magnitude of injury otherwise proven"].)

### 3. The Nuisance Cause of Action

[12][13][14] Plaintiffs attempt to state a cause of action for private nuisance, i.e., a nontrespassory interference with the private use and enjoyment of land. (See *Civ.Code, § § 3479-3481*.) In distinction to trespass, liability for nuisance does not require proof of damage to the plaintiff's property; proof of interference with the plaintiff's use and enjoyment of that property is sufficient. (E.g., *Dauberman v. Grant* (1926) 198 Cal. 586, 590, 246 P. 319 ["It was not necessary to the recovery of damages caused by the nuisance of smoke and soot to prove actual damage to plaintiff's property."].) In further distinction to trespass, however, liability for private nuisance requires proof of two additional elements. This requirement flows from the law's recognition that "Life in organized society and especially in populous communities involves an unavoidable clash of individual interests. Practically all human activities unless carried on in a wilderness interfere to some extent with others or involve some risk of interference, and these interferences range from mere trifling annoyances to serious harms. It is an obvious truth that each individual in a community must put up with a certain amount of annoyance, inconvenience and interference and must take a certain amount of risk in order that all may get on

together. The very existence of organized society depends upon the principle of 'give and take, **\*938** live and let live,' and therefore the law of torts does not attempt to impose liability or shift the loss in every case in which one person's conduct has some detrimental effect on another. Liability for damages is imposed in those cases in which the harm or risk to one is greater than he ought to be required to bear under the circumstances, at least without compensation." (*Rest. 2d Torts, § 822*, com. g, p. 112.)

[15][16][17][18] The first additional requirement for recovery of damages on a nuisance theory is proof that the invasion of the plaintiff's interest in the use and enjoyment of the land was *substantial*, i.e., that it caused the plaintiff to suffer "substantial actual damage." (1 Harper et al., *The Law of Torts* (3d ed. 1996) § 1.23, p. 1:97; accord, Prosser & Keeton, *supra*, § 87, pp. 622-623; *id.*, § 88, pp. 626-628.) The Restatement (Second) recognizes the same requirement as the need for proof of "significant harm" (*Rest. 2d Torts, § 821F*), which it variously defines as "harm of importance" and a "real and appreciable invasion of the plaintiff's interests" (*id.*, com. c, p. 105) and an invasion that is "definitely offensive, seriously annoying or intolerable" (*id.*, com. d, p. 106). The degree of harm is to be judged by an objective standard, i.e., what effect would the invasion have on persons of normal health and sensibilities living in the same community? (Prosser & Keeton, *supra*, § 88, pp. 627-628.) "If normal persons in that locality would not be substantially annoyed or disturbed by the situation, then the invasion is not a significant one, even though the idiosyncracies of the particular plaintiff may make it unendurable to him." (*Rest. 2d Torts, § 821F*, com. d, p. 106.) This is, of course, a question of fact that turns on the circumstances of each case.

[19][20][21] The second additional requirement for nuisance is superficially similar but analytically distinct: "The interference with the protected interest must not only be substantial, but it must also be *unreasonable*" (Prosser & Keeton, *supra*, § 88, p. 629, italics added), i.e., it must be "of such a nature, duration or amount as to constitute unreasonable interference with the use and enjoyment **\*\*697 \*\*\*752** of the land." (*Id.*, § 87, p. 623, fn. omitted; see generally, *id.*, § 88, pp. 629-630; accord, *Rest. 2d Torts, § 822*.) The primary test for determining whether the invasion is unreasonable is whether the gravity of the harm outweighs the social utility of the defendant's conduct, taking a number of factors into

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account. ([Rest. 2d Torts, § § 826-831.](#)) Again the standard is objective: the question is not whether the particular plaintiff found the invasion unreasonable, but "whether reasonable persons generally, looking at the whole situation impartially and objectively, would consider it unreasonable." (*Id.*, § 826, com. c, p. 121.) And again this is a question of fact: "Fundamentally, the unreasonableness of intentional invasions is a problem of relative values to be determined by the trier of fact in each case \*939 in the light of all the circumstances of that case." (*id.*, com. b, p. 120; accord, Prosser & Keeton, *supra*, § 88, p. 629 & fn. 27.)

[22] With these principles in mind we turn to the case at bar. Plaintiffs have abandoned their claim that the electric and magnetic fields arising from SDG&E's powerlines impaired their use and enjoyment of their property by causing them to suffer actual physical harm. Instead, plaintiffs now contend the fields impaired their use and enjoyment of the property simply because they assertedly *feared* that the fields would cause them physical harm. We need not and do not decide here whether a fear of future harm will support a cause of action for private nuisance (compare [Koll-Irvine Center Property Owners Assn. v. County of Orange](#) (1994) 24 Cal.App.4th 1036, 1041-1042, 29 Cal.Rptr.2d 664 [no cause of action for private nuisance], with [County of San Diego v. Carlstrom](#) (1961) 196 Cal.App.2d 485, 491, 16 Cal.Rptr. 667 [cause of action for public nuisance] ), or, if so, whether the fear must be reasonable, i.e., grounded in scientific fact (see 1 Harper et al., *supra*, § 1.25, p. 1:123, and cases cited in fns. 25 & 26). Even if we assume *arguendo* that plaintiffs could amend their complaint to allege such a fear, an award of damages on that basis would interfere with the policy of the commission on powerline electric and magnetic fields. As we have seen, in order to award such damages on a nuisance theory the trier of fact would be required to find that reasonable persons viewing the matter objectively (1) would experience a substantial fear that the fields cause physical harm and (2) would deem the invasion so serious that it outweighs the social utility of SDG&E's conduct. Such findings, however, would be inconsistent with the commission's conclusion, reached after consulting with DHS, studying the reports of advisory groups and experts, and holding evidentiary hearings, that the available evidence does *not* support a reasonable belief that 60 Hz electric and magnetic fields present a substantial risk of physical harm, and that unless and until the evidence supports such a belief regulated utilities need take no action to

reduce field levels from existing powerlines.

#### 4. *The Inverse Condemnation Cause of Action*

[23][24] Both eminent domain proceedings and inverse condemnation actions implement the constitutional rule that private property may not be "taken" ([U.S. Const., 5th Amend.](#)) or "taken or damaged" ([Cal. Const., Art. I, § 19](#)) for public use without just compensation. When a public entity exercises its power of eminent domain to condemn private property, there is ordinarily no question that it has "taken or damaged" that property. But the same is not true of inverse condemnation: "While, in eminent domain litigation, the focus is usually limited to the amount of compensation owed the property \*940 owner under the 'just compensation' clause, in an inverse condemnation action, the property owner must first clear the hurdle of establishing that the public entity has, in fact, taken [or damaged] his or her property before he or she can reach the issue of 'just compensation.'" ([Beatty v. Imperial Irrigation Dist.](#) (1986) 186 Cal.App.3d 897, 903, 231 Cal.Rptr. 128, and cases cited.) In the case at bar plaintiffs do not and cannot allege a sufficient "taking or damaging" under the law of inverse condemnation.

[25] A public entity "takes or damages" private property when it causes physical damage to that property without physically invading it. (E.g., \*\*\*753\*\*698 [Holtz v. Superior Court](#) (1970) 3 Cal.3d 296, 90 Cal.Rptr. 345, 475 P.2d 441 [withdrawal of lateral support caused by excavation of adjacent street]; [Reardon v. San Francisco](#) (1885) 66 Cal. 492, 6 P. 317 [converse: damage from increased lateral pressure caused by filling of adjacent street].) As we explained in our discussion of the cause of action for trespass, plaintiffs do not and cannot allege that the electric and magnetic fields in this case caused physical damage to their property.

[26][27] A public entity also "takes or damages" private property when it physically invades that property in any tangible manner. (E.g., [Albers v. County of Los Angeles](#) (1965) 62 Cal.2d 250, 42 Cal.Rptr. 89, 398 P.2d 129 [landslide]; [Bauer v. County of Ventura](#) (1955) 45 Cal.2d 276, 289 P.2d 1 [floodwaters].) Permanent physical invasions of property are takings "even if they occupy only relatively insubstantial amounts of space and do not seriously interfere with the landowner's use of the rest of his land." ([Loretto v. Teleprompter Manhattan CATV Corp.](#) (1982) 458 U.S. 419, 430,

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[102 S.Ct. 3164, 3173, 73 L.Ed.2d 868](#) [30-foot piece of television cable installed on apartment house roof].) As we also explained in our discussion of the cause of action for trespass, however, electric and magnetic fields are wholly intangible phenomena that, like television and radio waves, "occupy" no "space" at all and cannot even be perceived by the senses.

[28] When, as here, the conduct of a public entity results in an intangible intrusion onto the plaintiff's property that does not physically damage the property, the question whether there has been a "taking or damaging" of the property sufficient to support a cause of action for inverse condemnation is more difficult. In these circumstances the plaintiff must allege that the intrusion has resulted in a burden on the property that is direct, substantial, and peculiar to the property itself. Thus in [Variabedian v. City of Madera \(1977\) 20 Cal.3d 285, 142 Cal.Rptr. 429, 572 P.2d 43 \(Variabedian\)](#), the defendant city built a sewage treatment plant adjacent to and upwind from the plaintiffs' farm. The plaintiffs alleged that the plant emitted strong and \*941 offensive odors which the prevailing winds blew directly onto their property, rendering it uninhabitable. The trial court granted a motion for judgment on the pleadings as to the plaintiffs' cause of action for inverse condemnation on the ground that recovery on that theory required physical damage to the property. We reversed the judgment in that respect, holding that the plaintiffs could state a cause of action for inverse condemnation without alleging physical damage to the property. We reasoned that "If a plaintiff can establish that his property has suffered a 'direct and peculiar and substantial' burden as a result of recurring odors produced by a sewage facility ... then the policy favoring distribution of the resulting loss of market value is strong [citation] and the likelihood that compensation will impede necessary public construction is relatively slight." (*Id.* at p. 298, 142 Cal.Rptr. 429, 572 P.2d 43.) Nauseous gases flowing repeatedly and directly onto the plaintiffs' land, we held, could constitute such a burden. The Courts of Appeal have applied the same test to inverse condemnation actions based on such intangible intrusions as jet aircraft noise ([Aaron v. City of Los Angeles \(1974\) 40 Cal.App.3d 471, 493, 115 Cal.Rptr. 162](#) [operation of municipal airport] ) and traffic noise, dust, and loss of air and light ([Harding v. State ex rel. Dept. of Transportation \(1984\) 159 Cal.App.3d 359, 367, 205 Cal.Rptr. 561](#) [freeway construction] ).

In the case at bar plaintiffs contend the upgrading of SDG&E's powerlines in 1990 constituted a "taking or damaging" of their property on three theories. As will appear, none is persuasive.

[29] First, plaintiffs contend that the upgrading of the powerlines constituted a "taking or damaging" of their property "because it ... served a public use." This is a non sequitur. Plaintiffs rely on a case holding that there is no liability in inverse condemnation if a utility takes or damages property for a *private* use. ([Cantu v. Pacific Gas & Electric Co. \(1987\) 189 Cal.App.3d 160, 234 Cal.Rptr. 365.](#)) But the converse does not follow, i.e., it is not true that there *is* liability for inverse condemnation merely because a utility improves property for a *public* use; such liability arises only if in doing so the utility\*\*699 \*\*\*754 "takes or damages" private property within the meaning of the constitutional provisions on eminent domain.

Second, plaintiffs contend that the increased electric and magnetic fields arising from SDG&E's powerlines "constituted a physical intrusion upon plaintiffs' property which amounted to a *per se* taking requiring just compensation without further proof of impact." As explained above, however, a claim of inverse condemnation based on electric and magnetic fields is not governed by the traditional "physical intrusion" cases but by the cases \*942 dealing with an intangible intrusion that does not physically damage the property, i.e., by the rule of [Variabedian, supra, 20 Cal.3d 285, 142 Cal.Rptr. 429, 572 P.2d 43.](#)

Third, plaintiffs attempt to bring their case within the [Variabedian](#) rule, but they do not succeed. As noted above, [Variabedian](#) requires plaintiffs to allege that the intrusion resulted in a burden on the property that is direct, substantial, and peculiar. Plaintiffs are unable to allege, however, that the electric and magnetic fields in question caused a *direct and substantial* burden on their property.

[30] Plaintiffs' repeated claim that such fields caused a diminution in the *value* of their property does not supply the missing burden: a diminution in property value is not a "taking or damaging" of the property, but an element of the measure of just compensation when such taking or damaging is otherwise proved. Thus in [HFH, Ltd. v. Superior Court \(1975\) 15 Cal.3d 508, 518, 125 Cal.Rptr. 365, 542 P.2d 237,](#) this court held that "a zoning action which merely decreases the market value of property does not violate the constitutional provisions forbidding

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uncompensated taking or damaging...." Although that was a "regulatory taking" case, our reasoning applies as well to the present "intrusion taking" case: we explained that "Plaintiffs fail to distinguish between the 'damaged' property which is a requisite for a finding of compensability and the 'damages' by which courts measure the compensation due. Reasoning backwards, plaintiffs erroneously contend that since they can calculate damages (by measuring decline in market value), they must have been 'damaged' within the meaning of the state Constitution." (*Ibid.*) Plaintiffs' argument in the case at bar is equally fallacious.

[31] For the same reason, plaintiffs' reliance on *San Diego Gas & Electric Co. v. Daley* (1988) 205 Cal.App.3d 1334, 253 Cal.Rptr. 144 (Daley ), is misplaced. The case is clearly distinguishable: *Daley* was not an inverse condemnation action, but a typical eminent domain proceeding in which an electric utility exercised its undoubted power to condemn an easement for a new transmission line across unimproved property. There was no issue as to whether or not the utility had "taken" the easement, [FN27] and the property owner did not contest the utility's right to take it. Rather, the sole issue was the amount of just compensation--specifically, the amount of severance damages--required for the taking. It was in that context that the Court of Appeal held that severance damages could include a diminution in the value of the remainder of the property assertedly caused by prospective buyers' fear of electric and magnetic fields arising from the new transmission line, regardless of whether that fear was reasonable. (*Id.* at pp. 1346-1349, 253 Cal.Rptr. 144.) That was all \*943 that the court decided. Cases are not authority, of course, for issues not raised and resolved. (*Harris v. Capital Growth Investors XIV* (1991) 52 Cal.3d 1142, 1157, 278 Cal.Rptr. 614, 805 P.2d 873.) [FN28]

[FN27. The easement was plainly visible, being a parcel 200 feet wide stretching across a 4,000-acre ranch.

[FN28. We therefore need not and do not determine whether we agree with the rule of *Daley, supra*, 205 Cal.App.3d 1334, 1346-1349, 253 Cal.Rptr. 144, or what limits, if any, should be placed on that rule, or whether the Court of Appeal in the case at bar was correct in its alternate holding that *Potter, supra*, 6 Cal.4th 965, 25 Cal.Rptr.2d 550, 863 P.2d 795, "negates" *Daley's*

premise. Such questions must await a case in which they are properly raised.

Plaintiffs also contend the electric and magnetic fields in question caused a direct and substantial burden on their property because they assertedly changed its "highest \*\*\*755 \*\*700 and best use" from a residential property to an "effective utility easement." Plaintiffs rely on federal cases holding that airplane flights into and out of an airport may constitute a "taking," in the constitutional sense, of an air easement over adjacent private property. (E.g., *Griggs v. Allegheny County* (1962) 369 U.S. 84, 82 S.Ct. 531, 7 L.Ed.2d 585; see also *United States v. Causby* (1946) 328 U.S. 256, 66 S.Ct. 1062, 90 L.Ed. 1206.) But in such cases the flights were so low, so frequent, and so noisy that they constituted the "direct and immediate cause" of a substantial impairment of the owner's use and enjoyment of the property. [FN29] Here plaintiffs can make no similar allegations; indeed, they decline to allege that the electric and magnetic fields in question caused them to suffer any actual physical consequences at all. Plaintiffs cite no case holding that an allegation of fear that an intangible intrusion may cause *future* harm to occupants of property is sufficient to charge a "direct and substantial burden" on the property within the meaning of *Varjabedian, supra*, 20 Cal.3d 285, 142 Cal.Rptr. 429, 572 P.2d 43, and thus to satisfy the "taking or damaging" requirement of the cause of action for inverse condemnation. We have found no such authority in our reports, and plaintiffs give us no reason to adopt such a rule.

[FN29. Thus in *Griggs v. Allegheny County, supra*, 369 U.S. 84, 87, 82 S.Ct. 531, 532-533, 7 L.Ed.2d 585, the noise was comparable to that of a "steam hammer" or a "noisy factory," made normal conversation and regular sleep impossible, impaired the occupants' health, and rendered their occupancy of the property "unbearable." In *United States v. Causby, supra*, 328 U.S. 256, 259, 66 S.Ct. 1062, 1064-1065, 90 L.Ed. 1206, the noise was "startling," deprived the occupants of sleep, made them "nervous and frightened," and killed more than a hundred chickens on the chicken farm located on the property, destroying its use for that purpose.

## VI

Plaintiffs raise a number of additional contentions,

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but none is persuasive.

First, plaintiffs assert that the commission "has neither expressly nor impliedly asserted exclusive jurisdiction over EMF issues." Recognizing that the commission has plainly asserted its jurisdiction over all regulated \*944 electric utilities vis-à-vis local agencies, [\[FN30\]](#) plaintiffs argue that the commission has never expressly declared that local courts do not have concurrent jurisdiction over issues raised by powerline electric and magnetic fields. Plaintiffs rely on the undoubted fact that "It has never been the rule in California that the commission has exclusive jurisdiction over any and all matters having any reference to the regulation and supervision of public utilities." (*Vila v. Tahoe Southside Water Utility* (1965) 233 Cal.App.2d 469, 477, 43 Cal.Rptr. 654, italics deleted (*Vila*).

[FN30.](#) In *Rules Applicable to Transmission Lines*, *supra*, 55 Cal.P.U.C.2d 87, 96, the commission made the point crystal clear: "we herein declare our intent to exercise exclusive jurisdiction over all privately owned utility electric facilities in California [i.e., over all the electric utilities it regulates], and all local agencies are preempted." In the same decision the commission expressly reaffirmed its exclusive jurisdiction over distribution lines operating at less than 50 kV. (*Id.* at p. 99 ["Utility-owned under-50-kV lines remain under the Commission's exclusive jurisdiction, which may not be preempted."].) As noted above (pt. I, *ante*), the lines involved in the case at bar operate at 12 kV and hence fall within that category.

The argument misses the mark. The question is not whether the commission has declared (or has the power to declare) local courts to be preempted on this or any other subject; the Legislature has declared such preemption by enacting [section 1759](#). The question is therefore whether [section 1759](#) applies to this case. That question is answered by applying, as we do herein (pt. V, *ante*), the rule of *Waters*, *supra*, 12 Cal.3d 1, 11, 114 Cal.Rptr. 753, 523 P.2d 1161, i.e., that [section 1759](#) prevails over [section 2106](#) unless the superior court action "would not interfere with or obstruct the commission in carrying out its own policies." Indeed, in *Waters* (12 Cal.3d at p. 11, 114 Cal.Rptr. 753, 523 P.2d 1161) the court emphasized that *Vila* recognized this same implicit limitation when it held the superior court had

jurisdiction to issue a mandatory injunction compelling a regulated water company to provide service in accordance with its schedule approved by the commission, because "Existence and exercise of this jurisdiction is in aid and not derogation of the jurisdiction of the commission." \*\*701\*\*\*756( [233 Cal.App.2d at p. 479](#), [43 Cal.Rptr. 654](#).) Putting the point another way, the *Vila* court also observed that "California courts have frequently proclaimed concurrent jurisdiction in the superior court over controversies between utilities and others *not inimical to the purposes of the Public Utility Act.*" (*Id.* at p. 477, [43 Cal.Rptr. 654](#), italics added.)

Plaintiffs next seek to avoid the rule of *Waters*, *supra*, 12 Cal.3d 1, 114 Cal.Rptr. 753, 523 P.2d 1161, by contending that the decision should be narrowly limited to its facts, i.e., that it should apply only to a utility-- like the telephone company in that case--that had expressly limited its liability for negligence by the terms of its tariff. It is true that SDG&E is not such a utility. But nothing in *Waters* supports so narrow a reading of that decision, and plaintiffs fail to explain why we should so limit it now, over two decades after we adopted its rule.

\*945 Instead, plaintiffs rely on three Court of Appeal decisions holding that *Waters* did not bar the superior court action there in issue. But in each of those cases the Court of Appeal applied the *Waters* rule, and held that the superior court action was not barred by [section 1759](#) precisely because it would *not* hinder or interfere with a broad regulatory policy of the commission. We have discussed two of the cases above. (Pt. II, *ante*; [Cellular Plus, Inc. v. Superior Court](#), *supra*, 14 Cal.App.4th 1224, 18 Cal.Rptr.2d 308; [Stepak v. American Tel. & Tel. Co.](#), *supra*, 186 Cal.App.3d 633, 231 Cal.Rptr. 37.) The third is [Pierce v. Pacific Gas & Electric Co.](#) (1985) 166 Cal.App.3d 68, 212 Cal.Rptr. 283, a personal injury action brought by a homeowner who was hurt when a defective transformer of a public utility exploded and sent 7,000 volts of electricity into house wiring designed to carry 120 volts. The Court of Appeal reversed a judgment of nonsuit on a cause of action for strict product liability. As a preliminary matter, the court rejected (at pp. 77-78, [212 Cal.Rptr. 283](#)) a contention that the superior court lacked jurisdiction under the *Waters* rule simply because a general regulation (Gen. Order No. 95) provides that electric supply systems shall be maintained in such a condition as to give "safe" service and utilities shall "exercise due care to reduce to a minimum" the hazards from overhead wires. The ruling was

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correct: the commission had manifestly *not* determined that the scientific evidence is insufficient to establish that exploding transformers are a public health risk or that defective transformers should not be repaired. For the same reason the case is distinguishable from the matter before us.

By contrast, in two cases discussed above (pt. II, *ante*) in which the Court of Appeal held the superior court action was barred under the rule of *Waters*, the utilities had *not* limited their liability by their tariffs--indeed, the cases had nothing to do with such limitations of liability. (*Brian T. v. Pacific Bell, supra*, 210 Cal.App.3d 894, 258 Cal.Rptr. 707 [commission policy on blocking sexually explicit recorded telephone messages]; *Schell v. Southern Cal. Edison Co., supra*, 204 Cal.App.3d 1039, 251 Cal.Rptr. 667 [commission policy on rate schedules for baseline gas and electric service to RV parks].) Plaintiffs' cramped reading of *Waters* is untenable.

Plaintiffs next claim that the commission itself has conceded that it does not have the "expertise, authority or exclusive jurisdiction" to resolve the medical and scientific question whether electric and magnetic fields are hazardous to human health. As purported evidence of this concession, plaintiffs repeatedly quote the following sentence from the 1990 commission decision in *Kramer-Victor, supra*, 37 Cal.P.U.C.2d 413, 453, adding their own creative emphasis: "*We are no more able than any other governmental entity to make a final judgment based on current information about the \*946 potential for health risk stemming from exposure to electromagnetic fields.*" A glance at *Kramer-Victor* is enough to show that plaintiffs wrench this quotation out of context. As explained in our analysis of the case above (pt. IV, *ante*), the commission began its discussion of the point by observing that "studies to date allow one to reach virtually any conclusion" as to whether such fields pose a health risk. (37 Cal.P.U.C.2d at p. 452.) The commission then refused to adopt standards prescribing maximum allowable field levels because "the information currently \*\*\*757 \*\*702 available is insufficient to allow for this type of regulation." (*Id.* at p. 453.) It was in that context--current scientific uncertainty--that the commission made the statement now seized upon by plaintiffs.

When read in that context, it is obvious that the statement was not--as plaintiffs repeatedly imply--a dramatic confession of a lack of commission expertise to "make a final judgment ... about the

potential for health risk" from such fields. Rather, the statement was a far more prosaic recognition of the fact that neither the commission nor any other agency could make such a judgment "based on current information," i.e., "[b]ecause of the continuing scientific uncertainty" (37 Cal. P.U.C.2d at p. 453), and would therefore have to take interim measures "until the scientific findings are more definitive" (*ibid.*). The scientific research intended to produce those findings, as we have seen, continues apace.

Plaintiffs also make much of the fact that in its 1993 decision in *Electric and Magnetic Fields, supra*, 52 Cal.P.U.C.2d 1, the commission reiterated that DHS is "the state agency best equipped to assess the scientific evidence" concerning the public health risks, if any, arising from electric and magnetic fields (*id.* at p. 8), and is "the appropriate agency to inform us" about any such risks (*id.* at p. 27) and "the appropriate agency to define the research needed" to answer that question (*id.* at p. 28). Plaintiffs contend these quotations establish that the commission itself "has expressly rejected any suggestion that it has the exclusive jurisdiction to resolve the health effects issue."

The commission, however, has never claimed either the sole authority or the sole expertise to decide whether electric and magnetic fields cause adverse "health effects." Its constitutional and statutory powers to ensure that the service and facilities of regulated utilities pose no unreasonable danger to the public (see pt. III, *ante*) do not bar it from enlisting the assistance of other state agencies (or private contractors) in carrying out its responsibilities. And when the issue is a potential cancer risk, DHS is a \*947 logical partner. [FN31] The Legislature recognized as much when, as explained above (pt. IV, *ante*), it specifically directed the commission to enlist the cooperation of DHS in identifying and then conducting high-priority research projects in order "to establish whether exposure to electromagnetic fields caused by electrical utility generating and transmission facilities presents an unreasonable cancer risk" (Stats. 1988, ch. 1551, § 1, subd. (b), p. 5566). In these circumstances, the fact that the commission has asked DHS to manage the four-year research program that it ordered into effect in 1993 as one component of its general interim policy on this subject (*Electric and Magnetic Fields, supra*, 52 Cal.P.U.C.2d 1, 21-22) does not mean that it is not the *commission's* policy.

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[FN31](#). Among its many public health responsibilities, DHS is directed by statute to establish and operate a statewide cancer-reporting system ([Health & Saf.Code, § 103885](#)) and to conduct "a program of epidemiological assessments of the incidence of cancer." (*Id.*, § 103875, subd. (a).) Epidemiological studies, of course, are one of the principal methods of research into possible carcinogenic effects of electric and magnetic fields.

Plaintiffs next assert that their action would not interfere with commission policy on electric and magnetic fields because the commission has not made "a final and conclusive determination" that such fields are in fact dangerous; rather, the commission has found only that the scientific evidence is insufficient to establish such fields are dangerous and further research is needed. In these circumstances, plaintiffs reason, a determination by the superior court that such fields *are* dangerous, "based upon review of all applicable medical and scientific literature, and informed by the expert opinion of EMF scientists," would not conflict with any "declared" policy of the commission.

The reasoning is unsound. After reviewing the current scientific evidence the commission has determined that it is *not* sufficient at this time to establish that electric and magnetic fields are dangerous, and on that basis has adopted a detailed interim policy on the subject whose seven principal components we have discussed above (pt. IV, *ante*) and need not now repeat. A superior court determination that essentially the same evidence *is* sufficient to answer the question \*\*\*758 \*\*703 and that such fields are in fact dangerous would plainly undermine and interfere with that policy.

Apparently seeking to show that the scientific evidence before the superior court would be significantly different from that reviewed by the commission, plaintiffs claim "There have been many positive studies of EMF-cancer [i.e., epidemiological studies finding a "positive association" between such fields and cancer] reported in the scientific literature since the 1993 PUC order [i.e., [Electric and Magnetic Fields, supra, 52 Cal.P.U.C.2d 1](#)]." \*948 Plaintiffs cite only one such study, however, a study reported in 1995 that found an increased incidence of brain cancer (but no increase in leukemia) among electric utility workers. (Savitz & Loomis, *Magnetic Field Exposure in Relation to Leukemia and Brain Cancer*

*Mortality Among Electric Utility Workers* (1995) 141 *Am.J. Epidemiology* 123.)

While interesting, the report of a single positive epidemiological study (or even a number of such studies) in 1995 has not changed the broad scientific consensus on which the commission predicated its policy decision in 1993: for example, in the same year (1995) at least three noteworthy expressions of that consensus reiterated the view that the scientific evidence is still insufficient to establish that electric and magnetic fields are a health hazard. First, a report prepared by Oak Ridge National Laboratory and published by the National Institute of Environmental Health Sciences and the United States Department of Energy stated that "We do not know at this point whether EMF exposure from power frequency sources constitutes a health hazard. Therefore, we cannot determine levels of exposure which are 'safe' or 'unsafe.'" (NIEHS & USDE Q&A, [supra, p. 29](#).) Second, the American Physical Society [\[FN32\]](#) recently issued a formal statement declaring that "The scientific literature and the reports of reviews by other panels show no consistent, significant link between cancer and power line fields.... While it is impossible to prove that no deleterious health effects occur from exposure to any environmental factor, it is necessary to demonstrate a consistent, significant, and causal relationship before one can conclude that such effects do occur. From this standpoint, the conjectures relating cancer to power line fields have not been scientifically substantiated." (Council of Am. Physical Society, *Power Line Fields and Public Health* (April 1995).) Third, the American Medical Association (AMA) likewise adopted a policy statement declaring that the association "will continue to monitor developments and issues relating to the effects of electric and magnetic fields, *even though no scientifically documented health risk has been associated with the usually occurring levels of electromagnetic fields; ...*" (AMA Policy Compendium (1995) Policy No. 460.938, italics added.) [\[FN33\]](#)

[FN32](#). The American Physical Society is a nonprofit scientific and educational organization. It is the principal membership body of physicists in the United States, representing over 43,000 physicists in academia, industry, and government.

[FN33](#). The same conclusion is expressed in an amicus curiae brief filed in this court by 17 prominent physicists, epidemiologists,

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biochemists, and physicians, including among their number 6 Nobel laureates.

Plaintiffs also stress that the commission has not expressly *prohibited* utilities from taking steps to mitigate electric and magnetic fields arising from existing powerlines. But as we have seen, the commission has repeatedly declared, as an element of its general policy on such fields, that unless \*949 and until it issues new regulations providing otherwise utilities are *not required* to take any steps to reduce field levels from existing powerlines. A superior court action requiring a regulated utility to take such a step would plainly undermine and interfere with that policy.

Plaintiffs next claim the commission has not in fact adopted a uniform statewide policy on electric and magnetic fields, but has left this crucial matter to the discretion of the individual utilities. They premise this claim on a portion of the commission's 1993 decision on the subject (*Electric and Magnetic Fields, supra, 52 Cal.P.U.C.2d 1, 10-11*) in which the commission discussed a proposal by the utilities to authorize them to adopt "design guidelines" to follow in mitigating \*\*\*759 \*\*704 electric and magnetic field levels from new powerline facilities. Plaintiffs seize on the fact that the utilities argued to the commission that uniform guidelines applying to all projects and all utilities would not be feasible because exceptions might be justified for some projects and the utilities do not all use the same engineering design methods.

The point lacks merit on two grounds. First, although it agreed in principle to the idea of design guidelines drafted by the utilities, the commission made it clear that in practice they were to be as uniform as possible: "Although each utility may have unique engineering designs, there should be a concerted attempt to standardize EMF design guidelines to the maximum extent possible. The policies we outline in this decision have as one of their goals the standardization, to the extent possible, across the state of utility EMF policies." (*Electric and Magnetic Fields, supra, 52 Cal.P.U.C.2d 1, 11.*) Second, as we have seen (pt. IV, *ante*), the commission's order on such guidelines was merely one of at least seven components of a general policy on powerline electric and magnetic fields that it adopted in its 1993 decision and that was expressly intended to be uniform and statewide in application. The commission retains, of course, the ultimate authority to regulate the siting and design of

powerlines, whether for the purpose of mitigating electric and magnetic field levels or for any other public safety reason: as the commission stated in its 1994 decision quoted above, the utilities must follow its current mitigation policy "until such time as the Commission issues new guidelines...." (*Rules Applicable to Transmission Lines, supra, 55 Cal.P.U.C.2d at p. 100.*)

Plaintiffs also assert that "This is not a case where the plaintiffs are claiming damages from an existing power line which the utility did nothing to alter or upgrade." Rather, plaintiffs emphasize that in 1990 SDG&E upgraded the powerlines here in issue, increasing the electric and magnetic \*950 field levels on their property. On this basis they contend the present action would be "in aid and not in derogation of the jurisdiction of the commission" (*Vila, supra, 233 Cal.App.2d at p. 479, 43 Cal.Rptr. 654*) because it would further the commission's policy of requiring utilities to take no-cost or low-cost steps to mitigate electric and magnetic fields arising from new or upgraded projects. The point lacks merit. As we have seen, the commission adopted the foregoing policy in general terms in *Kramer-Victor, supra, 37 Cal.P.U.C.2d 413, 453*, and in specific terms in *Electric and Magnetic Fields, supra, 52 Cal.P.U.C.2d 1, 9*, and in so doing both decisions expressly excluded "existing facilities." Here the 1990 upgrade of SDG&E's powerlines took place *before* those decisions were rendered; with respect to those decisions, therefore, the powerlines in question were an "existing facility." [FN34]

[FN34] We need not consider at any length plaintiffs' argument that the cited commission decisions should not be applied "retroactively." As SDG&E correctly points out, if that argument were accepted the commission's distinction between new and "existing" facilities would be meaningless because there would be no "existing" facilities as of the date each decision was rendered.

[32] Apparently seeking to avoid this result, plaintiffs again change their theory and now contend that although the commission did not require SDG&E to mitigate electric and magnetic field levels when it upgraded its powerlines in 1990, a jury could nevertheless find it "negligent" for not doing so. The claim is untenable. There is no suggestion of this theory in the complaint. [FN35] But even if we assume *arguendo* that plaintiffs could amend their

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complaint to allege such "negligence," an award of damages on that theory would plainly undermine the commission's policy by holding the utility liable for not doing what the commission has repeatedly determined that it and all similarly situated utilities were not required to do.

FN35. It will be remembered that the only counts based on negligence alleged in the complaint are negligent infliction of emotional distress (count 3) and negligent product liability (count 5), both of which are causes of action for personal injury rather than property damage.

Finally, plaintiffs contend that to bar their superior court action under [section 1759](#) as construed in \*\*\*760\*\*705 *Waters, supra*, 12 Cal.3d 1, 114 Cal.Rptr. 753, 523 P.2d 1161, will deprive them of three constitutional rights. No such deprivations appear.

First, plaintiffs contend they will be denied their right to "just compensation" ([U.S. Const., 5th Amend.](#); [Cal. Const., Art. I, § 19](#)) because the commission has no power to award damages. But as explained above (pt. V.4., *ante*), plaintiffs do not and cannot allege a "taking or damaging" of their property that is a constitutional prerequisite to such compensation on an inverse condemnation theory.

[33][34] Second, plaintiffs assert that the commission failed to give them their due process rights of notice and opportunity to be heard "and to object to any \*951 application of the [commission's] orders to their property." The point is untenable. We assume that plaintiffs are referring to the commission "orders" that resulted from its 1991 order instituting investigation into powerline electric and magnetic fields (OII No. 91-01-012) and its 1993 interim decision on that subject (*Electric and Magnetic Fields, supra*, 52 Cal.P.U.C.2d 1). However, those proceedings were not quasi-judicial but quasi-legislative in character, designed not to adjudicate individual rights and obligations but to develop a legislative record and adopt a general policy or promulgate general regulations. "There is no constitutional requirement for any hearing in a quasi legislative proceeding." (*Franchise Tax Board v. Superior Court* (1950) 36 Cal.2d 538, 549, 225 P.2d 905.) A fortiori, there is no constitutional requirement that all private parties who might conceivably be affected by the outcome of such a proceeding be given notice and opportunity to be

heard.

[35][36] Third, plaintiffs complain they were denied their right to jury trial, apparently referring to their right to receive "just compensation, ascertained by a jury unless waived...." ([Cal. Const., Art. I, § 19](#).) But as we reaffirmed in *Hensler v. City of Glendale* (1994) 8 Cal.4th 1, 15, 32 Cal.Rptr.2d 244, 876 P.2d 1043, "the right to jury trial applies in inverse condemnation actions, but that right is limited to the question of damages." There is no right to jury trial on the issue whether there has been a taking in the first instance.

The judgment of the Court of Appeal is affirmed.

[GEORGE](#), C.J., and [KENNARD](#), [BAXTER](#), [WERDEGAR](#), [CHIN](#) and [BROWN](#), JJ., concur.

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