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File #: 167945

July 24, 2019

***VIA ELECTRONIC FILING***

Rosemary Chiavetta, Secretary  
Pennsylvania Public Utility Commission  
Commonwealth Keystone Building  
400 North Street, 2nd Floor North  
P.O. Box 3265  
Harrisburg, PA 17105-3265

**Re: Paula and Charles Hughes v. PPL Electric Utilities Corporation**  
**Docket No. C-2019-3007631**

Dear Secretary Chiavetta:

Enclosed for filing is the Motion of PPL Electric Utilities Corporation to Compel Responses to Discovery Propounded on Paula and Charles Hughes – Set I in the above-referenced proceeding. Copies will be provided as indicated on the Certificate of Service.

Respectfully submitted,



Devin Ryan

DTR/dmc  
Enclosure

cc: Honorable Elizabeth Barnes (*w/enclosure*)  
Certificate of Service

**CERTIFICATE OF SERVICE**

I hereby certify that a true and correct copy of the foregoing has been served upon the following persons, in the manner indicated, in accordance with the requirements of 52 Pa. Code § 1.54 (relating to service by a participant).

**VIA E-MAIL & FIRST CLASS MAIL**

Paula and Charles Hughes  
5471 Highview Drive  
Gap, PA 17527  
E-mail: pepchughes@yahoo.com

Date: July 24, 2019



Devin T. Ryan

**BEFORE THE  
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

Paula and Charles Hughes,	:	
	:	
Complainants,	:	
	:	
v.	:	Docket No. C-2019-3007631
	:	
PPL Electric Utilities Corporation,	:	
	:	
Respondent.	:	

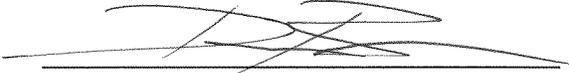
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**NOTICE TO PLEAD**

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YOU ARE HEREBY ADVISED THAT, PURSUANT TO 52 PA. CODE § 5.342(g)(1), YOU MAY FILE A REPLY TO THE ENCLOSED MOTION TO COMPEL WITHIN FIVE (5) DAYS AFTER THE DATE OF SERVICE. YOUR REPLY SHOULD BE FILED WITH THE SECRETARY OF THE PENNSYLVANIA PUBLIC UTILITY COMMISSION, P.O. BOX 3265, HARRISBURG, PA 17105-3265. A COPY OF YOUR REPLY SHOULD ALSO BE SERVED ON THE UNDERSIGNED COUNSEL.

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Date: July 24, 2019

Attorneys for PPL Electric Utilities Corporation

**BEFORE THE  
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

Paula and Charles Hughes,	:	
	:	
Complainants,	:	
	:	
v.	:	Docket No. C-2019-3007631
	:	
PPL Electric Utilities Corporation,	:	
	:	
Respondent.	:	

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**MOTION OF PPL ELECTRIC UTILITIES CORPORATION TO  
COMPEL RESPONSES TO  
DISCOVERY PROPOUNDED ON PAULA AND CHARLES HUGHES – SET I**

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TO ADMINISTRATIVE LAW JUDGE ELIZABETH H. BARNES:

Pursuant to 52 Pa. Code §§ 5.342(g) and 5.349(d), PPL Electric Utilities Corporation (“PPL Electric” or the “Company”) hereby files this Motion to Compel Responses to Discovery Propounded on Paula and Charles Hughes (“Complainants”) – Set I. In support of its Motion, PPL Electric states as follows:

**I. INTRODUCTION**

1. On June 21, 2019, PPL Electric served Interrogatories and Requests for Production of Documents on the Complainants – Set I (“PPL to Complainants Set I”) via email and certified mail. A true and correct copy of PPL to Complainants Set I is attached hereto and marked as **Appendix A**.

2. Pursuant to the Commission’s regulations, objections to PPL to Complainants Set I were due on or before July 1, 2019, and responses were due on or before July 11, 2019.

3. The Complainants never served any objections to PPL to Complainants Set I by July 1, 2019.

4. On July 10, 2019, the Complainants served their responses to PPL to Complainants Set I. However, the Complainants refused to provide or did not provide the information and materials requested in PPL to Complainants Set I, Questions 2, 3, and 4. A true and correct copy of the Complainants' responses PPL to Complainants Set I is attached hereto and marked as **Appendix B**.

5. On July 22, 2019, counsel for PPL Electric sent the Complainants a detailed email about the deficiencies with the discovery responses.

6. Since that time, PPL Electric's counsel and the Complainants have spoken and corresponded multiple times. Most recently, on July 24, 2019, the Complainants represented that they may be supplementing their responses to Questions 2, 3, and 4.

7. Given the upcoming deadline of August 5, 2019, for PPL Electric to serve its written testimony and exhibits, counsel for PPL Electric advised the Complainants that the Company would be proceeding with filing the instant Motion to Compel.

8. To date, the Complainants have never sent complete responses to PPL to Complainant Set I, Questions 2, 3, and 4.

## **II. MOTION TO COMPEL**

9. PPL Electric requests that Administrative Law Judge Elizabeth H. Barnes ("ALJ") compel responses to PPL to Complainants Set I, Questions 2, 3, and 4.

10. Under 52 Pa. Code § 5.321(c), a party is entitled to obtain discovery of any matter not privileged that is relevant to the pending proceeding, or any matter that is reasonably calculated to lead to the discovery of admissible evidence. Discovery is permitted regardless of

whether the information sought “relates to the claim or defense of the party seeking discovery or to the claim or defense of another party.” *Id.*

11. Objections to interrogatories and requests for production of documents must be served within 10 days of the date the discovery was served. 52 Pa. Code §§ 5.342(e), 5.349(d). Objecting parties remain under an obligation to provide timely answers to interrogatories or subparts of interrogatories to which they did not object. *Id.* § 5.342(f). Further, objections must be contained in a document separate from an answer. *Id.* §§ 5.342(c), 5.349(d).<sup>1</sup>

12. Answers to written interrogatories must “[a]nswer each interrogatory fully and completely unless an objection is made.” *Id.* § 5.342(a)(4). Answers must be served within 20 days after service of the interrogatories. *Id.* § 5.342(d).

13. Similarly, a party shall serve a response to a request for documents within 20 days after the service of the request. *Id.* § 5.349(d). The requesting party may move to compel a response to a request for documents with respect to a failure to respond to the request. *See id.*

14. As explained herein, the Complainants have failed to comply with the Commission’s discovery rules by failing to provide full and complete responses to PPL to Complainants Set I, Questions 2, 3, and 4 and produce the documents sought by these requests.

15. For the reasons stated in more detail below, the ALJ should direct the Complainants to answer fully PPL to Complainants Set I, Questions 2, 3, and 4. Moreover, should the ALJ grant PPL Electric’s Motion to Compel and the Complainants fail to timely provide full and complete responses to Complainants Set I, Questions 2, 3, and 4, PPL Electric intends to file a Motion for Sanctions pursuant to 52 Pa. Code §§ 5.371(a) and 5.372(a).

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<sup>1</sup> The Complainants did not serve objections to discovery. Therefore, Complainants’ failure to provide full and complete responses to discovery requests operate, in effect, as untimely objections.

**A. PPL TO COMPLAINANTS SET I, QUESTION 2**

16. PPL to Complainants-I-2 requests the following:

Please identify all wireless phones, cellphones, microwaves, wireless routers, wifi networks, tablets, computers, Bluetooth speakers, wireless security systems, smart speakers (*e.g.*, Amazon Echo), garage door openers, baby monitors, and walkie talkies that are contained in or used in the house.

17. The Complainants' response to PPL to Complainants-I-2 states:

PPL and other companies that are pushing/trying to force the smart meters like to claim that they are similar to cell phones and microwaves.

Cell phones are a CHOICE of the consumer. They can be turned on and off by the consumer. Microwaves are also a CHOICE of the consumer. They do not emit waves when not in use.

In our home we do not use wireless/cordless phones, baby monitors, walkie talkies, tablets, or blue tooth speakers. We do not have an Amazon Echo. The remote to the garage door opener was lost by the previous owner. Our garage is more of a storage unit and the doors are not opened often. The security system is RING and uses rechargeable batteries. The wifi network is Comcast.

We feel that the request 1-2, even though answered, is not applicable to our concerns with the smart meter. All items listed in the request are items of "choice" and can be monitored and controlled by the owner/consumer as is appropriate.

18. As explained above, Section 5.342(a)(4) requires a party to fully and completely answer an interrogatory. 52 Pa. Code § 5.342(a)(4). In addition, a party has a duty to amend its prior responses to discovery requests when the information contained therein is incomplete. *Id.* § 5.332(2).

19. The response served by the Complainants was non-responsive and incomplete because they refused to: (1) provide the make and model of the cell phones that they own<sup>2</sup>; and

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<sup>2</sup> In the response to Question 3, the Complainants admit that they own cell phones. See Paragraph 33, *infra*.

(2) failed to identify the devices used in their home and, instead, listed several items that are not in their home.

20. However, the deadline to serve any objections was July 1, 2019.

21. The Complainants' response was served on July 10, 2019.

22. Therefore, the Complainants waived their right to object to this interrogatory.

23. Moreover, the information requested about Complainants' exposure to other devices that emit radio frequency ("RF") fields is highly relevant to the issues raised in the case.

24. The Complainants claim that they have health concerns about RF fields from AMI meters. As the testimony of PPL Electric's expert witness on RF exposures – Dr. Christopher Davis – will demonstrate, however, the RF exposure received from use of a cell phone and other devices is far higher than from an AMI meter.

25. In fact, in the Formal Complaint, the Complainants provided a cell phone number. (Complaint ¶ 1.) Further, in the response to Question 3, the Complainants admit that they both have cell phones and have owned them "since March of 2018." See Paragraph 33, *infra*.

26. PPL Electric is entitled to show how the RF exposures from the Complainants' devices and appliances, including any cell phones, compare to those from the AMI meter.

27. Finally, PPL Electric did not ask about the devices that are not used or located inside the Complainants' home.

28. PPL Electric specifically requested that the Complainants "identify all wireless phones, cellphones, microwaves, wireless routers, wifi networks, tablets, computers, Bluetooth speakers, wireless security systems, smart speakers (*e.g.*, Amazon Echo), garage door openers, baby monitors, and walkie talkies that are contained in or used in the house." (emphasis added).

29. Notably, the Complainants fail to provide the make and model of their cell phones and microwave.

30. Additionally, although the Complainants state that their “security system is RING” and that the “wifi network is Comcast,” the Complainants do not provide the specific make and model of their security system and their wireless router, as requested in the interrogatory.

31. Therefore, any attempt by the Complainants to limit the scope of the interrogatory otherwise should be rejected.

32. For these reasons, the ALJ should direct the Complainant to answer fully PPL to Complainant Set I, Question 2.

**B. PPL TO COMPLAINANTS SET I, QUESTION 3**

33. PPL to Complainants-I-3 requests the following:

Please state whether you or any member of your household uses a cell phone. If so, please provide the make and model of each cell phone and, for each phone identified, provide 12 months of phone bills or other records of actual cell phone usage.

34. The Complainants’ response to PPL to Complainants-I-3 states:

We feel this request is not applicable, and violates privacy. My husband and I each use a cell phone purchased by our older son who is overseas. We have only had them since March of 2018. Asking for phone bills to determine usage is inappropriate to smart meter concerns.

35. As explained above, Section 5.342(a)(4) requires a party to fully and completely answer an interrogatory. 52 Pa. Code § 5.342(a)(4). In addition, a party has a duty to amend its prior responses to discovery requests when the information contained therein is incomplete. *Id.* § 5.332(2).

36. The response served by the Complainants was non-responsive and incomplete because they refused to answer the interrogatory on the grounds that it “is not applicable” and “violates privacy.”

37. However, the deadline to serve any objections was July 1, 2019.

38. The Complainants’ response was served on July 10, 2019.

39. Therefore, the Complainants waived their right to object to this interrogatory.

40. In addition, PPL Electric’s interrogatory does not and cannot violate the Complainants’ constitutional rights.

41. For there to be a deprivation of constitution rights, two elements must be met: (1) “the deprivation must be caused by the exercise of some right or privilege created by the state”; and (2) “the party charged with the deprivation must be a person who may fairly said to be a state actor.” *Commonwealth v. Corley*, 491 A.2d 829, 832 (Pa. 1985) (emphasis added) (quoting *Lugar v. Edmonson Oil Co.*, 457 U.S. 922, 937 (1982)); see *Commonwealth v. Demor*, 942 A.2d 898, 899-900 (Pa. Super. 2008) (applying principles outlined in *Corley* to Fourth Amendment analysis); *W. Pa. Socialist Workers 1982 Campaign v. Conn. General Life Ins. Co.*, 485 A.2d 1, 5-6 (Pa. Super. 1984) (“[T]he search and seizure provisions of Article 1, section 8, have been held inapplicable to the conduct of private parties.”) (citations omitted).

42. Here, PPL Electric is a utility corporation, not a state actor. In *Jackson v. Metropolitan Edison Co.*, the U.S. Supreme Court found that a fellow Pennsylvania electric utility, *i.e.*, Metropolitan Edison Company, was not a state actor, even though it arguably had “monopoly power” and “provided an essential public service required to be supplied on a reasonably continuous basis.” *Jackson v. Metropolitan Edison Co.*, 419 U.S. 345, 351-53

(1974). Therefore, in keeping with the U.S. Supreme Court's holding in *Jackson*, PPL Electric similarly is not a state actor.

43. Thus, PPL Electric cannot, by propounding this interrogatory and demanding a response, violate the Complainants' constitutional rights, including the Fourth Amendment of the U.S. Constitution.

44. Moreover, the information requested about Complainants' exposure to other devices that emit RF fields is highly relevant to the issues raised in the case.

45. The Complainants claim that they have health concerns about RF fields from AMI meters. As the testimony of PPL Electric's expert witness on RF exposures – Dr. Christopher Davis – will demonstrate, however, the RF exposure received from use of a cell phone and other devices is far higher than from an AMI meter.

46. In fact, in the Formal Complaint, the Complainants provided a cell phone number. (Complaint ¶ 1.) Further, in the response to Question 3, the Complainants admit that they both have cell phones and have owned them “since March of 2018.” *See* Paragraph 33, *supra*.

47. PPL Electric is entitled to: (1) show how the RF exposures from the cell phone use compare to those from the AMI meter; and (2) discover the billing records needed to quantify the amount of time that the Complainants choose to use their cell phones.

48. Based on the foregoing, the ALJ should direct the Complainant to answer fully PPL to Complainant Set I, Question 3.

**C. PPL TO COMPLAINANTS SET I, QUESTION 4**

49. PPL to Complainants-I-4 requests the following:

- (a) Please state every health condition you claim was caused by a smart meter or will be caused or worsened by the installation of PPL Electric's new smart meter.

- (b) Please provide the date that every health condition identified in subpart (a) began.
- (c) Please provide copies of all your medical records of every health condition identified in subpart (a).
- (d) For each alleged health condition that you do not have medical records for in response to subpart (c), please state whether such condition was diagnosed by a medical professional. If so, please provide the name, address, and telephone number of the medical professional and the date of the diagnosis.
- (e) For each of the alleged health conditions identified in subpart (a), please state whether you have been prescribed any therapy or treatment for the condition by a medical professional. If so, please identify the therapy or treatment, provide the name, address, and telephone number of the prescribing medical professional, and provide the date the therapy or treatment was prescribed.

50. The Complainants' response to the question states:

- (a) In our original complaint to the P.U.C., I did not claim my illnesses were caused by the smart meter. I stated how they would be worsened. Although, since they began while residing in a house that had a smart meter installed, it could be concluded that the meter was an instigator.

The health issues that are present are extreme anxiety, asthma for myself and for our younger son, Chad. Please see attached Doctor's notes for verification, Exhibits C3 pgs 2, 3, 4, & 5.

Installation of a known fire hazard such as the smart meter exacerbates the anxiety and also triggers more asthma. Additionally, any service discontinuation most definitely exacerbates both the anxiety and the asthma because the filtration of the A/C, and heat, water, sewer ect [sic] are life sustaining necessities. For any entity to withhold them for any reason, especially for one so politically unnecessary, with the knowledge of medical issues, is a direct intent to harm.

- (b) My son and I have had bronchial issues all our lives. My asthma was first suspected during a doctor visit on 3/22/13. It was confirmed 5/10/13 and is still present. The anxiety medicine was first prescribed in 12/15/16 and is still heavily present.
- (c) The verification of illnesses have been provided by the appropriate Doctors [sic] notes. Please see again Exhibit C3 pgs 2, 3, 4, & 5. Our medical records are private information protected under HIPA [sic].

- (d) The health conditions, medical professional information and beginning date(s) of diagnosis are answered in (a), (b) and (c).
- (e) Please see answers to subpart (b), (c) and (d). Additionally, the anxiety and asthma medications are Ativan, Symbicort, Ventolin, Prednisone and Advair Discus.

51. The response served by the Complainants to Question 4 was non-responsive and incomplete.

52. The Complainants refuse to provide all of their medical records related to the health conditions they claim will be caused by, contributed to, or exacerbated by the installation of the new AMI meter.

53. However, the deadline to serve any objections was July 1, 2019.

54. The Complainants' response was served on July 10, 2019.

55. Therefore, the Complainants waived their right to object to interrogatory.

56. Moreover, the Complainants allege that the new AMI meter will cause, contribute to, or exacerbate adverse health effects.

57. Therefore, the Complainants' medical records and conditions are highly relevant to this case.

58. Yet, the Complainants have refused to provide: (1) all of their medical records about the health conditions that they allege will be caused by, contributed to, or exacerbated by the new AMI meter; and (2) if there are no medical records for those health conditions, information about whether those conditions were diagnosed by a medical professional.

59. The Complainants should be directed to provide a full and complete response to this interrogatory.

60. Furthermore, Section 5.365(c)(4) of the Commission's regulations states:

Prior to the issuance of a protective order, a party may not refuse to provide information which the party reasonably believes to be

proprietary to a party who agrees to treat the information as if it were covered by a protective order until the presiding officer or the Commission issues the order or determines that issuance of the order would not be appropriate. The party claiming the privilege shall file a petition for protective order under subsection (a) within 14 days of the date the request for information was received.

52 Pa. Code § 5.365(c)(4).

61. Here, concurrent with the filing of the instant Motion, PPL Electric is filing a Motion for Protective Order, which would protect the Complainants' medical records and information from unauthorized public disclosure.

62. PPL Electric hereby agrees to treat such information as confidential as though it were governed by the terms of a protective order. Thus, under Section 5.365(c)(4), the Complainant cannot refuse to provide this information to the Company.

63. For these reasons, the ALJ should direct the Complainant to answer fully PPL to Complainant Set I, Question 4.

### **III. SANCTIONS**

64. Upon the motion of a party, the presiding officer may make an appropriate order for sanctions if a party fails to answer or otherwise respond to a discovery request or refuses to obey an order of the presiding officer respecting discovery. *See* 52 Pa. Code § 5.371(a).

65. In ruling upon a motion for sanctions, the presiding officer may, among other things, issue: (1) “[a]n order that the matters regarding which the questions were asked, the character or description of the thing or land, the contents of the paper, or other designated fact shall be taken to be established for the purposes of the action in accordance with the claim of the party obtaining the order”; (2) [a]n order refusing to allow the disobedient party to support or oppose designated claims or defenses, or prohibiting the party from introducing in evidence

designated documents, things or testimony”; and (3) “[a]n order striking out pleadings or parts thereof, staying further proceedings until the order is obeyed, or entering a judgment against the disobedient party or individual advising the disobedience.” *Id.* § 5.372(a)(1)-(3).

66. If the Complainants fail to provide full and complete responses to PPL Electric’s discovery requests by approximately 30 days before the September 19, 2019 hearing, PPL Electric will be deprived of a reasonable opportunity to prepare for the hearing and respond to the Complainant’s claims.

67. Accordingly, the Company respectfully requests that if the Complainants fail to produce the information and documents related to any of their claims by August 20, 2019, then the Complainants should be barred from litigating the corresponding claim(s).

68. For example, if the Complainants fail to produce all of their medical records to verify the existence of any claimed medical conditions or issues, then the Complainants would be precluded from litigating claims that the installation of PPL Electric’s AMI meter would cause, contribute to, or exacerbate adverse health effects.

69. Similarly, if the Complainants fail to produce information about their current exposure to RF fields as requested in Questions 2 and 3, including but not limited to bills showing the extent of their cell phone use, then the Complainants would be precluded from litigating claims that PPL Electric’s AMI meter would expose them to unreasonable levels of RF fields.

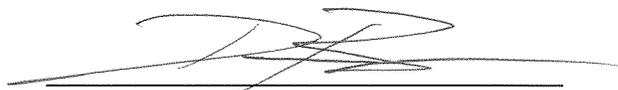
70. Finally, to the extent that this Motion is granted and the Complainants fail to answer fully PPL to Complainants Set I, or otherwise comply with the ALJ’s order, PPL Electric intends to file an appropriate motion pursuant to 52 Pa. Code §§ 5.371(a) and 5.372(a) to dismiss the Complaint with prejudice.

71. The Commission has regularly dismissed AMI meter complaints with prejudice due to the complainants' failure to answer discovery in compliance with the presiding administrative law judge's orders granting motions to compel. *See, e.g., Carol Sojda & Carol Lutzkanin v. Metropolitan Edison Co.*, Docket No. C-2017-2638350, pp. 7-8 (Jan. 9, 2019), *adopted*, Docket No. C-2017-2638350 (Order entered Mar. 28, 2019); *Kimberly Beckmann v. Metropolitan Edison Co.*, Docket No. C-2017-2613702, pp. 7-10 (Jan. 31, 2019), *adopted*, Docket No. C-2017-2613702 (Order entered Apr. 11, 2019); *Darlene Stanton v. Pennsylvania Electric Co.*, Docket No. C-2018-3001144, pp. 6-11 (May 10, 2019), *adopted*, Docket No. C-2018-3001144 (Order entered July 11, 2019); *Diana Cook v. West Penn Power Co.*, Docket No. C-2018-3003051, pp. 6-10 (May 1, 2019), *adopted*, Docket No. C-2018-3003051 (Order entered July 11, 2019).

**IV. CONCLUSION**

For the reasons set forth above, PPL Electric Utilities Corporation respectfully requests that Administrative Law Judge Elizabeth H. Barnes grant this Motion to Compel Responses to Discovery and direct Paula and Charles Hughes to answer fully PPL to Complainant Set I, as described above within three (3) days from the date of the order.

Respectfully submitted,



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Date: July 24, 2019

Attorneys for PPL Electric Utilities Corporation

# **APPENDIX A**

## **Interrogatories and Requests for Production of Documents Propounded by PPL Electric Utilities Corporation on Paula and Charles Hughes – Set I**



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File #: 167945

June 21, 2019

**VIA CERTIFIED MAIL (7017 1450 0002 3778 0994)**  
**VIA E-MAIL**

Paula and Charles Hughes  
5471 Highview Drive  
Gap, PA 17527

**Re: Paula and Charles Hughes v. PPL Electric Utilities Corporation**  
**Docket No. C-2019-3007631**

Dear Mr. & Mrs. Hughes:

Enclosed are the Interrogatories and Requests for Production of Documents Propounded by PPL Electric Utilities Corporation on Paula and Charles Hughes – Set I in the above-referenced proceeding. Copies will be provided as indicated on the Certificate of Service.

Please provide answers to the enclosed discovery within twenty (20) days of the date of service, pursuant to 52 Pa. Code § 5.342.

Sincerely,

A handwritten signature in black ink, appearing to read 'Devin Ryan', is written over a horizontal line.

Devin Ryan

DTR/jpf  
Enclosures

cc: Rosemary Chiavetta, Secretary (*Letter & Certificate of Service Only*)  
Certificate of Service

**CERTIFICATE OF SERVICE**

I hereby certify that a true and correct copy of the foregoing has been served upon the following persons, in the manner indicated, in accordance with the requirements of 52 Pa. Code § 1.54 (relating to service by a participant).

**VIA E-MAIL & CERTIFIED MAIL**

Paula and Charles Hughes  
5471 Highview Drive  
Gap, PA 17527  
E-mail: [pepchughes@yahoo.com](mailto:pepchughes@yahoo.com)

Date: June 21, 2019



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Devin T. Ryan



4. To “identify” a business entity means to state the full name of such business, the form of the business, and its location or address.

5. To “identify” a “document” means to provide all of the following information irrespective of whether the document is deemed privileged or subject to any claim of privilege:

- a. The title or other means of identification of each such document;
- b. The date of each such document;
- c. The author, preparer or signer of each such document; and
- d. A description of the subject matter of such document sufficient to permit an understanding of its contents and importance to the testimony or position being examined and the present or last known location of the document. The specific nature of the document should also be stated (*e.g.*, letter, business record, memorandum, computer print-out, etc.).

In lieu of “identifying” any document, it shall be deemed a sufficient compliance with these discovery requests to attach a copy of each such document to the answers hereto and reference said document in the particular interrogatory to which the document is responsive.

6. “Document” means the original and all drafts of all written and graphic matter, however produced or reproduced, of any kind or description, whether or not sent or received, and all copies thereof which are different in any way from the original (whether by interlineation, date-stamp, notarization, indication of copies sent or received, or otherwise), including without limitation, any paper, book, account, photograph, blueprint, drawing, sketch, schematic, agreement, contract, memorandum, press release, circular, advertising material, correspondence, letter, telegram, telex, object, report, opinion, investigation, record, transcript, hearing, meeting, study, notation, working paper, summary, intra-office communication, diary, chart, minutes, index sheet, computer software, computer-generated records or files, however stored, check, check stub, delivery ticket, bill of lading, invoice, record or recording or summary of any telephone or other conversation, or of any interview or of any conference, or

any other written, recorded, transcribed, punched, taped, filmed, or graphic matter of which the Responding Party has or has had possession, custody or control, or of which the Responding Party has knowledge.

7. “Communication” means any manner or form of information or message transmission, however produced or reproduced, whether as a document as herein defined, or orally or otherwise, which is made, distributed, or circulated between or among persons, or data storage or processing units.

8. “Date” means the exact day, month, and year, if ascertainable, or if not, the best approximation thereof.

9. Items referred to in the singular include those in the plural, and items referred to in the plural include those in the singular.

10. Items referred to in the masculine include those in the feminine, and items referred to in the feminine include those in the masculine.

11. The answers provided to these discovery requests should first restate the question asked and identify the person(s) supplying the information.

12. In answering these discovery requests, the Responding Party is requested to furnish all information that is available to the Responding Party, including information in the possession of the Responding Party’s attorneys, agents, consultants, or investigators, and not merely such information of the Responding Party’s own knowledge. If any of the discovery requests cannot be answered in full after exercising due diligence to secure the requested information, please so state and answer to the extent possible, specifying the Responding Party’s inability to answer the remainder, and stating whatever information the Responding

Party has concerning the unanswered portions. If the Responding Party's answer is qualified in any particular, please set forth the details of such qualification.

13. If the Responding Party objects to providing any document requested on any ground, identify such document by describing it as set forth in Instruction 5 and state the basis of the objection.

14. If the Responding Party objects to part of a discovery request and refuses to answer that part, state the Responding Party's objection and answer the remaining portion of that discovery request. If the Responding Party objects to the scope or time period of a discovery request and refuses to answer for that scope or time period, state the Responding Party's objection and answer the discovery request for the scope or time period that the Responding Party believes is appropriate.

15. If, in connection with a discovery request, the Responding Party contends that any information, otherwise subject to discovery, is covered by either the attorney-client privilege, the so-called "attorneys' work product doctrine," or any other privilege or doctrine, then specify the general subject matter of the information and the basis to support each such objection.

16. If any information is withheld on grounds of privilege or other protection from disclosure, provide the following information: (a) every person to whom such information has been communicated and from whom such information was learned; (b) the nature and subject matter of the information; and (c) the basis on which the privilege or other protection from disclosure is claimed.

17. As set forth in 52 Pa. Code § 5.342(g), these discovery requests are continuing, and the Responding Party is obliged to change, supplement, and correct all answers given to conform to new or changing information.

18. "Formal Complaint" means the Formal Complaint filed by the Complainant at Docket No. C-2019-3007631.

**INTERROGATORIES AND REQUESTS FOR  
PRODUCTION OF DOCUMENTS PROPOUNDED ON  
PAULA AND CHARLES HUGHES – SET I**

PPL to Complainant-I-1

Re: Formal Complaint.

- (a) Please explain in detail the reasons why you are challenging the Company's installation of the new smart meter.
- (b) Please describe in detail all health concerns, if any, raised by the Company's new smart meter, state the bases for such claims, and provide all documents relied upon by you in your response.
- (c) Please describe in detail all safety concerns, if any, raised by the Company's new smart meter, state the bases for such claims, and provide all documents relied upon by you in your response.
- (d) Please describe in detail all privacy concerns, if any, raised by the Company's new smart meter, state the bases for such claims, and provide all documents relied upon by you in your response.
- (e) Please describe in detail all reasons you believe the Company's new smart meter violates the law.

PPL to Complainant-I-2

Please identify all wireless phones, cellphones, microwaves, wireless routers, wifi networks, tablets, computers, Bluetooth speakers, wireless security systems, smart speakers (*e.g.*, Amazon Echo), garage door openers, baby monitors, and walkie talkies that are contained in or used in the house.

PPL to Complainant-I-3

Please state whether you or any member of your household uses a cell phone. If so, please provide the make and model of each cell phone and, for each phone identified, provide 12 months of phone bills or other records of actual cell phone usage.

PPL to Complainant-I-4

- (a) Please state every health condition you claim was caused by a smart meter or will be caused or worsened by the installation of PPL Electric's new smart meter.
- (b) Please provide the date that every health condition identified in subpart (a) began.

- (c) Please provide copies of all your medical records of every health condition identified in subpart (a).
- (d) For each alleged health condition that you do not have medical records for in response to subpart (c), please state whether such condition was diagnosed by a medical professional. If so, please provide the name, address, and telephone number of the medical professional and the date of the diagnosis.
- (e) For each of the alleged health conditions identified in subpart (a), please state whether you have been prescribed any therapy or treatment for the condition by a medical professional. If so, please identify the therapy or treatment, provide the name, address, and telephone number of the prescribing medical professional, and provide the date the therapy or treatment was prescribed.

PPL to Complainant-I-5

Please identify each person you plan to call as a fact witness in this proceeding. For each person, please:

- (a) Provide the person's name, home and business address, background, and qualifications;
- (b) Explain in detail the subject matter(s) on which the witness is expected to testify; and
- (c) Provide the source(s) of information relied upon or referenced by the witness.

PPL to Complainant-I-6

Please identify each person you plan to call as an expert witness in this proceeding. For each person, please:

- (a) Provide the person's name, home and business address, background, and qualifications;
- (b) Explain in detail the subject matter(s) on which the witness is expected to testify;
- (c) Provide the source(s) of information relied upon or referenced by the witness; and
- (d) Provide a copy of the expert witness's current curriculum vitae.

PPL to Complainant-I-7

Please provide copies of all exhibits you intend to present or utilize at the evidentiary hearing in this proceeding. For each exhibit to be used as part of your direct case, please identify the witness who will be sponsoring the exhibit.

# **APPENDIX B**

## **Paula and Charles Hughes's Answers to PPL Electric Utilities Corporation's Interrogatories and Requests for Production of Documents – Set I**

JUL 12 2019

Post and Schell

17 North Second ST.

12<sup>th</sup> Floor

Harrisburg, Pa. 17101

Charles and Paula Hughes

5471 Highview Drive

Gap, Pa. 17527

July 10, 2019

Dear Mr. Ryan,

Enclosed, please find our answers to the Interrogatories and Requests for Production of Documents Propounded by PPL Electric Utilities Corporation.

We have answered the questions and provided documents to the best of our ability.

Additionally, we have included questions and requests of our own.

Sincerely,

Charles and Paula Hughes

RE: Formal Complaint

1-1

Response(s) – From Paula Hughes

Request (a) Please explain in detail the reasons why you are challenging the company's installation of the new smart meter

Response (a) 1. The smart meters are unsafe in both concerns of their 24/7 constant pulsing of radiation and their well known record of being a fire hazard.

2. Smart meters violate privacy rights by recording time and types of usage within the home and reporting data to another party(s).

3. We have an extensive deck and stair system on our home. It is extremely unreasonable to expect one to modify their existing home structure to accommodate a highly incendiary device. We are not going to modify or deconstruct our home. The deck was built along with the home as part of the original construction in 1992. Please see Exhibit E2, providing photos of the deck with a copy of the approved permit. For 27 years, PPL has been able to easily access the meter for reading the monthly usage, bill accordingly, and have been paid successfully. [Exhibit E2 pgs 1, 2 and 3, and E3]

Request (b) Please describe in detail all health concerns, if any, raised by the Company's new smart meter, state the basis for such claims, and provide all documents relied upon you in your response.

Response (b) The smart meters are a radiation emitting device that pulses continuously, sending a constant flow of dirty electric invading our living space. This causes health problems and exacerbates others. We as a family have experienced many headaches, nosebleeds, ringing in the ears, anxiety and sleep issues when we lived in our former house that had a smart meter. It was a big contributing factor to why we moved to our current home. Please see Exhibit F. Smart meters are also a health risk because of their lengthy reputation of causing fires. I will elaborate more on that in the next response.

Request (c) Please describe in detail all safety concerns, if any, raised by the Company's new smart meter, state the basis of such claims and provide all documents relied upon by you in your response.

Response (c) The smart meters are unsafe in that they are a health risk as described in response (b), as well as a known fire hazard. Please refer to Exhibit E1 and again F. Smart meters are also unsafe because they record whether or not we are in residence based on usage signatures. Since this information is stored by additional parties, none of which is exempt from hacking, our personal information is not secure, neither are our persons or belongings.

Request (d) Please describe in detail all privacy concerns, if any raised by the Company's new smart meter, state the basis for such claims and provide all documents relied upon you in your response.

Response (d) The smart meter is a unit that records usage and activity at all hours within our home. Based on certain electronic signatures, the information recorded and stored depicts detailed activities as well as whether or not we are home. Our information is stored with other parties which allows not only our personal information to be at risk, but, also our lives and property. As mentioned in response (c). Please see Exhibits D1-A and E1.

Request (e) Please describe in detail all reasons you believe the Company's new smart meter violates the law.

Response (e) 1. The smart meter violates the law by violating our rights of privacy under the 4<sup>th</sup> Amendment of the Constitution. Referring to Exhibit D1-A pg1, "The Fourth Amendment provides that "the right of the people be secure in their persons, houses, papers and effects against unreasonable searches and seizures, shall not be violated". At the very core of the Fourth Amendment "stands the right of a man to retreat into his own home and there be free from unreasonable governmental intrusion". We would NOT be secure in our persons, houses, papers and effects with the smart meter due to its reputation for fire hazard unsafety and its nature of recording when, where and what we are doing. This is unreasonable governmental intrusion. The smart meter is not Federally mandated. Please see Exhibit I.

2. It is our opinion that smart meters are a form of attack on the health, safety and well-being of all human beings. Additionally, the tactics used to force these devices sadly border too closely to many definitions of terrorism.

The following will be responses in RE: to Formal Complaint 1-1 from Charles Hughes. The Request questions will not be re-typed, however, the responses will be appropriately labeled by their accompanying letter.

1-1 (a) There are many reasons. First of which is a violation of my 4<sup>th</sup> Amendment to the Constitution. My home and my person are not secure from unreasonable search and seizures. It is no ones business of what I do in my home and when I do it. Second: in our opinion the smart meter adds an unnecessary risk of fire to our home. Third: There is more and more evidence proving bad health effects. Fourth: Our deck (fire escape) has been the same since 1992 when the house was erected with an approved building permit.

(c) Safety concerns: To the ability to safeguard the data collected. It is impossible to give a 100% guaranty that no one can hack into PPL'S data base and gain access to the activity in my house. That puts my house and family at risk for burglary or attack.

1-1 (d) It was proven in court recently that the smart meter does constitute a search. It is also proven that the smart meter can monitor activity in a house, i.e.; whether someone is home or not. It can also monitor what appliances are being used and when. So, if the meter knows when I turn on a light and an exhaust fan and the water, it can basically tell by duration, whether I am in the shower, sitting on the toilet or making a short visit to the bathroom. None of which is of any concern to any entity other than myself. To me, this is an unreasonable search and seizure of information.

The Fourth Amendment in its writing does not mention to whom the person has a right to security from, just that "The right of the people to be secure in their persons, houses, papers and effects, against unreasonable searches and seizures, shall not be violated, and no warrants shall issue, but upon probable cause, supported by oath or affirmation, and particularly describing the place to be searched, and the persons or things to be seized".

Again, nowhere in this Amendment does it say the government can't search and seize. It does not say what party cannot do search and seizure, but it does mention who is protected from it. So, I say, that it does not matter what entity wants to do the search and seizure, my rights are protected.

At the time of the ratification of the Fourth Amendment, technology was not an issue. However, in not addressing technology, it does address human nature. If we allow the government to make programs that sound good for the greater good, yet they trample all over our rights in the meantime, we regress to how the Fourth Amendment came into being in the first place, with the British and their "Writs of Assistance".

Society today seems to feel okay with their behavior if they can justify a violation. However, a violation is still a violation.

Justice Scalia delivered the opinion of the Court for *Kyllo v United States* No. 99-8508, June 11, 2001. In Section Three, second paragraph, fourth sentence, I quote, "While it may be difficult to refine *Katz* when the search of areas such as telephone booths, automobiles, or even the curtilage and uncovered portions of residences are at issue, in the case of the search of the interior of homes – the prototypical and hence most commonly litigated area of privacy – there is a ready criterion, with the roots deep in common law, of the minimal expectation of privacy that exists, and that is acknowledged to be reasonable. To withdraw protection of this minimum expectation would be to permit police technology to erode the privacy guaranteed by the Fourth Amendment. We think that by obtaining by sense – enhancing technology any information regarding the interior of the home that could otherwise have been obtained without physical "intrusion into a constitutionally protected area" *Silverman*, 365 U.S. at 512, constitutes a search – at least where (as here) the technology in question is not in general public use. This assures preservation of that degree of privacy against government that existed when the Fourth Amendment was adopted".

When making the comment "at least where the technology in question IS NOT in general public use", what is the description of the other end of the example? Of, "at most" where the technology in question IS in general public use? A lot has changed in technology since 2001, and Justice Scalia addresses even that in the same Section Three, paragraph three, sentence six, "While the technology used in the present case was relatively crude, the rule we adopt must take account of more sophisticated systems that are already in use or development."

The intrusion from the technology is the problem. Please see exhibits D1-B, D1-C, D-2 & D-3.

1-2

Response(s) – From Paula Hughes

Request – Please identify all wireless phones, cell phones, microwaves, wireless routers, wifi networks, tablets, computers, Bluetooth speakers, wireless security systems, smart speakers (eg Amazon Echo), garage door opener, baby monitors, and walkie talkies contained or used in the home.

Response – PPL and other companies that are pushing / trying to force the smart meters like to claim that they are similar to cell phones and microwaves.

Cell phones are a CHOICE of the consumer. They can be turned on and off by the consumer. Microwaves are also a CHOICE of the consumer. They do not emit waves when not in use.

In our home we do not use wireless/cordless phones, baby monitors, walkie talkies, tablets, or blue tooth speakers. We do not have an Amazon Echo. The remote to the garage door opener was lost by the previous owner. Our garage is more of a storage unit and the doors are not opened often. The security system is RING and uses rechargeable batteries. The wifi network is Comcast.

We feel that the request 1-2, even though answered, is not applicable to our concerns with the smart meter. All items listed in the request are items of “choice” and can be monitored and controlled by the owner/consumer as is appropriate.

1-3

Request - Please state whether you or any member of your household uses a cell phone. If so, please provide the make and model of each cell phone and for each cell phone identified, provide 12 months of phone bills or other records of actual cell phone usage.

Response – We feel this request is not applicable, and violates privacy. My husband and I each use a cell phone purchased by our older son who is overseas. We have only had them since March of 2018. Asking for phone bills to determine usage is inappropriate to smart meter concerns.

1-4

Request (a) Please state every health condition you claim was caused by a smart meter or will be caused or worsened by the installation of PPL Electric 's new meter.

Response – (a) In our original complaint to the P.U.C., I did not claim my illnesses were caused by the smart meter. I stated how they would be worsened. Although, since they began while residing in a house that had a smart meter installed, it could be concluded that the meter was an instigator.

The health issues that are present are extreme anxiety, asthma for myself and for our younger son, Chad. Please see attached Doctor's notes for verification, Exhibits C3 pgs 2,3,4 & 5.

Installation of a known fire hazard such as the smart meter exacerbates the anxiety and also triggers more asthma. Additionally, any service discontinuation most definitely exacerbates both the anxiety and the asthma because the filtration of the A/C, and heat, water, sewer ect are life sustaining necessities. For an entity to withhold them for any reason, especially for one so politically unnecessary, with the knowledge of medical issues, is a direct intent to harm.

Request (b) Please provide the date that every health condition identified in subpart (a) began.

Response – (b) My son and I have had bronchial issues all our lives. My asthma was first suspected during a doctor visit on 3/22/13. It was confirmed 5/10/13 and is still present. The anxiety medicine was first prescribed in 12/15/16 and is still heavily present.

Request (c) Please provide copies of all your medical records for every health condition identified in subpart (a).

Response – (c) The verification of illnesses have been provided by the appropriate Doctors notes. Please see again Exhibit C3 pgs 2,3,4 & 5. Our medical records are private information protected under HIPA.

Request (d) For each alleged health condition that you do not have medical records for in response to subpart (c), please state whether such condition was diagnosed by a medical professional. If so, please provide the name, address and telephone number of the medical professional and the date of the diagnosis.

Response – (d) The health conditions, medical professional information and beginning date(s) of diagnosis are answered in (a), (b) and (c).

Request (e) For each alleged health condition identified in subpart (a) please state whether you have been prescribed any therapy or treatment for the condition by a medical professional. If so, please identify the therapy or treatment, provide the name, address and telephone number of the prescribing medical professional and provide the date and therapy or treatment was prescribed.

Response – (e) Please see answers to subpart (b), (c) and (d). Additionally, the anxiety and asthma medications are Ativan, Symbicort, Ventolin, Prednisone and Advair Discus.

1-5

Request – Please identify each person to call as a fact witness in this proceeding. For each person, please, (a) Provide the person's name, home and business address, background qualifications.

(b) Explain in detail the subject matter(s) on which witness is to testify; and

(c) Provide the source(s) of information relied upon or referenced by the witness.

Response – The persons called are ourselves.

(a). Charles E. Hughes and Paula J.B. Hughes. The address is 5471 Highview Drive Gap, Pa 17527

(b) We are the homeowners.

(c) We will be using the information we have submitted here and to the P.U.C.

If we obtain any additional information we will supply it to both the P.U.C. and to you.

1-6

Request – Please identify each person you plan to call as an expert witness in this proceeding

Response – We are not calling an expert witness.

1-7

Request – Please provide copies of all exhibits you intend to present to utilize at the evidentiary hearing in this proceeding. For each exhibit to be used as part of your direct case, please identify the witnesses who will be sponsoring the exhibit.

Response – We feel as though we have already answered this request to the best of our ability within the various responses above.

DOCID #  
C-2019-3007631  
Exhibit C3  
Pg 2

 Penn Medicine  
Lancaster General Health Physicians

Letter concerning:  
Paula J Hughes  
5471 Highview Drive  
GAP, PA 17527

1/28/2019

To Whom It May Concern:

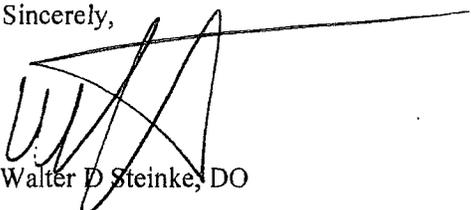
It has come to my attention that the electric company is demanding Mrs Hughes convert to a smart meter in her home for monitoring of her electricity use.

Mrs Hughes does not want this type of meter for reasons of privacy.

This conflict is causing an exacerbation of her health problems. She is suffering from chronic anxiety and severe asthma. She uses a nebulizer which requires electricity to treat her asthma. I am very concerned the harsh treatment she is receiving from the electric company is worsening her medical conditions.

I ask that a mutually acceptable resolution be reached.

Sincerely,



Walter D Steinke, DO

Docket #  
C-2019-3007631  
Exhibit C3  
pg 3

 Penn Medicine  
Lancaster General Health Physicians

Paula J Hughes  
5471 Highview Drive  
GAP, PA 17527

12/3/2018

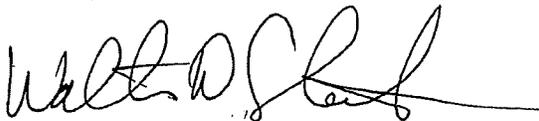
To Whom It May Concern:

I am the primary care physician for Ms. Paula Hughes. She has made me aware of a conflict she is having with her electric power provider. I am told the company is forcing her to install a "smart meter". She has much concern about this meter.

My concern is her health and well being. Let it be known that she has an anxiety disorder that is usually under control but this conflict has exacerbated her condition. She is struggling mightily with anxiety at the present.

I do not know how to resolve this but putting more and more pressure on my patient whom is struggling with anxiety is not the correct approach. Please find a better way to resolve

Sincerely,



Walter D Steinke, DO

 Penn Medicine  
Lancaster General Health Physicians

Docket #  
C-2019-3007631  
Exhibit C3  
pg 4

Paula J Hughes  
5471 Highview Drive  
GAP, PA 17527

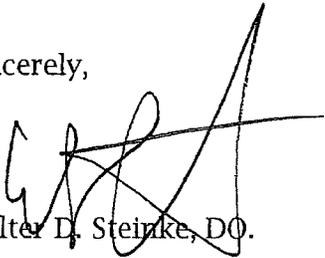
8/10/2018

RE: Paula J Hughes  
DOB: 2/8/1966

To Whom it May Concern:

This is to certify that Paula J Hughes is under our care for the condition of Asthma and is currently being treated.

Sincerely,

  
Walter D. Steinke, DO.

 Penn Medicine  
Lancaster General Health Physicians

Docket #  
C-2019-3007631  
Exhibit C3  
pg 5

Chad E Hughes  
5471 Highview Drive  
GAP, PA 17527

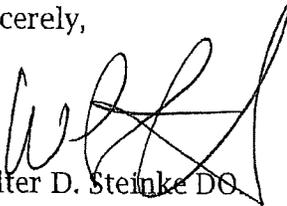
8/10/2018

RE: Chad E Hughes  
DOB: 12/28/2000

To Whom it May Concern:

This is to certify that Chad E Hughes is currently under our care for the condition of Asthma and is currently being treated.

Sincerely,



Walter D. Steinke DO

This case presents the question whether the use of a smart meter on my home constitutes a "reasonable search" within the meaning of the Fourth Amendment. I contest that any surveillance of my home that can breach of the exterior walls of my home no matter what form of technology is used is an unreasonable form of search without probable cause and a court ordered warrant.

As stated in the opening of section (Roman numeral II) of the Opinion of the court, Of the Supreme Court Of The United States, pertaining *Kyllo v. United States*, 533 U.S., No. 99-8508, Justice Scalia said:

II

The Fourth Amendment provides that "[t]he right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated." "At the very core" of the Fourth Amendment "stands the right of a man to retreat into his own home and there be free from unreasonable governmental intrusion." *Silverman v. United States*, 365 U. S. 505, 511 (1961). With few exceptions, the question whether a warrantless search of a home is reasonable and hence constitutional must be answered no. See *Illinois v. Rodriguez*, 497 U. S. 177, 181 (1990); *Payton v. New York*, 445 U. S. 573, 586 (1980).

Note that the Fourth Amendment does not mention the word "Government" in describing "the right of the people being secure...., against unreasonable searches and seizures". This leaves to believe that the writers and ratifiers of the Bill of Rights had more in mind than just the "Government" invading our privacy like the British did with their " writs of assistance", but to include anyone conducting an unreasonable search and seizure.

In the case *Naperville Smart Meter Awareness v. City of Naperville*, No. 16-3766, United States Court Of Appeals For The Seventh Circuit, starts off the same way and in fact quotes the case of *Kyllo v. United States* in saying:

II. ANALYSIS The Fourth Amendment of the U.S. Constitution protects “[t]he right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures.” Similarly, Article I, § 6 of the Illinois Constitution affords people “the right to be secure in their persons, houses, papers and other possessions against unreasonable searches, seizures, invasions of privacy or interceptions of communications by eavesdropping devices or other means.” We can resolve both the state and federal constitutional claims by answering the following two questions.<sup>3</sup> First, has the organization plausibly alleged that the data collection is a search? Second, is the search unreasonable? For the reasons that follow, we find that the data collection constitutes a search under both the Fourth Amendment and the Illinois Constitution. This search, however, is reasonable. 4 A. The collection of smart-meter data at fifteen-minute intervals constitutes a search. “At the [Fourth Amendment’s] very core stands the right of a man to retreat into his own home and there be free from unreasonable government intrusion.” *Silverman v. United States*, 365 U.S. 505, 511 (1961). This protection, though previously tied to common-law trespass, now encompasses searches of the home made possible by ever-more sophisticated technology. *Kyllo v. United States*, 533 U.S. 27, 31–32 (2001). Any other rule would “erode the privacy guaranteed by the Fourth Amendment.” *Id.* at 34. “Where ... the Government uses a device that is not in general public use, to explore details of the home that would previously have been unknowable without physical intrusion, the surveillance is a ‘search.’” *Id.* at 40. This protection remains in force even when the enhancements do not allow the government to literally peer into the home. In *Kyllo*, for instance, the intrusion by way of thermal imaging was relatively crude—it showed that “the roof over the garage and a side wall of [a] home were relatively hot compared to the rest of the home and substantially warmer than neighboring homes in the triplex.” *Id.* at 30. The device

“did not show any people or activity within the walls of the structure” nor could it “penetrate walls or windows to reveal conversations or human activities.” Id. (quoting Supp.App. to Pet. for Cert. 39–40). Nevertheless, the Supreme Court held that law enforcement had searched the home when they collected thermal images. Id. at 40. The technology-assisted data collection that Smart Meter Awareness alleges here is at least as rich as that found to be a search in *Kyllo*. Indeed, the group alleges that energy-consumption data collected at fifteen-minute intervals reveals when people are home, when people are away, when people sleep and eat, what types of appliances are in the home, and when those appliances are used.<sup>5</sup> (R. 102-1 at 14.) By contrast, *Kyllo* merely revealed that something in the home was emitting a large amount of energy (in the form of heat). It’s true that observers of smart-meter data must make some inferences to conclude, for instance, that an occupant is showering, or eating, or sleeping. But *Kyllo* rejected the “extraordinary assertion that anything learned through ‘an inference’ cannot be a search.” Id. at 36 (quoting id. at 44 (Stevens, J., dissenting)). What’s more, the data collected by Naperville can be used to draw the exact inference that troubled the Court in *Kyllo*. There, law enforcement “concluded that [a home’s occupant] was using halide lights to grow marijuana in his house” based on an excessive amount of energy coming from the home. Id. at 30. Here too, law enforcement could conclude that an occupant was using grow lights from incredibly high meter readings, particularly if the power was drawn at odd hours. In fact, the data collected by Naperville could prove even more intrusive. By analyzing the energy consumption of a home over time in concert with appliance load profiles for grow lights, Naperville law enforcement could “conclude” that a resident was using the lights with more confidence than those using thermal imaging could ever hope for. With little effort, they could conduct this analysis for many homes over many years. Under *Kyllo*, however, even an extremely invasive technology can evade the warrant requirement if it is “in general public use.” Id. at 40. While more and more energy providers are encouraging (or in this case forcing) their customers to permit the installation of smart meters, the meters are not yet so pervasive that they fall into this class. To

be sure, the exact contours of this qualifier are unclear—since *Kyllo*, the Supreme Court has offered little guidance. But *Kyllo* itself suggests that the use of technology is not a search when the technology is both widely available and routinely used by the general public. See *id.* at 39 n.6 (quoting *California v. Ciraolo*, 476 U.S. 207, 215 (1986) (“In an age where private and commercial flight in the public airways is routine, it is unreasonable for respondent to expect that his marijuana plants were constitutionally protected from being observed with the naked eye from an altitude of 1,000 feet.”)). Smart meters, by contrast, have been adopted only by a portion of a highly specialized industry. The ever-accelerating pace of technological development carries serious privacy implications. Smart meters are no exception. Their data, even when collected at fifteen-minute intervals, reveals details about the home that would be otherwise unavailable to government officials with a physical search. Naperville therefore “searches” its residents’ homes when it collects this data. Before continuing, we address one wrinkle to the search analysis. Naperville argues that the third-party doctrine renders the Fourth Amendment’s protections irrelevant here. Under that doctrine, a person surrenders her expectation of privacy in information by voluntarily sharing it with a third party. See *Carpenter v. United States*, 138 S. Ct. 2206, 2216 (2018) (citing *Smith v. Maryland*, 442 U.S. 735, 743–744 (1979) and *United States v. Miller*, 425 U.S. 435, 443 (1976)). Thus, when a government authority gathers the information from the third party, it does not run afoul of the Fourth Amendment. *Id.* Referencing this doctrine, Naperville argues that its citizens sacrifice their expectation of privacy in smart-meter data by entering into a “voluntary relationship” to purchase electricity from the city. This argument is unpersuasive. As a threshold matter, Smart Meter Awareness challenges the collection of the data by Naperville’s public utility. There is no third party involved in the exchange.<sup>6</sup> Moreover, were we to assume that Naperville’s public utility was a third party, the doctrine would still provide Naperville no refuge. The third-party doctrine rests on “the notion that an individual has a reduced expectation of privacy in information knowingly shared with another.” *Carpenter*, 138 S. Ct. at 2219. But in this context, a choice to share

data imposed by fiat is no choice at all. If a person does not—in any meaningful sense—“voluntarily ‘assume the risk’ of turning over a comprehensive dossier of physical movements” by choosing to use a cell phone, *Carpenter*, 138 S. Ct. at 2220 (quoting *Smith*, 442 U.S. at 745), it also goes that a home occupant does not assume the risk of near constant monitoring by choosing to have electricity in her home. We therefore doubt that *Smith* and *Miller* extend this far.

The case of *Kyllo v. United States* is quite interesting. The United States said that the information gathered by the Agema Thermovision 210 thermal imager only recorded information that was on the surface of the house being searched. Yet the heat that was coming from the house in question was not coming from the surface but from inside the house. Either way the conclusion was that, according to *Kyllo v. U.S.* in the Opinion of the Court, Page six, paragraph 2, sentence 4,

While it may be difficult to refine *Katz* when the search of areas such as telephone booths, automobiles, or even the curtilage and uncovered portions of residences are at issue, in the case of the search of the interior of homes--the prototypical and hence most commonly litigated area of protected privacy--there is a ready criterion, with roots deep in the common law, of the minimal expectation of privacy that *exists*, and that is acknowledged to be *reasonable*. To withdraw protection of this minimum expectation would be to permit police technology to erode the privacy guaranteed by the Fourth Amendment. We think that obtaining by sense-enhancing technology any information regarding the interior of the home that could not otherwise have been obtained without physical "intrusion

into a constitutionally protected area," *Silverman*, 365 U. S., at 512, constitutes a search--at least where (as here) the technology in question is not in general public use. This assures preservation of that degree of privacy against government that existed when the Fourth Amendment was adopted. On the basis of this criterion, the information obtained by the thermal imager in this case was the product of a search.

I agree with the above statement except for the part "at least where (as here) the technology in question is not in general public use." What does it matter if the technology is in general public use or not? Today you can get an app on your phone to find a wooden stud in your wall and display that information as a picture or simulation of the stud or electric wire on the screen of your phone. If we use the criterion of "not in general public use" then anybody could use any technology off their phone and perform a reasonable search them selves of any property they wanted to without a warrant. In this case the Fourth Amendment would be useless against the general public to conduct a search of someone's home. Hence the Fourth Amendment not only protects us from police and government intrusion but that of businesses and private persons as well.

In the Naperville case the judge came to the conclusion that: Thus, if Naperville's search is reasonable, it may collect the data without a warrant. Since these searches are not performed as part of a criminal

investigation, see *Riley v. California*, 134 S. Ct. 2473, 2482 (2014), we can turn immediately to an assessment of whether they are reasonable, “by balancing its intrusion on the individual’s Fourth Amendment interests against its promotion of legitimate government interests.” *Hiibel v. Sixth Judicial Dist. Court*, 542 U.S. 177, 187–88 (2004) (quoting *Delaware v. Prouse*, 440 U.S. 648, 654 (1979)). Although in this case, our balancing begins with the presumption that this warrantless search is unreasonable, see *Kyllo*, 533 U.S. at 40, Naperville’s smart-meter ordinance overcomes this presumption. Residents certainly have a privacy interest in their energyconsumption data. But its collection—even if routine and frequent—is far less invasive than the prototypical Fourth Amendment search of a home. Critically, Naperville conducts the search with no prosecutorial intent. Employees of the city’s public utility—not law enforcement—collect and review the data. In *Camara v. Municipal Court*, the Supreme Court noted that this consideration lessens an individual’s privacy interest. 387 U.S. 523, 530 (1967). And though the Court held that a warrantless, administrative, home inspection violated the Fourth Amendment in that case, it did so based on concerns largely absent from this one. *Id.* at 530–31. Indeed, unlike the search in *Camara*, Naperville’s data collection reveals details No. 16-3766 11 about the home without physical entry. See *id.* at 531 (highlighting the “serious threat to personal and family security” posed by physical entry). Moreover, the risk of corollary prosecution that troubled the court in *Camara* is minimal here. See *id.* (noting that “most regulatory laws, fire, health, and housing codes are enforced by criminal process.”). To this court’s knowledge, using too much electricity is not yet a crime in Naperville. And Naperville’s amended “Smart Grid Customer Bill of Rights” clarifies that the city’s public utility will not provide customer data to third parties, including law enforcement, without a warrant or court order. Thus, the privacy interest at stake here is yet more limited than that at issue in *Camara*. Of course, even a lessened privacy interest must be weighed against the government’s interest in the data collection. That interest is substantial in this case. Indeed, the modernization of the electrical grid is a priority for both Naperville, (R. 120-1, Smart Meter Agreement between Naperville and the

Department of Energy), and the Federal Government, see Smart Grid, Federal Energy Regulatory Commission (Apr. 21, 2016), <https://www.ferc.gov/industries/electric/indusact/smart-grid.asp>. Smart meters play a crucial role in this transition. See *id.* For instance, they allow utilities to restore service more quickly when power goes out precisely because they provide energy-consumption data at regular intervals. See, e.g., Noelia Uribe-Pérez et al., State of the Art and Trends Review of Smart Metering in Electricity Grids, 6 Applied Sci., no. 3, 2016, at 68, 82. The meters also permit utilities to offer time-based pricing, an innovation which reduces strain on the grid by encouraging consumers to shift usage away from peak demand periods. *Id.* In addition, smart meters reduce utilities' labor costs because home visits are needed less frequently. *Id.* With these benefits stacked together, the government's interest in smart meters is significant. Smart meters allow utilities to reduce costs, provide cheaper power to consumers, encourage energy efficiency, and increase grid stability. We hold that these interests render the city's search reasonable, where the search is unrelated to law enforcement, is minimally invasive, and presents little risk of corollary criminal consequences. We caution, however, that our holding depends on the particular circumstances of this case. Were a city to collect the data at shorter intervals, our conclusion could change. Likewise, our conclusion might change if the data was more easily accessible to law enforcement or other city officials outside the utility. In a sense the court just keeps making excuses for the government to invade the privacy of the home to justify its Conclusion. There are other ways to collect the data that is needed to meet basic upgrades to the system. For power outages, a monitor at the end of the block can be just as effective. A ping of my analogue meter at the beginning of peak and non peak times could assist in the new billing system. I am sure that other options could be available if someone put their mind to it. But this one violates my privacy and my Fourth Amendment Rights given to me by

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God and upheld by the Bill of Rights and the Constitution of the United States of America. pg 9

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pg 1

# Naperville Smart Meter Awareness v. City of Naperville, No. 16-3766 (7th Cir. 2018)

## Justia Opinion Summary

Through a Department of Energy grant, Naperville received \$11 million to update its grid and began replacing its residential, analog energy meters with digital “smart meters.” Traditional energy meters typically collect monthly energy consumption in a single lump figure once per month. Smart meters often collect thousands of readings every month, showing the amount of electricity being used inside a home and when it is used. This data reveals information about the happenings inside a home because individual appliances have distinct energy-consumption patterns; researchers can predict the appliances that are present in a home and when they are used. While some cities allow residents to decide whether to adopt smart meters, Naperville’s residents cannot opt out of the smart-meter program. Naperville stores the data for up to three years. Concerned citizens sued, alleging that Naperville’s smart meters reveal “intimate personal details and that collection of this data constitutes an unreasonable search under the Fourth Amendment as an unreasonable search and invasion of privacy under the Illinois Constitution. The Seventh Circuit affirmed dismissal. The data collection constitutes a search but, given the significant government interests in the program and the diminished privacy interests at stake, the search is reasonable.

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In the  
**United States Court of Appeals**  
**For the Seventh Circuit**

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No. 16-3766

NAPERVILLE SMART METER AWARENESS,

*Plaintiff-Appellant,*

*v.*

CITY OF NAPERVILLE,

*Defendant-Appellee.*

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Appeal from the United States District Court for the  
Northern District of Illinois, Eastern Division.  
No. 11 C 9299 — **John Z. Lee, Judge.**

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ARGUED MARCH 27, 2018 — DECIDED AUGUST 16, 2018

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Before WOOD, *Chief Judge*, and BAUER and KANNE, *Circuit Judges*.

KANNE, *Circuit Judge*. The City of Naperville owns and operates a public utility that provides electricity to the city's residents. The utility collects residents' energy-consumption data at fifteen-minute intervals. It then stores the data for up to three years. This case presents the question whether Naperville's collection of this data is reasonable under the Fourth

Amendment of the U.S. Constitution and Article I, § 6 of the Illinois Constitution.

### I. BACKGROUND

The American Recovery and Reinvestment Act of 2009 set aside funds to modernize the Nation's electrical grid. The Act tasked the Department of Energy with distributing these funds under the Smart Grid Investment Grant program. Through this program, the City of Naperville was selected to receive \$11 million to update its own grid. As part of these upgrades, Naperville began replacing its residential, analog energy meters with digital "smart meters."

Using traditional energy meters, utilities typically collect monthly energy consumption in a single lump figure once per month. By contrast, smart meters record consumption much more frequently, often collecting thousands of readings every month. Due to this frequency, smart meters show both the amount of electricity being used inside a home and when that energy is used.

This data reveals information about the happenings inside a home. That is because individual appliances have distinct energy-consumption patterns or "load signatures." Ramyar Rashed Mohassel et al., *A Survey on Advanced Metering Infrastructure*, 63 Int'l J. Electrical Power & Energy Systems 473, 478 (2014). A refrigerator, for instance, draws power differently than a television, respirator, or indoor grow light. By comparing longitudinal energy-consumption data against a growing library of appliance load signatures, researchers can predict the appliances that are present in a home and when those appliances are used. *See id.*; A. Prudenzi, *A Neuron Nets Based Procedure for Identifying Domestic Appliances Pattern-of-*

*Use from Energy Recordings at Meter Panel*, 2 IEEE Power Engineering Soc'y Winter Meeting 941 (2002). The accuracy of these predictions depends, of course, on the frequency at which the data is collected and the sophistication of the tools used to analyze that data.

While some cities have allowed residents to decide whether to adopt smart meters, Naperville's residents have little choice. If they want electricity in their homes, they must buy it from the city's public utility. And they cannot opt out of the smart-meter program.<sup>1</sup> The meters the city installed collect residents' energy-usage data at fifteen-minute intervals. Naperville then stores the data for up to three years.

Naperville Smart Meter Awareness ("Smart Meter Awareness"), a group of concerned citizens, sued Naperville over the smart-meter program. It alleges that Naperville's smart meters reveal "intimate personal details of the City's electric customers such as when people are home and when the home is vacant, sleeping routines, eating routines, specific appliance types in the home and when used, and charging data for plug-in vehicles that can be used to identify travel routines and history." (R. 102-1 at 14.) The organization further alleges that collection of this data constitutes an unreasonable search under the Fourth Amendment of the U.S. Constitution as well

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<sup>1</sup> Residents may request that Naperville replace their analog meters with "non-wireless" smart meters. But these alternatives are smart meters with wireless transmission disabled. They collect equally rich data. The difference is that the data must be manually retrieved. (R. 117 at 3.)

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as an unreasonable search and invasion of privacy under Article I, § 6 of the Illinois Constitution.<sup>2</sup>

The district court dismissed two of Smart Meter Awareness's complaints without prejudice. Smart Meter Awareness requested leave to file a third, but the district court denied that request. It reasoned that amending the complaint would be futile because even the proposed third amended complaint had not plausibly alleged a Fourth Amendment violation or a violation of the Illinois Constitution. Smart Meter Awareness appealed. Because the district court denied leave to amend on futility grounds, we apply the legal sufficiency standard of Rule 12(b)(6) *de novo* to determine if the proposed amended complaint fails to state a claim. *See, e.g., Gen. Elec. Capital Corp. v. Lease Resolution Corp.*, 128 F.3d 1074, 1085 (7th Cir. 1997).

## II. ANALYSIS

The Fourth Amendment of the U.S. Constitution protects "[t]he right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures." Similarly, Article I, § 6 of the Illinois Constitution affords people "the right to be secure in their persons, houses, papers and other possessions against unreasonable searches, seizures, invasions of privacy or interceptions of communications by eavesdropping devices or other means."

We can resolve both the state and federal constitutional claims by answering the following two questions.<sup>3</sup> First, has

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<sup>2</sup> Smart Meter Awareness challenged the smart-meter program on a number of other grounds that are not relevant to this appeal.

<sup>3</sup> The Illinois Supreme Court applies "a 'limited lockstep' approach when interpreting cognate provisions of [the Illinois] and federal constitutions." *See, e.g., City of Chicago v. Alexander*, 89 N.E.3d 707, 713 (Ill. 2017)

the organization plausibly alleged that the data collection is a search? Second, is the search unreasonable? For the reasons that follow, we find that the data collection constitutes a search under both the Fourth Amendment and the Illinois Constitution. This search, however, is reasonable.<sup>4</sup>

*A. The collection of smart-meter data at fifteen-minute intervals constitutes a search.*

“At the [Fourth Amendment’s] very core stands the right of a man to retreat into his own home and there be free from unreasonable government intrusion.” *Silverman v. United States*, 365 U.S. 505, 511 (1961). This protection, though previously tied to common-law trespass, now encompasses

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(citing *People v. Caballes*, 851 N.E.2d 26, 35–36 (Ill. 2006)). Under this approach, the Illinois Supreme Court will interpret a provision of the Illinois Constitution in the same way as a similar provision in the Federal Constitution absent certain exceptional circumstances. See *Caballes*, 851 N.E.2d at 31–46 (tracing the development and application of the limited lockstep approach). Here, our analysis focuses on two terms: “searches” and “unreasonable.” These terms appear in both documents in analogous fashion. Neither party has “made a case for an exception to the lockstep doctrine.” *Id.* at 46. And we see no reason for an exception. Thus, our analysis of Smart Meter Awareness’s claim under the Fourth Amendment also resolves its claim under Article I, § 6 of Illinois Constitution.

<sup>4</sup> Smart Meter Awareness also claims that smart meters are an invasion of privacy under Article I, § 6 of the Illinois Constitution. It’s certainly possible that this is the case. But the Illinois Supreme Court conducts reasonableness balancing for the invasion of privacy under the same framework as searches under the Fourth Amendment. *In re May 1991 Will Cty. Grand Jury*, 604 N.E.2d 929, 934–35 (Ill. 1992). Even were we to find that the data collection was an invasion of privacy as well as a search, our reasonableness analysis for both claims would be the same. We therefore decline to conduct the additional analysis.

searches of the home made possible by ever-more sophisticated technology. *Kyllo v. United States*, 533 U.S. 27, 31–32 (2001). Any other rule would “erode the privacy guaranteed by the Fourth Amendment.” *Id.* at 34.

“Where ... the Government uses a device that is not in general public use, to explore details of the home that would previously have been unknowable without physical intrusion, the surveillance is a ‘search.’” *Id.* at 40. This protection remains in force even when the enhancements do not allow the government to literally peer into the home. In *Kyllo*, for instance, the intrusion by way of thermal imaging was relatively crude—it showed that “the roof over the garage and a side wall of [a] home were relatively hot compared to the rest of the home and substantially warmer than neighboring homes in the triplex.” *Id.* at 30. The device “did not show any people or activity within the walls of the structure” nor could it “penetrate walls or windows to reveal conversations or human activities.” *Id.* (quoting Supp.App. to Pet. for Cert. 39–40). Nevertheless, the Supreme Court held that law enforcement had searched the home when they collected thermal images. *Id.* at 40.

The technology-assisted data collection that Smart Meter Awareness alleges here is at least as rich as that found to be a search in *Kyllo*. Indeed, the group alleges that energy-consumption data collected at fifteen-minute intervals reveals when people are home, when people are away, when people sleep and eat, what types of appliances are in the home, and when those appliances are used.<sup>5</sup> (R. 102-1 at 14.) By contrast,

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<sup>5</sup> Smart Meter Awareness directed the court to academic studies demonstrating the revealing nature of smart-meter data collected at fifteen-minute intervals, *see, e.g.*, Ramyar Rashed Mohassel et al., *supra* at

*Kyllo* merely revealed that something in the home was emitting a large amount of energy (in the form of heat).

It's true that observers of smart-meter data must make some inferences to conclude, for instance, that an occupant is showering, or eating, or sleeping. But *Kyllo* rejected the "extraordinary assertion that anything learned through 'an inference' cannot be a search." *Id.* at 36 (quoting *id.* at 44 (Stevens, J., dissenting)). What's more, the data collected by Naperville can be used to draw the exact inference that troubled the Court in *Kyllo*. There, law enforcement "concluded that [a home's occupant] was using halide lights to grow marijuana in his house" based on an excessive amount of energy coming from the home. *Id.* at 30. Here too, law enforcement could conclude that an occupant was using grow lights from incredibly high meter readings, particularly if the power was drawn at odd hours. In fact, the data collected by Naperville could prove even more intrusive. By analyzing the energy consumption of a home over time in concert with appliance load profiles for grow lights, Naperville law enforcement could "conclude" that a resident was using the lights with more confidence than those using thermal imaging could ever hope for. With little effort, they could conduct this analysis for many homes over many years.

Under *Kyllo*, however, even an extremely invasive technology can evade the warrant requirement if it is "in general public use." *Id.* at 40. While more and more energy providers are encouraging (or in this case forcing) their customers to

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478; A. Prudenzi, *supra*, and to commercially available products that can identify what appliances are used in a home and when they are used based on smart-meter data. See *Disaggregation*, Ecotagious, <https://www.ecotagious.com/disaggregation/> (last visited July 25, 2018).

permit the installation of smart meters, the meters are not yet so pervasive that they fall into this class. To be sure, the exact contours of this qualifier are unclear—since *Kyllo*, the Supreme Court has offered little guidance. But *Kyllo* itself suggests that the use of technology is not a search when the technology is both widely available and routinely used by the general public. *See id.* at 39 n.6 (quoting *California v. Ciraolo*, 476 U.S. 207, 215 (1986) (“In an age where private and commercial flight in the public airways is routine, it is unreasonable for respondent to expect that his marijuana plants were constitutionally protected from being observed with the naked eye from an altitude of 1,000 feet.”)). Smart meters, by contrast, have been adopted only by a portion of a highly specialized industry.

The ever-accelerating pace of technological development carries serious privacy implications. Smart meters are no exception. Their data, even when collected at fifteen-minute intervals, reveals details about the home that would be otherwise unavailable to government officials with a physical search. Naperville therefore “searches” its residents’ homes when it collects this data.

Before continuing, we address one wrinkle to the search analysis. Naperville argues that the third-party doctrine renders the Fourth Amendment’s protections irrelevant here. Under that doctrine, a person surrenders her expectation of privacy in information by voluntarily sharing it with a third party. *See Carpenter v. United States*, 138 S. Ct. 2206, 2216 (2018) (citing *Smith v. Maryland*, 442 U.S. 735, 743–744 (1979) and *United States v. Miller*, 425 U.S. 435, 443 (1976)). Thus, when a government authority gathers the information from the third

party, it does not run afoul of the Fourth Amendment. *Id.* Referencing this doctrine, Naperville argues that its citizens sacrifice their expectation of privacy in smart-meter data by entering into a “voluntary relationship” to purchase electricity from the city.

This argument is unpersuasive. As a threshold matter, Smart Meter Awareness challenges the collection of the data by Naperville’s public utility. There is no third party involved in the exchange.<sup>6</sup> Moreover, were we to assume that Naperville’s public utility was a third party, the doctrine would still provide Naperville no refuge. The third-party doctrine rests on “the notion that an individual has a reduced expectation of privacy in information knowingly shared with another.” *Carpenter*, 138 S. Ct. at 2219. But in this context, a choice to share data imposed by fiat is no choice at all. If a person does not—in any meaningful sense—“voluntarily ‘assume the risk’ of turning over a comprehensive dossier of physical movements” by choosing to use a cell phone, *Carpenter*, 138 S. Ct. at 2220 (quoting *Smith*, 442 U.S. at 745), it also goes that a home occupant does not assume the risk of near constant monitoring by choosing to have electricity in her home. We therefore doubt that *Smith* and *Miller* extend this far.

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<sup>6</sup> This alone renders Naperville’s reference to the Eighth Circuit’s decision, *United States v. McIntyre*, 646 F.3d 1107 (8th Cir. 2011), irrelevant. Whereas here residents contest the utility’s initial collection of the data, *McIntyre* challenged law enforcement’s subsequent warrantless collection of traditional meter readings from the utility.

*B. The data collection is a reasonable search.*

That the data collection constitutes a search does not end our inquiry. Indeed, “[t]he touchstone of the Fourth Amendment is reasonableness.” *Florida v. Jimeno*, 500 U.S. 248, 250 (1991). Thus, if Naperville’s search is reasonable, it may collect the data without a warrant. Since these searches are not performed as part of a criminal investigation, see *Riley v. California*, 134 S. Ct. 2473, 2482 (2014), we can turn immediately to an assessment of whether they are reasonable, “by balancing its intrusion on the individual’s Fourth Amendment interests against its promotion of legitimate government interests.” *Hiibel v. Sixth Judicial Dist. Court*, 542 U.S. 177, 187–88 (2004) (quoting *Delaware v. Prouse*, 440 U.S. 648, 654 (1979)). Although in this case, our balancing begins with the presumption that this warrantless search is unreasonable, see *Kyllo*, 533 U.S. at 40, Naperville’s smart-meter ordinance overcomes this presumption.

Residents certainly have a privacy interest in their energy-consumption data. But its collection—even if routine and frequent—is far less invasive than the prototypical Fourth Amendment search of a home. Critically, Naperville conducts the search with no prosecutorial intent. Employees of the city’s public utility—not law enforcement—collect and review the data.

In *Camara v. Municipal Court*, the Supreme Court noted that this consideration lessens an individual’s privacy interest. 387 U.S. 523, 530 (1967). And though the Court held that a warrantless, administrative, home inspection violated the Fourth Amendment in that case, it did so based on concerns largely absent from this one. *Id.* at 530–31. Indeed, unlike the search in *Camara*, Naperville’s data collection reveals details

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about the home without physical entry. *See id.* at 531 (highlighting the “serious threat to personal and family security” posed by physical entry). Moreover, the risk of corollary prosecution that troubled the court in *Camara* is minimal here. *See id.* (noting that “most regulatory laws, fire, health, and housing codes are enforced by criminal process.”). To this court’s knowledge, using too much electricity is not yet a crime in Naperville. And Naperville’s amended “Smart Grid Customer Bill of Rights” clarifies that the city’s public utility will not provide customer data to third parties, including law enforcement, without a warrant or court order. Thus, the privacy interest at stake here is yet more limited than that at issue in *Camara*.

Of course, even a lessened privacy interest must be weighed against the government’s interest in the data collection. That interest is substantial in this case. Indeed, the modernization of the electrical grid is a priority for both Naperville, (R. 120-1, Smart Meter Agreement between Naperville and the Department of Energy), and the Federal Government, *see Smart Grid*, Federal Energy Regulatory Commission (Apr. 21, 2016), <https://www.ferc.gov/industries/electric/industryact/smart-grid.asp>.

Smart meters play a crucial role in this transition. *See id.* For instance, they allow utilities to restore service more quickly when power goes out precisely because they provide energy-consumption data at regular intervals. *See, e.g.,* Noelia Uribe-Pérez et al., *State of the Art and Trends Review of Smart Metering in Electricity Grids*, 6 *Applied Sci.*, no. 3, 2016, at 68, 82. The meters also permit utilities to offer time-based pricing, an innovation which reduces strain on the grid by encourag-

ing consumers to shift usage away from peak demand periods. *Id.* In addition, smart meters reduce utilities' labor costs because home visits are needed less frequently. *Id.*

With these benefits stacked together, the government's interest in smart meters is significant. Smart meters allow utilities to reduce costs, provide cheaper power to consumers, encourage energy efficiency, and increase grid stability. We hold that these interests render the city's search reasonable, where the search is unrelated to law enforcement, is minimally invasive, and presents little risk of corollary criminal consequences.

We caution, however, that our holding depends on the particular circumstances of this case. Were a city to collect the data at shorter intervals, our conclusion could change. Likewise, our conclusion might change if the data was more easily accessible to law enforcement or other city officials outside the utility.

### III. CONCLUSION

Naperville could have avoided this controversy—and may still avoid future uncertainty—by giving its residents a genuine opportunity to consent to the installation of smart meters, as many other utilities have. Nonetheless, Naperville's warrantless collection of its residents' energy-consumption data survives our review in this case.

Even when set to collect readings at fifteen-minute intervals, smart meters provide Naperville rich data. Accepting Smart Meter Awareness's well-pled allegations as true, this collection constitutes a search. But because of the significant

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government interests in the program, and the diminished privacy interests at stake, the search is reasonable. We therefore **AFFIRM** the district court's denial of leave to amend.

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**SUPREME COURT OF THE UNITED STATES**

No. 99-8508

**DANNY LEE KYLLO, PETITIONER v. UNITED STATES**

ON WRIT OF CERTIORARI TO THE UNITED STATES COURT OF  
APPEALS FOR THE NINTH CIRCUIT

[June 11, 2001]

JUSTICE SCALIA delivered the opinion of the Court.

This case presents the question whether the use of a thermal-imaging device aimed at a private home from a public street to detect relative amounts of heat within the home constitutes a "search" within the meaning of the Fourth Amendment.

I

In 1991 Agent William Elliott of the United States Department of the Interior came to suspect that marijuana was being grown in the home belonging to petitioner Danny Kyllo, part of a triplex on Rhododendron Drive in Florence, Oregon. Indoor marijuana growth typically requires high-intensity lamps. In order to determine whether an amount of heat was emanating from petitioner's home consistent with the use of such lamps, at 3:20 a.m. on January 16, 1992, Agent Elliott and Dan Haas used an Agema Thermovision 210 thermal imager to scan the triplex. Thermal imagers detect infrared radiation, which virtually all objects emit but which is not visible to the naked eye. The imager converts radiation into images based on relative warmth—black is cool, white is hot, shades of gray connote relative differences; in that

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respect, it operates somewhat like a video camera showing heat images. The scan of Kylo's home took only a few minutes and was performed from the passenger seat of Agent Elliott's vehicle across the street from the front of the house and also from the street in back of the house. The scan showed that the roof over the garage and a side wall of petitioner's home were relatively hot compared to the rest of the home and substantially warmer than neighboring homes in the triplex. Agent Elliott concluded that petitioner was using halide lights to grow marijuana in his house, which indeed he was. Based on tips from informants, utility bills, and the thermal imaging, a Federal Magistrate Judge issued a warrant authorizing a search of petitioner's home, and the agents found an indoor growing operation involving more than 100 plants. Petitioner was indicted on one count of manufacturing marijuana, in violation of 21 U. S. C. §841(a)(1). He unsuccessfully moved to suppress the evidence seized from his home and then entered a conditional guilty plea.

The Court of Appeals for the Ninth Circuit remanded the case for an evidentiary hearing regarding the intrusiveness of thermal imaging. On remand the District Court found that the Agema 210 "is a non-intrusive device which emits no rays or beams and shows a crude visual image of the heat being radiated from the outside of the house"; it "did not show any people or activity within the walls of the structure"; "[t]he device used cannot penetrate walls or windows to reveal conversations or human activities"; and "[n]o intimate details of the home were observed." Supp. App. to Pet. for Cert. 39-40. Based on these findings, the District Court upheld the validity of the warrant that relied in part upon the thermal imaging, and reaffirmed its denial of the motion to suppress. A divided Court of Appeals initially reversed, 140 F. 3d 1249 (1998), but that opinion was withdrawn and the panel (after a change in composition) affirmed, 190 F. 3d 1041

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(1999), with Judge Noonan dissenting. The court held that petitioner had shown no subjective expectation of privacy because he had made no attempt to conceal the heat escaping from his home, *id.*, at 1046, and even if he had, there was no objectively reasonable expectation of privacy because the imager “did not expose any intimate details of Kyllo’s life,” only “amorphous ‘hot spots’ on the roof and exterior wall,” *id.*, at 1047. We granted certiorari. 530 U. S. 1305 (2000).

II

The Fourth Amendment provides that “[t]he right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated.” “At the very core” of the Fourth Amendment “stands the right of a man to retreat into his own home and there be free from unreasonable governmental intrusion.” *Silverman v. United States*, 365 U. S. 505, 511 (1961). With few exceptions, the question whether a warrantless search of a home is reasonable and hence constitutional must be answered no. See *Illinois v. Rodriguez*, 497 U. S. 177, 181 (1990); *Payton v. New York*, 445 U. S. 573, 586 (1980).

On the other hand, the antecedent question of whether or not a Fourth Amendment “search” has occurred is not so simple under our precedent. The permissibility of ordinary visual surveillance of a home used to be clear because, well into the 20th century, our Fourth Amendment jurisprudence was tied to common-law trespass. See, e.g., *Goldman v. United States*, 316 U. S. 129, 134–136 (1942); *Olmstead v. United States*, 277 U. S. 438, 464–466 (1928). Cf. *Silverman v. United States*, *supra*, at 510–512 (technical trespass not necessary for Fourth Amendment violation; it suffices if there is “actual intrusion into a constitutionally protected area”). Visual surveillance was unquestionably lawful because “the eye

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cannot by the laws of England be guilty of a trespass.” *Boyd v. United States*, 116 U. S. 616, 628 (1886) (quoting *Entick v. Carrington*, 19 How. St. Tr. 1029, 95 Eng. Rep. 807 (K. B. 1765)). We have since decoupled violation of a person’s Fourth Amendment rights from trespassory violation of his property, see *Rakas v. Illinois*, 439 U. S. 128, 143 (1978), but the lawfulness of warrantless visual surveillance of a home has still been preserved. As we observed in *California v. Ciraolo*, 476 U. S. 207, 213 (1986), “[t]he Fourth Amendment protection of the home has never been extended to require law enforcement officers to shield their eyes when passing by a home on public thoroughfares.”

One might think that the new validating rationale would be that examining the portion of a house that is in plain public view, while it is a “search”<sup>1</sup> despite the absence of trespass, is not an “unreasonable” one under the Fourth Amendment. See *Minnesota v. Carter*, 525 U. S. 83, 104 (1998) (BREYER, J., concurring in judgment). But in fact we have held that visual observation is no “search” at all—perhaps in order to preserve somewhat more intact our doctrine that warrantless searches are presumptively unconstitutional. See *Dow Chemical Co. v. United States*, 476 U. S. 227, 234–235, 239 (1986). In assessing when a search is not a search, we have applied somewhat in reverse the principle first enunciated in *Katz v. United States*, 389 U. S. 347 (1967). *Katz* involved eavesdropping by means of an electronic listening device placed on the outside of a telephone booth— a location not within the catalog (“persons, houses, papers, and effects”) that the

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<sup>1</sup>When the Fourth Amendment was adopted, as now, to “search” meant “[t]o look over or through for the purpose of finding something; to explore; to examine by inspection; as, to *search* the house for a book; to *search* the wood for a thief.” N. Webster, *An American Dictionary of the English Language* 66 (1828) (reprint 6th ed. 1989).

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Fourth Amendment protects against unreasonable searches. We held that the Fourth Amendment nonetheless protected Katz from the warrantless eavesdropping because he “justifiably relied” upon the privacy of the telephone booth. *Id.*, at 353. As Justice Harlan’s oft-quoted concurrence described it, a Fourth Amendment search occurs when the government violates a subjective expectation of privacy that society recognizes as reasonable. See *id.*, at 361. We have subsequently applied this principle to hold that a Fourth Amendment search does not occur— even when the explicitly protected location of a house is concerned— unless “the individual manifested a subjective expectation of privacy in the object of the challenged search,” and “society [is] willing to recognize that expectation as reasonable.” *Ciraolo, supra*, at 211. We have applied this test in holding that it is not a search for the police to use a pen register at the phone company to determine what numbers were dialed in a private home, *Smith v. Maryland*, 442 U. S. 735, 743–744 (1979), and we have applied the test on two different occasions in holding that aerial surveillance of private homes and surrounding areas does not constitute a search, *Ciraolo, supra*; *Florida v. Riley*, 488 U. S. 445 (1989).

The present case involves officers on a public street engaged in more than naked-eye surveillance of a home. We have previously reserved judgment as to how much technological enhancement of ordinary perception from such a vantage point, if any, is too much. While we upheld enhanced aerial photography of an industrial complex in *Dow Chemical*, we noted that we found “it important that this is *not* an area immediately adjacent to a private home, where privacy expectations are most heightened,” 476 U. S., at 237, n. 4 (emphasis in original).

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III

It would be foolish to contend that the degree of privacy secured to citizens by the Fourth Amendment has been entirely unaffected by the advance of technology. For example, as the cases discussed above make clear, the technology enabling human flight has exposed to public view (and hence, we have said, to official observation) uncovered portions of the house and its curtilage that once were private. See *Ciraolo, supra*, at 215. The question we confront today is what limits there are upon this power of technology to shrink the realm of guaranteed privacy.

The *Katz* test— whether the individual has an expectation of privacy that society is prepared to recognize as reasonable— has often been criticized as circular, and hence subjective and unpredictable. See 1 W. LaFare, *Search and Seizure* §2.1(d), pp. 393–394 (3d ed. 1996); Posner, *The Uncertain Protection of Privacy by the Supreme Court*, 1979 S. Ct. Rev. 173, 188; *Carter, supra*, at 97 (SCALIA, J., concurring). But see *Rakas, supra*, at 143–144, n. 12. While it may be difficult to refine *Katz* when the search of areas such as telephone booths, automobiles, or even the curtilage and uncovered portions of residences are at issue, in the case of the search of the interior of homes— the prototypical and hence most commonly litigated area of protected privacy— there is a ready criterion, with roots deep in the common law, of the minimal expectation of privacy that *exists*, and that is acknowledged to be *reasonable*. To withdraw protection of this minimum expectation would be to permit police technology to erode the privacy guaranteed by the Fourth Amendment. We think that obtaining by sense-enhancing technology any information regarding the interior of the home that could not otherwise have been obtained without physical “intrusion into a constitutionally protected area,” *Silverman*, 365 U. S., at 512, constitutes a search— at least where (as here) the technology in question is not in general public

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use. This assures preservation of that degree of privacy against government that existed when the Fourth Amendment was adopted. On the basis of this criterion, the information obtained by the thermal imager in this case was the product of a search.<sup>2</sup>

The Government maintains, however, that the thermal imaging must be upheld because it detected “only heat radiating from the external surface of the house,” Brief for United States 26. The dissent makes this its leading point, see *post*, at 1, contending that there is a fundamental difference between what it calls “off-the-wall” observations and “through-the-wall surveillance.” But just as a thermal imager captures only heat emanating from a house, so also a powerful directional microphone picks up only sound emanating from a house—and a satellite capable of scanning from many miles away would pick up only visible light emanating from a house. We rejected such a mechanical interpretation of the Fourth Amendment in *Katz*, where the eavesdropping device picked up only

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<sup>2</sup>The dissent’s repeated assertion that the thermal imaging did not obtain information regarding the interior of the home, *post*, at 3, 4 (opinion of STEVENS, J.), is simply inaccurate. A thermal imager reveals the relative heat of various rooms in the home. The dissent may not find that information particularly private or important, see *post*, at 4, 5, 10, but there is no basis for saying it is not information regarding the interior of the home. The dissent’s comparison of the thermal imaging to various circumstances in which outside observers might be able to perceive, without technology, the heat of the home—for example, by observing snowmelt on the roof, *post*, at 3—is quite irrelevant. The fact that equivalent information could sometimes be obtained by other means does not make lawful the use of means that violate the Fourth Amendment. The police might, for example, learn how many people are in a particular house by setting up year-round surveillance; but that does not make breaking and entering to find out the same information lawful. In any event, on the night of January 16, 1992, no outside observer could have discerned the relative heat of *Kyllo*’s home without thermal imaging.

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5 sound waves that reached the exterior of the phone booth. Reversing that approach would leave the homeowner at the mercy of advancing technology— including imaging technology that could discern all human activity in the home. While the technology used in the present case was relatively crude, the rule we adopt must take account of more sophisticated systems that are already in use or in development.<sup>3</sup> The dissent’s reliance on the distinction between “off-the-wall” and “through-the-wall” observation is entirely incompatible with the dissent’s belief, which we discuss below, that thermal-imaging observations of the intimate details of a home are impermissible. The most sophisticated thermal imaging devices continue to measure heat “off-the-wall” rather than “through-the-wall”; the dissent’s disapproval of those more sophisticated thermal-imaging devices, see *post*, at 10, is an acknowledgement that there is no substance to this distinction. As for the dissent’s extraordinary assertion that anything learned through “an inference” cannot be a search, see *post*, at 4–5, that would validate even the “through-the-wall” technologies that the dissent purports to disapprove. Surely the dissent does not believe that the through-the-wall radar or ultrasound technology produces an 8-by-10 Kodak glossy that needs no analysis (*i.e.*, the making of inferences).

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<sup>3</sup>The ability to “see” through walls and other opaque barriers is a clear, and scientifically feasible, goal of law enforcement research and development. The National Law Enforcement and Corrections Technology Center, a program within the United States Department of Justice, features on its Internet Website projects that include a “Radar-Based Through-the-Wall Surveillance System,” “Handheld Ultrasound Through the Wall Surveillance,” and a “Radar Flashlight” that “will enable law officers to detect individuals through interior building walls.” [www.nlectc.org/techproj/](http://www.nlectc.org/techproj/) (visited May 3, 2001). Some devices may emit low levels of radiation that travel “through-the-wall,” but others, such as more sophisticated thermal imaging devices, are entirely passive, or “off-the-wall” as the dissent puts it.

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And, of course, the novel proposition that inference insulates a search is blatantly contrary to *United States v. Karo*, 468 U. S. 705 (1984), where the police “inferred” from the activation of a beeper that a certain can of ether was in the home. The police activity was held to be a search, and the search was held unlawful.<sup>4</sup>

The Government also contends that the thermal imaging was constitutional because it did not “detect private activities occurring in private areas,” Brief for United States 22. It points out that in *Dow Chemical* we observed that the enhanced aerial photography did not reveal any “intimate details.” 476 U. S., at 238. *Dow Chemical*, however, involved enhanced aerial photography of an industrial complex, which does not share the Fourth Amendment sanctity of the home. The Fourth Amendment’s protection of the home has never been tied to measurement of the quality or quantity of information obtained. In *Silverman*, for example, we made clear that any physical invasion of the structure of the home, “by even a fraction of an inch,” was too much, 365 U. S., at 512, and there is certainly no exception to the warrant requirement for the officer who barely cracks open the

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<sup>4</sup>The dissent asserts, *post*, at 5, n. 3, that we have misunderstood its point, which is not that inference *insulates* a search, but that inference alone is *not* a search. If we misunderstood the point, it was only in a good-faith effort to render the point germane to the case at hand. The issue in this case is not the police’s allegedly unlawful inferencing, but their allegedly unlawful thermal-imaging measurement of the emanations from a house. We say such measurement is a search; the dissent says it is not, because an inference is not a search. We took that to mean that, since the technologically enhanced emanations had to be the basis of inferences before anything inside the house could be known, the use of the emanations could not be a search. But the dissent certainly knows better than we what it intends. And if it means only that an inference is not a search, we certainly agree. That has no bearing, however, upon whether hi-tech measurement of emanations from a house is a search.

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front door and sees nothing but the nonintimate rug on the vestibule floor. In the home, our cases show, *all* details are intimate details, because the entire area is held safe from prying government eyes. Thus, in *Karo, supra*, the only thing detected was a can of ether in the home; and in *Arizona v. Hicks*, 480 U. S. 321 (1987), the only thing detected by a physical search that went beyond what officers lawfully present could observe in “plain view” was the registration number of a phonograph turntable. These were intimate details because they were details of the home, just as was the detail of how warm— or even how relatively warm— Kylo was heating his residence.<sup>5</sup>

Limiting the prohibition of thermal imaging to “intimate details” would not only be wrong in principle; it would be impractical in application, failing to provide “a workable accommodation between the needs of law enforcement and the interests protected by the Fourth Amendment,” *Oliver v. United States*, 466 U. S. 170, 181 (1984). To begin with, there is no necessary connection between the sophistication of the surveillance equipment and the “intimacy” of the details that it observes— which means that one cannot say (and the police cannot be assured) that use of the relatively crude equipment at issue here will always be lawful. The Agema Thermovision 210 might disclose, for example, at what hour each night the lady of the house takes her daily sauna and bath— a detail that many would consider “intimate”; and a much more sophisticated sys-

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<sup>5</sup>The Government cites our statement in *California v. Circolo*, 476 U. S. 207 (1986), noting apparent agreement with the State of California that aerial surveillance of a house’s curtilage could become “invasive” if “modern technology” revealed “those intimate associations, objects or activities otherwise imperceptible to police or fellow citizens.” *Id.*, at 215, n. 3 (quoting brief of the State of California). We think the Court’s focus in this second-hand dictum was not upon intimacy but upon otherwise-imperceptibility, which is precisely the principle we vindicate today.

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tem might detect nothing more intimate than the fact that someone left a closet light on. We could not, in other words, develop a rule approving only that through-the-wall surveillance which identifies objects no smaller than 36 by 36 inches, but would have to develop a jurisprudence specifying which home activities are “intimate” and which are not. And even when (if ever) that jurisprudence were fully developed, no police officer would be able to know *in advance* whether his through-the-wall surveillance picks up “intimate” details— and thus would be unable to know in advance whether it is constitutional.

The dissent’s proposed standard— whether the technology offers the “functional equivalent of actual presence in the area being searched,” *post*, at 7— would seem quite similar to our own at first blush. The dissent concludes that *Katz* was such a case, but then inexplicably asserts that if the same listening device only revealed the volume of the conversation, the surveillance would be permissible, *post*, at 10. Yet if, without technology, the police could not discern volume without being actually present in the phone booth, JUSTICE STEVENS should conclude a search has occurred. *Cf. Karo, supra*, at 735 (STEVENS, J., concurring in part and dissenting in part) (“I find little comfort in the Court’s notion that no invasion of privacy occurs until a listener obtains some significant information by use of the device. . . . A bathtub is a less private area when the plumber is present even if his back is turned”). The same should hold for the interior heat of the home if only a person present in the home could discern the heat. Thus the driving force of the dissent, despite its recitation of the above standard, appears to be a distinction among different types of information— whether the “homeowner would even care if anybody noticed,” *post*, at 10. The dissent offers no practical guidance for the application of this standard, and for reasons already discussed, we believe there can be none. The people in their houses, as

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well as the police, deserve more precision.<sup>6</sup>

We have said that the Fourth Amendment draws “a firm line at the entrance to the house,” *Payton*, 445 U. S., at 590. That line, we think, must be not only firm but also bright— which requires clear specification of those methods of surveillance that require a warrant. While it is certainly possible to conclude from the videotape of the thermal imaging that occurred in this case that no “significant” compromise of the homeowner’s privacy has occurred, we must take the long view, from the original meaning of the Fourth Amendment forward.

“The Fourth Amendment is to be construed in the light of what was deemed an unreasonable search and seizure when it was adopted, and in a manner which will conserve public interests as well as the interests and rights of individual citizens.” *Carroll v. United States*, 267 U. S. 132, 149 (1925).

Where, as here, the Government uses a device that is not in general public use, to explore details of the home that would previously have been unknowable without physical intrusion, the surveillance is a “search” and is presumptively unreasonable without a warrant.

Since we hold the Thermovision imaging to have been an unlawful search, it will remain for the District Court to determine whether, without the evidence it provided, the

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<sup>6</sup>The dissent argues that we have injected potential uncertainty into the constitutional analysis by noting that whether or not the technology is in general public use may be a factor. See *post*, at 7–8. That quarrel, however, is not with us but with this Court’s precedent. See *Ciraolo*, *supra*, at 215 (“In an age where private and commercial flight in the public airways is routine, it is unreasonable for respondent to expect that his marijuana plants were constitutionally protected from being observed with the naked eye from an altitude of 1,000 feet”). Given that we can quite confidently say that thermal imaging is not “routine,” we decline in this case to reexamine that factor.

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search warrant issued in this case was supported by probable cause— and if not, whether there is any other basis for supporting admission of the evidence that the search pursuant to the warrant produced.

\* \* \*

The judgment of the Court of Appeals is reversed; the case is remanded for further proceedings consistent with this opinion.

*It is so ordered.*

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## Annotation 1 - Fourth Amendment

### SEARCH AND SEIZURE

#### History and Scope of the Amendment

**History** .—Few provisions of the Bill of Rights grew so directly out of the experience of the colonials as the Fourth Amendment (<https://constitution.findlaw.com/amendment4.html>), embodying as it did the protection against the utilization of the "writs of assistance." But while the insistence on freedom from unreasonable searches and seizures as a fundamental right gained expression in the Colonies late and as a result of experience, 1 there was also a rich English experience to draw on. "Every man's house is his castle" was a maxim much celebrated in England, as was demonstrated in *Semayne's Case*, decided in 1603. 2 A civil case of execution of process, *Semayne's Case* nonetheless recognized the right of the homeowner to defend his house against unlawful entry even by the King's agents, but at the same time recognized the authority of the appropriate officers to break and enter upon notice in order to arrest or to execute the King's process. Most famous of the English cases was *Entick v. Carrington*, 3 one of a series of civil actions against state officers who, pursuant to general warrants, had raided many homes and other places in search of materials connected with John Wilkes' polemical pamphlets attacking not only governmental policies but the King himself. 4

*Entick*, an associate of Wilkes, sued because agents had forcibly broken into his house, broken into locked desks and boxes, and seized many printed charts, pamphlets and the like. In an opinion sweeping in terms, the court declared the warrant and the behavior it authorized subversive "of all the comforts of society," and the issuance of a warrant for the seizure of all of a person's papers rather than only those alleged to be criminal in nature "contrary to the genius of the law of England." 5 Besides its general character, said the court, the warrant was bad because it was not issued on a showing of probable cause and no record was required to be made of what had been seized. *Entick v. Carrington*, the Supreme Court has said, is a "great judgment," "one of the landmarks of English liberty," "one of the permanent monuments of the British Constitution," and a guide to an understanding of what the Framers meant in writing the Fourth Amendment. 6

In the colonies, smuggling rather than seditious libel afforded the leading examples of the necessity for protection against unreasonable searches and seizures. In order to enforce the revenue laws, English authorities made use of writs of assistance, which were general warrants authorizing the bearer to enter any house or other place to search for and seize "prohibited and uncustomed" goods, and commanding all subjects to assist in these endeavors. The writs once issued remained in force throughout the lifetime of the sovereign and six months thereafter. When, upon the death of George II in 1760, the authorities were required to obtain the issuance of new writs, opposition was led by James Otis, who attacked such writs on libertarian grounds and who asserted the invalidity of the authorizing statutes because they conflicted with English constitutionalism. 7 Otis lost and the writs were issued and utilized, but his arguments were much cited in the colonies not only on the immediate subject but also with regard to judicial review.

**Scope of the Amendment** .-The language of the provision which became the Fourth Amendment underwent some modest changes on its passage through the Congress, and it is possible that the changes reflected more than a modest significance in the interpretation of the relationship of the two clauses. Madison's introduced version provided "The rights to be secured in their persons, their houses, their papers, and their other property, from all unreasonable searches and seizures, shall not be violated by warrants issued without probable cause, supported by oath or affirmation, or not particularly describing the places to be searched, or the persons or things to be seized." 8 As reported from committee, with an inadvertent omission corrected on the floor, 9 the section was almost identical to the introduced version, and the House defeated a motion to substitute "and no warrant shall issue" for "by warrants issuing" in the committee draft. In some fashion, the rejected amendment was inserted in the language before passage by the House and is the language of the ratified constitutional provision. 10

As noted above, the noteworthy disputes over search and seizure in England and the colonies revolved about the character of warrants. There were, however, lawful warrantless searches, primarily searches incident to arrest, and these apparently gave rise to no disputes. Thus, the question arises whether the Fourth Amendment's two clauses must be read together to mean that the only searches and seizures which are "reasonable" are those which meet the requirements of the second clause, that is, are pursuant to warrants issued under the prescribed safeguards, or whether the two clauses are independent, so that searches under warrant must comply with the second clause but that there are "reasonable" searches under the first clause which need not comply with the second clause. 11 This issue has divided the Court for some time, has seen several reversals of precedents, and is important for the resolution of many cases. It is a dispute which has run most consistently throughout the cases involving the scope of the right to search incident to arrest. 12 While the right to search the person of the arrestee without a warrant is unquestioned, how far afield into areas within and without the control of the arrestee a search may range is an interesting and crucial matter.

The Court has drawn a wavering line. 13 In *Harris v. United States*, 14 it approved as "reasonable" the warrantless search of a four-room apartment pursuant to the arrest of the man found there. A year later, however, a reconstituted Court majority set aside a conviction based on evidence seized by a warrantless search pursuant to an arrest and adopted the "cardinal rule that, in seizing goods and articles, law enforcement agents must secure and use search warrants wherever reasonably practicable." 15 This rule was set aside two years later by another reconstituted majority which adopted the premise that the test "is not whether it is reasonable to procure a search warrant, but whether the search was reasonable." Whether a search is reasonable, the Court said, "must find resolution in the facts and circumstances of each case." 16 However, the Court soon returned to its emphasis upon the warrant. "The [Fourth] Amendment was in large part a reaction to the general warrants and warrantless searches that had so alienated the colonists and had helped speed the movement for independence. In the scheme of the Amendment, therefore, the requirement that 'no Warrants shall issue, but upon probable cause,' plays a crucial part." 17 Therefore, "the police must, whenever practicable, obtain advance judicial approval of searches and seizures through a warrant procedure." 18 Exceptions to searches under warrants were to be closely contained by the rationale undergirding the necessity for the exception, and the scope of a search under one of the exceptions was similarly limited. 19

During the 1970s the Court was closely divided on which standard to apply. 20 For a while, the balance tipped in favor of the view that warrantless searches are per se unreasonable, with a few carefully prescribed exceptions. 21 Gradually, guided by the variable expectation of privacy approach to coverage of the Fourth Amendment, the Court broadened its view of permissible exceptions and of the scope of those exceptions. 22

By 1992, it was no longer the case that the "warrants-with-narrow-exceptions" standard normally prevails over a "reasonableness" approach. 23 Exceptions to the warrant requirement have multiplied, tending to confine application of the requirement to cases that are exclusively "criminal" in nature. And even within that core area of "criminal" cases, some exceptions have been broadened. The most important category of exception is that of administrative searches justified by "special needs beyond the normal need for law enforcement." Under this general rubric the Court has upheld warrantless searches by administrative authorities in public schools, government offices, and prisons, and has upheld drug testing of public and transportation employees. 24 In all of these instances the warrant and probable cause requirements are dispensed with in favor of a reasonableness standard that balances the government's regulatory interest against the individual's privacy interest; in all of these instances the government's interest has been found to outweigh the individual's. The broad scope of the administrative search exception is evidenced by the fact that an overlap between law enforcement objectives and administrative "special needs" does not result in application of the warrant requirement; instead, the Court has upheld warrantless inspection of automobile junkyards and dismantling operations in spite of the strong law

6/28/2019 enforcement component of the regulation. 25 In the law enforcement context, where search by warrant is still the general rule, there has also been some loosening of the requirement. For example, the Court has shifted focus from whether exigent circumstances justified failure to obtain a warrant, to whether an officer had a "reasonable" belief that an exception to the warrant requirement applied; 26 in another case the scope of a valid search "incident to arrest," once limited to areas within the immediate reach of the arrested suspect, was expanded to a "protective sweep" of the entire home if arresting officers have a reasonable belief that the home harbors an individual who may pose a danger. 27

Another matter of scope recently addressed by the Court is the category of persons protected by the Fourth Amendment—who constitutes "the people." This phrase, the Court determined, "refers to a class of persons who are part of a national community or who have otherwise developed sufficient connection with [the United States] to be considered part of that community." 28 The Fourth Amendment therefore does not apply to the search and seizure by United States agents of property that is owned by a nonresident alien and located in a foreign country. The community of protected people includes U.S. citizens who go abroad, and aliens who have voluntarily entered U.S. territory and developed substantial connections with this country. There is no resulting broad principle, however, that the Fourth Amendment constrains federal officials wherever and against whomever they act.

**The Interest Protected .**—For the Fourth Amendment to be applicable to a particular set of facts, there must be a "search" and a "seizure," occurring typically in a criminal case, with a subsequent attempt to use judicially what was seized. Whether there was a search and seizure within the meaning of the Amendment, whether a complainant's interests were constitutionally infringed, will often turn upon consideration of his interest and whether it was officially abused. What does the Amendment protect? Under the common law, there was no doubt. Said Lord Camden in *Entick v. Carrington*: 29 "The great end for which men entered in society was to secure their property. That right is preserved sacred and incommunicable in all instances where it has not been taken away or abridged by some public law for the good of the whole. . . . By the laws of England, every invasion of private property, be it ever so minute, is a trespass. No man can set foot upon my ground without my license but he is liable to an action though the damage be nothing . . . ." Protection of property interests as the basis of the Fourth Amendment found easy acceptance in the Supreme Court 30 and that acceptance controlled decision in numerous cases. 31 For example, in *Olmstead v. United States*, 32 one of the two premises underlying the holding that wiretapping was not covered by the Amendment was that there had been no actual physical invasion of the defendant's premises; where there had been an invasion, a technical trespass, electronic surveillance was deemed subject to Fourth Amendment restrictions. 33 The Court later rejected this approach, however. "The premise that property interests control the right of the Government to search and seize has been discredited. . . . We have recognized that the principal object of the Fourth Amendment is the protection of privacy rather than property, and have increasingly discarded fictional and procedural barriers rested on property concepts." 34 Thus, because the Amendment "protects people, not places," the requirement of actual physical trespass is dispensed with and electronic surveillance was made subject to the Amendment's requirements. 35

The test propounded in *Katz* is whether there is an expectation of privacy upon which one may "justifiably" rely. 36 "What a person knowingly exposes to the public, even in his own home or office, is not a subject of Fourth Amendment protection. But what he seeks to preserve as private, even in an area accessible to the public, may be constitutionally protected." 37 That is, the "capacity to claim the protection of the Amendment depends not upon a property right in the invaded place but upon whether the area was one in which there was reasonable expectation of freedom from governmental intrusion." 38

The two-part test that Justice Harlan suggested in *Katz* 39 has purported to guide the Court in its deliberations, but its consequences are unclear. On the one hand, there is no difference in result between many of the old cases premised on property concepts and more recent cases in which the reasonable expectation of privacy flows from ownership concepts. 40 On the other hand, many other cases have presented close questions that have sharply divided the Court. 41 The first element, the "subjective expectation" of privacy, has largely dwindled as a viable standard, because, as Justice Harlan noted in a subsequent case, "our expectations, and the risks we assume, are in large part reflections of laws that translate into rules the customs and values of the past and present." 42 As for the second element, whether one has a "legitimate" expectation of privacy that society finds "reasonable" to recognize, the Court has said that "[l]egitimation of expectations of privacy by law must have a source outside of the Fourth Amendment, either by reference to concepts of real or personal property law or to understandings that are recognized and permitted by society." 43 Thus, protection of the home is at the apex of Fourth Amendment coverage because of the right associated with ownership to exclude others; 44 but ownership of other things, i.e., automobiles, does not carry a similar high degree of protection. 45 That a person has taken normal precautions to maintain his privacy, that is, precautions customarily taken

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6/28/2019 seeking to exclude others, is usually a significant factor in determining the level of expectation. 46 Some expectations, the Court has held, are simply not those which society is prepared to accept. 47 While perhaps not clearly expressed in the opinions, what seems to have emerged is a balancing standard, which requires "an assessing of the nature of a particular practice and the likely extent of its impact on the individual's sense of security balanced against the utility of the conduct as a technique of law enforcement." As the intrusions grow more extensive and significantly jeopardize the sense of security of the individual, greater restraint of police officers through the warrant requirement may be deemed necessary. 48 On the other hand, the Court's solicitude for law enforcement objectives may tilt the balance in the other direction.

Application of this balancing test, because of the Court's weighing in of law enforcement investigative needs 49 and the Court's subjective evaluation of privacy needs, has led to the creation of a two-tier or sliding-tier scale of privacy interests. The privacy test was originally designed to permit a determination that a Fourth Amendment protected interest had been invaded. 50 If it had been, then ordinarily a warrant was required, subject only to the narrowly defined exceptions, and the scope of the search under those exceptions was "strictly tied to and justified by the circumstances which rendered its initiation permissible." 51 But the Court now uses the test to determine whether the interest invaded is important or persuasive enough so that a warrant is required to justify it; 52 if the individual has a lesser expectation of privacy, then the invasion may be justified, absent a warrant, by the reasonableness of the intrusion. 53 Exceptions to the warrant requirement are no longer evaluated solely by the justifications for the exception, e.g., exigent circumstances, and the scope of the search is no longer tied to and limited by the justification for the exception. 54 The result has been a considerable expansion, beyond what existed prior to Katz, of the power of police and other authorities to conduct searches.

**Arrests and Other Detentions** .—That the Fourth Amendment was intended to protect against arbitrary arrests as well as against unreasonable searches was early assumed by Chief Justice Marshall 55 and is now established law. 56 At the common law, it was proper to arrest one who had committed a breach of the peace or a felony without a warrant, 57 and this history is reflected in the fact that the Fourth Amendment is satisfied if the arrest is made in a public place on probable cause, regardless of whether a warrant has been obtained. 58 However, in order to effectuate an arrest in the home, absent consent or exigent circumstances, police officers must have a warrant. 59 The Fourth Amendment applies to "seizures" and it is not necessary that a detention be a formal arrest in order to bring to bear the requirements of warrants or probable cause in instances in which warrants may be forgone. 60 Some objective justification must be shown to validate all seizures of the person, including seizures that involve only a brief detention short of arrest, although the nature of the detention will determine whether probable cause or some reasonable and articulable suspicion is necessary. 61

Until relatively recently, the legality of arrests was seldom litigated in the Supreme Court because of the rule that a person detained pursuant to an arbitrary seizure—unlike evidence obtained as a result of an unlawful search—remains subject to custody and presentation to court. 62 But the application of self-incrimination and other exclusionary rules to the States and the heightening of their scope in state and federal cases alike brought forth the rule that verbal evidence, confessions, and other admissions, like all derivative evidence obtained as a result of unlawful seizures, could be excluded. 63 Thus, a confession made by one illegally in custody must be suppressed, unless the causal connection between the illegal arrest and the confession had become so attenuated that the latter should not be deemed "tainted" by the former. 64 Similarly, fingerprints and other physical evidence obtained as a result of an unlawful arrest must be suppressed. 65

**Searches and Inspections in Noncriminal Cases** .—Certain early cases held that the Fourth Amendment was applicable only when a search was undertaken for criminal investigatory purposes, 66 and the Supreme Court until recently employed a reasonableness test for such searches without requiring either a warrant or probable cause in the absence of a warrant. 67 But in 1967, the Court held in two cases that administrative inspections to detect building code violations must be undertaken pursuant to warrant if the occupant objects. 68 "We may agree that a routine inspection of the physical condition of private property is a less hostile intrusion than the typical policeman's search for the fruits and instrumentalities of crime. . . . But we cannot agree that the Fourth Amendment interests at stake in these inspection cases are merely 'peripheral.' It is surely anomalous to say that the individual and his private property are fully protected by the Fourth Amendment only when the individual is suspected of criminal behavior." 69 Certain administrative inspections utilized to enforce regulatory schemes with regard to such items as alcohol and firearms are, however, exempt from the Fourth Amendment warrant requirement and may be authorized simply by statute. 70

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One curious case has approved a system of "home visits" by welfare case workers, in which the recipients are required to admit the worker or lose eligibility for benefits. 82 In another unusual case, the Court held that a sheriff's assistance to a trailer park owner in disconnecting and removing a mobile home constituted a "seizure" of the home. Supp.1

In addition, there are now a number of situations, some of them analogous to administrative searches, where "special needs" beyond normal law enforcement . . . justify departures from the usual warrant and probable cause requirements." 83 In one of these cases the Court, without acknowledging the magnitude of the leap from one context to another, has taken the Dewey/Burger rationale--developed to justify warrantless searches of business establishments--and applied it to justify the significant intrusion into personal privacy represented by urinalysis drug testing. Because of the history of pervasive regulation of the railroad industry, the Court reasoned, railroad employees have a diminished expectation of privacy that makes mandatory urinalysis less intrusive and more reasonable. 84

With respect to automobiles, the holdings are mixed. Random stops of automobiles to check drivers' licenses, vehicle registrations, and safety conditions were condemned as too intrusive; the degree to which random stops would advance the legitimate governmental interests involved did not outweigh the individual's legitimate expectations of privacy. 85 On the other hand, in *South Dakota v. Opperman*, 86 the Court sustained the admission of evidence found when police impounded an automobile from a public street for multiple parking violations and entered the car to secure and inventory valuables for safekeeping. Marijuana was discovered in the glove compartment.

**Footnotes**

[Footnote 1]. Apparently the first statement of freedom from unreasonable searches and seizures appeared in *The Rights of the Colonists and a List of Infringements and Violations of Rights*, 1772, in the drafting of which Samuel Adams took the lead. 1 B. Schwartz, *The Bill of Rights: A Documentary History* 199, 205-06 (1971).

[Footnote 2]. 5 Coke's Rep. 91a, 77 Eng. Rep. 194 (K.B. 1604). One of the most forceful expressions of the maxim was that of William Pitt in Parliament in 1763: "The poorest man may in his cottage bid defiance to all the force of the crown. It may be frail--its roof may shake--the wind may blow through it--the storm may enter, the rain may enter--but the King of England cannot enter--all his force dares not cross the threshold of the ruined tenement."

[Footnote 3]. 19 Howell's State Trials 1029, 95 Eng. 807 (1705).

[Footnote 4]. See also *Wilkes v. Wood*, 98 Eng. 489 (C.P. 1763); *Huckle v. Money*, 95 Eng. Rep. 768 (K.B. 1763), *aff'd* 19 Howell's State Trials 1002, 1028; 97 Eng. Rep. 1075 (K.B. 1765).

[Footnote 5]. 5 Eng. Rep. 817, 818.

[Footnote 6]. *Boyd v. United States*, 116 U.S. 616, 626 (<https://case.law.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=116&invol=616#626>) (1886).

[Footnote 7]. The arguments of Otis and others as well as much background material are contained in Quincy's *Massachusetts Reports*, 1761-1772, App. I, pp. 395-540, and in *2 Legal Papers of John Adams* 106-47 (Wroth & Zobel eds., 1965). See also Dickerson, *Writs of Assistance as a Cause of the American Revolution*, in *The Era of the American Revolution: Studies Inscribed to Evarts Boutell Greene* 40 (R. Morris, ed., 1939).

[Footnote 8]. 1 *Annals of Congress* 434-35 (June 8, 1789).

[Footnote 9]. The word "secured" was changed to "secure" and the phrase "against unreasonable searches and seizures" was reinstated. *Id.* at 754 (August 17, 1789).

[Footnote 10]. *Id.* It has been theorized that the author of the defeated revision, who was chairman of the committee appointed to arrange the amendments prior to House passage, simply inserted his provision and that it passed unnoticed. N. Lasson, *The History and Development of the Fourth Amendment to the United States Constitution* 101-03 (1937).

[Footnote 11] The amendment was originally in one clause and in the Fourth Amendment was the insertion of the defeated amendment to the language which changed the text into two clauses and arguably had the effect of extending the protection against unreasonable searches and seizures beyond the requirements imposed on the issuance of warrants. It is also possible to read the two clauses together to mean that some seizures even under warrants would be unreasonable, and this reading has indeed been effectuated in certain cases, although for independent reasons. *Boyd v. United States*, 116 U.S. 616 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=116&invol=616>) (1886); *Gouled v. United States*, 255 U.S. 298 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=255&invol=298>) (1921), overruled by *Warden v. Hayden*, 387 U.S. 294 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=387&invol=294>) (1967); but see *id.* at 303 (reserving the question whether "there are items of evidential value whose very nature precludes them from being the object of a reasonable search and seizure.")

[Footnote 12] Approval of warrantless searches pursuant to arrest first appeared in dicta in several cases. *Weeks v. United States*, 232 U.S. 383, 392 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=232&invol=383#392>) (1914); *Carroll v. United States*, 267 U.S. 132, 158 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=267&invol=132#158>) (1925); *Agnello v. United States*, 269 U.S. 20, 30 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=269&invol=20#30>) (1925). Whether or not there is to be a rule or a principle generally preferring or requiring searches pursuant to warrant to warrantless searches, however, has ramifications far beyond the issue of searches pursuant to arrest. *United States v. United States District Court*, 407 U.S. 297, 320 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=407&invol=297#320>) (1972).

[Footnote 13] Compare *Marron v. United States*, 275 U.S. 192 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=275&invol=192>) (1927), with *Go-Bart Importing Co. v. United States*, 282 U.S. 344 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=282&invol=344>) (1931), and *United States v. Lefkowitz*, 285 U.S. 452 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=285&invol=452>) (1932).

[Footnote 14] 331 U.S. 145 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=331&invol=145>) (1947).

[Footnote 15] *Trupiano v. United States*, 334 U.S. 699, 705 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=334&invol=699#705>) (1948). See also *McDonald v. United States*, 335 U.S. 451 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=335&invol=451>) (1948).

[Footnote 16] *United States v. Rabinowitz*, 339 U.S. 56, 66 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=339&invol=56#66>) (1950).

[Footnote 17] *Chimel v. California*, 395 U.S. 752, 761 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=395&invol=752#761>) (1969).

[Footnote 18] *Terry v. Ohio*, 392 U.S. 1, 20 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=392&invol=1#20>) (1968). In *United States v. United States District Court*, 407 U.S. 297, 321 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=407&invol=297#321>) (1972), Justice Powell explained that the "very heart" of the Amendment's mandate is "that where practical, a governmental search and seizure should represent both the efforts of the officer to gather evidence of wrongful acts and the judgment of the magistrate that the collected evidence is sufficient to justify invasion of a citizen's private premises or conversation." Thus, what is "reasonable" in terms of a search and seizure derives content and meaning through reference to the warrant clause. *Coolidge v. New Hampshire*, 403 U.S. 443, 473 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=403&invol=443#473>)-84 (1971). See also *Davis v. Mississippi*, 394 U.S. 721, 728 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=394&invol=721#728>) (1969); *Katz v. United States*, 389 U.S. 347, 356 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=389&invol=347#356>)-58 (1967); *Warden v. Hayden*, 387 U.S. 294, 299 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=387&invol=294#299>) (1967).

[Footnote 19] *Chimel v. California*, 395 U.S. 752, 762 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=395&invol=752#762>)-64 (1969) (limiting scope of search incident to arrest). See also *United States v. United States District Court*, 407 U.S. 297 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=407&invol=297>) (<https://constitution.findlaw.com/amendment4/annotation01.htm#1>)

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navby=case&court=us&vol=407&invol=297). (1972) (rejecting argument that it was "reasonable" to allow President through Attorney General to authorize warrantless electronic surveillance of persons thought to be endangering the national security); *Katz v. United States*, 389 U.S. 347 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=389&invol=347>). (1967) (although officers acted with great self-restraint and reasonably in engaging in electronic seizures of conversations from telephone booth, self-imposition was not enough and magistrate's judgment required); *Preston v. United States*, 376 U.S. 364 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=376&invol=364>). (1964) (warrantless search of seized automobile not justified because not within rationale of exceptions to warrant clause). There were exceptions, e.g., *Cooper v. California*, 386 U.S. 58 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=386&invol=58>). (1967) (warrantless search of impounded car was reasonable); *United States v. Harris*, 390 U.S. 234 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=390&invol=234>). (1968) (warrantless inventory search of automobile).

[Footnote 20]. See, e.g., *Almeida-Sanchez v. United States*, 413 U.S. 266 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=413&invol=266>) (1973), Justices Stewart, Douglas, Brennan, and Marshall adhered to the warrant-based rule, while Justices White, Blackmun, and Rehnquist, and Chief Justice Burger placed greater emphasis upon the question of reasonableness without necessary regard to the warrant requirement. *Id.* at 285. Justice Powell generally agreed with the former group of Justices, *id.* at 275 (concurring).

[Footnote 21]. E.g., *G.M. Leasing Corp. v. United States*, 429 U.S. 338, 352 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=429&invol=338#352>)-53 (1977) (unanimous); *Marshall v. Barlow's, Inc.*, 436 U.S. 307, 312 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=436&invol=307#312>) (1978); *Michigan v. Tyler*, 436 U.S. 499, 506 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=436&invol=499#506>) (1978); *Mincey v. Arizona*, 437 U.S. 385, 390 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=437&invol=385#390>) (1978) (unanimous); *Arkansas v. Sanders*, 442 U.S. 743, 758 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=442&invol=743#758>) (1979); *United States v. Ross*, 456 U.S. 798, 824 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=456&invol=798#824>)-25 (1982).

[Footnote 22]. E.g., *Chambers v. Maroney*, 399 U.S. 42 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=399&invol=42>) (1970) (warrantless search of automobile taken to police station); *Texas v. White*, 423 U.S. 67 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=423&invol=67>) (1975) (same); *New York v. Belton*, 453 U.S. 454 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=453&invol=454>) (1981) (search incident to arrest); *United States v. Ross*, 456 U.S. 798 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=456&invol=798>) (1982) (automobile search at scene). On the other hand, the warrant-based standard did preclude a number of warrantless searches. E.g., *Almeida-Sanchez v. United States*, 413 U.S. 266 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=413&invol=266>) (1973) (warrantless stop and search of auto by roving patrol near border); *Marshall v. Barlow's, Inc.*, 436 U.S. 307 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=436&invol=307>) (1978) (warrantless administrative inspection of business premises); *Mincey v. Arizona*, 437 U.S. 385 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=437&invol=385>) (1978) (warrantless search of home that was "homicide scene").

[Footnote 23]. Of the 1992 Justices, only Justice Stevens has frequently sided with the warrants-with-narrow-exceptions approach. See, e.g., *Illinois v. Rodriguez*, 497 U.S. 177, 189 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=497&invol=177#189>) (Justice Stevens joining Justice Marshall's dissent); *New Jersey v. T.L.O.*, 469 U.S. 325, 370 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=469&invol=325#370>) (1985) (Justice Stevens dissenting); *California v. Acevedo*, 500 U.S. 565, 585 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=500&invol=565#585>) (1991) (Justice Stevens dissenting).

[Footnote 24]. See various headings *infra* under the general heading "Valid Searches and Seizures Without Warrants."

[Footnote 25]. *New York v. Burger*, 482 U.S. 691 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=482&invol=691>) (1987).

[Footnote 26] Illinois v. Rodriguez, 497 U.S. 177 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=court&court=us&vol=497&invol=177>). (1990).

[Footnote 27] Maryland v. Buie, 494 U.S. 325 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=court&court=us&vol=494&invol=325>). (1990).

[Footnote 28] United States v. Verdugo-Urquidez, 494 U.S. 259, 265 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=court&court=us&vol=494&invol=259#265>). (1990).

[Footnote 29] 19 Howell's State Trials 1029, 1035, 95 Eng. Reg. 807, 817- 18 (1765).

[Footnote 30] Boyd v. United States, 116 U.S. 616, 627 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=court&court=us&vol=116&invol=616#627>) (1886); Adams v. New York, 192 U.S. 585, 598 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=court&court=us&vol=192&invol=585#598>) (1904).

[Footnote 31] Thus, the rule that "mere evidence" could not be seized but rather only the fruits of crime, its instrumentalities, or contraband, turned upon the question of the right of the public to possess the materials or the police power to make possession by the possessor unlawful. Gouled v. United States, 255 U.S. 298 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=court&court=us&vol=255&invol=298>) (1921), overruled by Warden v. Hayden, 387 U.S. 294 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=court&court=us&vol=387&invol=294>) (1967). See also Davis v. United States, 328 U.S. 582 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=court&court=us&vol=328&invol=582>) (1946). Standing to contest unlawful searches and seizures was based upon property interests, United States v. Jeffers, 342 U.S. 48 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=court&court=us&vol=342&invol=48>) (1951); Jones v. United States, 362 U.S. 257 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=court&court=us&vol=362&invol=257>) (1960), as well as decision upon the validity of a consent to search. Chapman v. United States, 365 U.S. 610 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=court&court=us&vol=365&invol=610>) (1961); Stoner v. California, 376 U.S. 483 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=court&court=us&vol=376&invol=483>) (1964); Frazier v. Culp, 394 U.S. 731, 740 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=court&court=us&vol=394&invol=731#740>) (1969).

[Footnote 32] 277 U.S. 438 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=court&court=us&vol=277&invol=438>) (1928). See also Goldman v. United States, 316 U.S. 129 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=court&court=us&vol=316&invol=129>) (1942) (detectaphone placed against wall of adjoining room; no search and seizure).

[Footnote 33] Silverman v. United States, 365 U.S. 505 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=court&court=us&vol=365&invol=505>) (1961) (spike mike pushed through a party wall until it hit a heating duct).

[Footnote 34] Warden v. Hayden, 387 U.S. 294, 304 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=court&court=us&vol=387&invol=294#304>) (1967).

[Footnote 35] Katz v. United States, 389 U.S. 347, 353 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=court&court=us&vol=389&invol=347#353>) (1967). But see California v. Hodari D., 499 U.S. 621, 626 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=court&court=us&vol=499&invol=621#626>) (1991) (Fourth Amendment "seizure" of the person is the same as a common law arrest; there must be either application of physical force or submission to the assertion of authority).

[Footnote 36] 389 U.S. at 353 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=court&court=us&vol=389&page=353#353>). Justice Harlan, concurring, formulated a two pronged test for determining whether the privacy interest is paramount: "first that a person have exhibited an actual (subjective) expectation of privacy and, second, that the expectation be one that society is prepared to recognize as 'reasonable.'" Id. at 361.

[Footnote 37] Id. at 351-52.

[Footnote 38] Mancusi v. DeForte, 392 U.S. 364, 368 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=392&invol=364#368>). (1968) (official had a reasonable expectation of privacy in an office he shared with others, although he owned neither the premises nor the papers seized). Minnesota v. Olson, 495 U.S. 91 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=495&invol=91>). (1990) (overnight guest in home has a reasonable expectation of privacy). Cf. Rakas v. Illinois, 439 U.S. 128 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=439&invol=128>). (1978). Property rights are still protected by the Amendment, however. A "seizure" of property can occur when there is some meaningful interference with an individual's possessory interests in that property, and regardless of whether there is any interference with the individual's privacy interest. Soldal v. Cook County, 506 U.S. 56 (1992) (a seizure occurred when sheriff's deputies assisted in the disconnection and removal of a mobile home in the course of an eviction from a mobile home park). The reasonableness of a seizure, however, is an additional issue that may still hinge on privacy interests. United States v. Jacobsen, 466 U.S. 109, 120-21 (1984) (DEA agents reasonably seized package for examination after private mail carrier had opened the damaged package for inspection, discovered presence of contraband, and informed agents).

[Footnote 39] Justice Harlan's opinion has been much relied upon. E.g., Terry v. Ohio, 392 U.S. 1, 19 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=392&invol=1#19>). (1968); Rakas v. Illinois, 439 U.S. 128, 143 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=439&invol=128#143>), 144 n.12 (1978); Smith v. Maryland, 442 U.S. 735, 740 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=442&invol=735#740>), 41 (1979); United States v. Salvucci, 448 U.S. 83, 91 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=448&invol=83#91>), 92 (1980); Rawlings v. Kentucky, 448 U.S. 98, 105 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=448&invol=98#105>), 06 (1980).

[Footnote 40] E.g., Alderman v. United States, 394 U.S. 165 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=394&invol=165>), (1969) (home owner could object to electronic surveillance of conversations emanating from his home, even though he was not party to the conversations).

[Footnote 41] E.g., Rakas v. Illinois, 439 U.S. 128 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=439&invol=128>). (1978) (4-1-4 decision: passengers in automobile who own neither the car nor the property seized had no legitimate expectation of privacy in areas searched).

[Footnote 42] United States v. White, 401 U.S. 745, 786 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=401&invol=745#786>). (1971). See Smith v. Maryland, 442 U.S. 735, 740 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=442&invol=735#740>) n.5 (1979) (government could not condition "subjective expectations" by, say, announcing that henceforth all homes would be subject to warrantless entry, and thus destroy the "legitimate expectation of privacy").

[Footnote 43] Rakas v. Illinois, 439 U.S. 128, 144 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=439&invol=128#144>) n.12 (1978).

[Footnote 44] E.g., Alderman v. United States, 394 U.S. 165 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=394&invol=165>). (1969); Mincey v. Arizona, 437 U.S. 385 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=437&invol=385>). (1978); Payton v. New York, 445 U.S. 573 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=445&invol=573>). (1980).

[Footnote 45] E.g., United States v. Ross, 456 U.S. 798 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=456&invol=798>). (1982). See also Donovan v. Dewey, 452 U.S. 594 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=452&invol=594>). (1981) (commercial premises); Maryland v. Macon, 472 U.S. 463 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=472&invol=463>). (1985) (no legitimate expectation of privacy in denying to undercover officers allegedly obscene materials offered to public in bookstore).

[Footnote 46] E.g., United States v. Chadwick, 433 U.S. 1, 11 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=433&invol=1#11>). (1977); Katz v. United States, 389 U.S. 347, 352 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=389&invol=347#352>). (1967). But cf. South Dakota v. <https://constitution.findlaw.com/amendment4/annotation01.html#1>

(<https://lp.findlaw.com/>).

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## Annotation 5 - Fourth Amendment

### Electronic Surveillance and the Fourth Amendment

**The Olmstead Case** .—With the invention of the microphone, the telephone, and the dictograph recorder, it became possible to "eavesdrop" with much greater secrecy and expediency. Inevitably, the use of electronic devices in law enforcement was challenged, and in 1928 the Court reviewed convictions obtained on the basis of evidence gained through taps on telephone wires in violation of state law. On a five-to-four vote, the Court held that wiretapping was not within the confines of the Fourth Amendment (<https://constitution.findlaw.com/amendment4.html>). 131 Chief Justice Taft, writing the opinion of the Court, relied on two lines of argument for the conclusion. First, inasmuch as the Amendment was designed to protect one's property interest in his premises, there was no search so long as there was no physical trespass on premises owned or controlled by a defendant. Second, all the evidence obtained had been secured by hearing, and the interception of a conversation could not qualify as a seizure, for the Amendment referred only to the seizure of tangible items. Furthermore, the violation of state law did not render the evidence excludible, since the exclusionary rule operated only on evidence seized in violation of the Constitution. 132

**Federal Communications Act** .—Six years after the decision in the Olmstead case, Congress enacted the Federal Communications Act and included in Sec. 605 of the Act a broadly worded proscription on which the Court seized to place some limitation upon governmental wiretapping. 133 Thus, in *Nardone v. United States*, 134 the Court held that wiretapping by federal officers could violate Sec. 605 if the officers both intercepted and divulged the contents of the conversation they overheard, and that testimony in court would constitute a form of prohibited divulgence. Such evidence was therefore excluded, although wiretapping was not illegal under the Court's interpretation if the information was not used outside the governmental agency. Because Sec. 605 applied to intrastate as well as interstate transmissions, 135 there was no question about the applicability of the ban to state police officers, but the Court declined to apply either the statute or the due process clause to require the exclusion of such evidence from state criminal trials. 136 State efforts to legalize wiretapping pursuant to court orders were held by the Court to be precluded by the fact that Congress in Sec. 605 had intended to occupy the field completely to the exclusion of the States. 137

**Nontelephonic Electronic Surveillance** .—The trespass rationale of Olmstead was utilized in cases dealing with "bugging" of premises rather than with tapping of telephones. Thus, in *Goldman v. United States*, 138 the Court found no Fourth Amendment violation when a listening device was placed against a party wall so that conversations were overheard on the other side. But when officers drove a "spike mike" into a party wall until it came into contact with a heating duct and thus broadcast defendant's conversations, the Court determined that the trespass brought the case within the Amendment. 139 In so holding, the Court, without alluding to the matter, overruled in effect the second rationale of Olmstead, the premise that conversations could not be seized.

**The Berger and Katz Cases** .-In *Berger v. New York*, 140 the Court confirmed the absence of the alternative holding in *Olmstead* that conversations could not be seized in the Fourth Amendment sense. 141 *Berger* held unconstitutional on its face a state eavesdropping statute under which judges were authorized to issue warrants permitting police officers to trespass on private premises to install listening devices. The warrants were to be issued upon a showing of "reasonable ground to believe that evidence of crime may be thus obtained, and particularly describing the person or persons whose communications, conversations or discussions are to be overheard or recorded." For the five-Justice majority, Justice Clark discerned several constitutional defects in the law. "First, . . . eavesdropping is authorized without requiring belief that any particular offense has been or is being committed; nor that the 'property' sought, the conversations, be particularly described.

"The purpose of the probable-cause requirement of the Fourth Amendment to keep the state out of constitutionally protected areas until it has reason to believe that a specific crime has been or is being committed is thereby wholly aborted. Likewise the statute's failure to describe with particularity the conversations sought gives the officer a roving commission to 'seize' any and all conversations. It is true that the statute requires the naming of 'the person or persons whose communications, conversations or discussions are to be overheard or recorded. . . .' But this does no more than identify the person whose constitutionally protected area is to be invaded rather than 'particularly describing' the communications, conversations, or discussions to be seized. . . . Secondly, authorization of eavesdropping for a two-month period is the equivalent of a series of intrusions, searches, and seizures pursuant to a single showing of probable cause. Prompt execution is also avoided. During such a long and continuous (24 hours a day) period the conversations of any and all persons coming into the area covered by the device will be seized indiscriminately and without regard to their connection with the crime under investigation. Moreover, the statute permits. . . extensions of the original two-month period—presumably for two months each—on a mere showing that such extension is 'in the public interest.' . . . Third, the statute places no termination date on the eavesdrop once the conversation sought is seized. . . . Finally, the statute's procedure, necessarily because its success depends on secrecy, has no requirement for notice as do conventional warrants, nor does it overcome this defect by requiring some showing of special facts. On the contrary, it permits unconsented entry without any showing of exigent circumstances. Such a showing of exigency, in order to avoid notice, would appear more important in eavesdropping, with its inherent dangers, than that required when conventional procedures of search and seizure are utilized. Nor does the statute provide for a return on the warrant thereby leaving full discretion in the officer as to the use of seized conversations of innocent as well as guilty parties. In short, the statute's blanket grant of permission to eavesdrop is without adequate judicial supervision or protective procedures." 142

Both Justices Black and White in dissent accused the *Berger* majority of so construing the Fourth Amendment that no wiretapping-eavesdropping statute could pass constitutional scrutiny, 143 and in *Katz v. United States*, 144 the Court in an opinion by one of the *Berger* dissenters, Justice Stewart, modified some of its language and pointed to Court approval of some types of statutorily-authorized electronic surveillance. Just as *Berger* had confirmed that one rationale of the *Olmstead* decision, the inapplicability of "seizure" to conversations, was no longer valid, *Katz* disposed of the other rationale. In the latter case, officers had affixed a listening device to the outside wall of a telephone booth regularly used by *Katz* and activated it each time he entered; since there had been no physical trespass into the booth, the lower courts held the Fourth Amendment not relevant. The Court disagreed, saying that "once it is recognized that the Fourth Amendment protects people—and not simply 'areas'—against unreasonable searches and seizures, it becomes clear that the reach of that Amendment cannot turn upon the presence or absence of a physical intrusion into any given enclosure." 145 Because the surveillance of *Katz's* telephone calls had not been authorized by a magistrate, it was invalid; however, the Court thought that "it is clear that this surveillance was so narrowly circumscribed that a duly authorized magistrate, properly notified of the need for such investigation, specifically informed of the basis on which it was to proceed, and clearly apprised of the precise intrusion it would entail, could constitutionally have authorized, with appropriate safeguards, the very limited search and seizure that the Government asserts in fact took place." 146 The notice requirement, which had loomed in *Berger* as an obstacle to successful electronic surveillance, was summarily disposed of. 147 Finally, Justice Stewart observed that it was unlikely that electronic surveillance would ever come under any of the established exceptions so that it could be conducted without prior judicial approval. 148

Following *Katz*, Congress enacted in 1968 a comprehensive statute authorizing federal officers and permitting state officers pursuant to state legislation complying with the federal law to seek warrants for electronic surveillance to investigate violations of prescribed classes of criminal legislation. 149 The Court has not yet had occasion to pass on the federal statute and to determine

whether its procedures and authorizations comport with the standards sketched in *Oshana*, *Berger*, and *Katz* or whether those standards are somewhat more flexible than they appear to be on the faces of the opinions. 150

**Warrantless "National Security" Electronic Surveillance .**—In *Katz v. United States*, 151 Justice White sought to preserve for a future case the possibility that in "national security cases" electronic surveillance upon the authorization of the President or the Attorney General could be permissible without prior judicial approval. The Executive Branch then asserted the power to wiretap and to "bug" in two types of national security situations, against domestic subversion and against foreign intelligence operations, first basing its authority on a theory of "inherent" presidential power and then in the Supreme Court withdrawing to the argument that such surveillance was a "reasonable" search and seizure and therefore valid under the Fourth Amendment. Unanimously, the Court held that at least in cases of domestic subversive investigations, compliance with the warrant provisions of the Fourth Amendment was required. 152 Whether or not a search was reasonable, wrote Justice Powell for the Court, was a question which derived much of its answer from the warrant clause; except in a few narrowly circumscribed classes of situations, only those searches conducted pursuant to warrants were reasonable. The Government's duty to preserve the national security did not override the guarantee that before government could invade the privacy of its citizens it must present to a neutral magistrate evidence sufficient to support issuance of a warrant authorizing that invasion of privacy. 153 This protection was even more needed in "national security cases" than in cases of "ordinary" crime, the Justice continued, inasmuch as the tendency of government so often is to regard opponents of its policies as a threat and hence to tread in areas protected by the First Amendment (<https://constitution.findlaw.com/amendment1.html>), as well as by the Fourth. 154 Rejected also was the argument that courts could not appreciate the intricacies of investigations in the area of national security nor preserve the secrecy which is required. 155

The question of the scope of the President's constitutional powers, if any, remains judicially unsettled. 156 Congress has acted, however, providing for a special court to hear requests for warrants for electronic surveillance in foreign intelligence situations, and permitting the President to authorize warrantless surveillance to acquire foreign intelligence information provided that the communications to be monitored are exclusively between or among foreign powers and there is no substantial likelihood any "United States person" will be overheard. 157

#### Footnotes

[Footnote 131]. *Olmstead v. United States*, 277 U.S. 438 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=277&invol=438>) (1928).

[Footnote 132]. Among the dissenters were Justice Holmes, who characterized "illegal" wiretapping as "dirty business," *id.* at 470, and Justice Brandeis, who contributed to his opinion the famous peroration about government as "the potent, the omnipresent, teacher" which "breeds contempt for law" among the people by its example. *Id.* at 485. More relevant here was his lengthy argument rejecting the premises of the majority, an argument which later became the law of the land. (1) "To protect [the right to be left alone], every unjustifiable intrusion by the Government upon the privacy of the individual, whatever the means employed, must be deemed a violation of the Fourth Amendment." *Id.* at 478. (2) "There is, in essence, no difference between the sealed letter and the private telephone message. . . . The evil incident to invasion of the privacy of the telephone is far greater than that involved in tampering with the mails. Whenever a telephone line is tapped, the privacy of the persons at both ends of the line is invaded and all conversations between them upon any subject . . . may be overheard." *Id.* at 475-76.

[Footnote 133]. Ch. 652, 48 Stat. 1103 (1934), providing, *inter alia*, that ". . . no person not being authorized by the sender shall intercept any communication and divulge or publish the existence, contents, purport, effect, or meaning of such intercepted communication to any person." Nothing in the legislative history indicated what Congress had in mind in including this language. The section, which appeared at 47 U.S.C. Sec. 605, was rewritten by Title III of the Omnibus Crime Act of 1968, 82 Stat. 22, Sec. 803, so that the "regulation of the interception of wire or oral communications in the future is to be governed by" the provisions of Title III. S. Rep. No. 1097, 90th Cong., 2d Sess. 107-08 (1968).

[Footnote 134]. 302 U.S. 379 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=302&invol=379>) (1937). Derivative evidence, that is, evidence discovered as a result of information obtained through a wiretap, was similarly inadmissible, *Nardone v. United States*, 308 U.S. 338 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=308&invol=338>) (1939), although the testimony of witnesses might be obtained through the exploitation

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wiretap information. Goldstein v. United States, 316 U.S. 149 (https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=cas&court=us&vol=316&invol=149) (1942). Eavesdropping on a conversation on an extension telephone with the consent of one of the parties did not violate the statute. Rathbun v. United States, 355 U.S. 107 (https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=cas&court=us&vol=355&invol=107) (1957).

[Footnote 135] Weiss v. United States, 308 U.S. 321 (https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=cas&court=us&vol=308&invol=321) (1939).

[Footnote 136] Schwartz v. Texas, 344 U.S. 199 (https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=cas&court=us&vol=344&invol=199) (1952). At this time, evidence obtained in violation of the Fourth Amendment could be admitted in state courts. Wolf v. Colorado, 338 U.S. 25 (https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=cas&court=us&vol=338&invol=25) (1949). Although Wolf was overruled by Mapp v. Ohio, 367 U.S. 643 (https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=cas&court=us&vol=367&invol=643) (1961), it was some seven years later and after wiretapping itself had been made subject to the Fourth Amendment that Schwartz was overruled in Lee v. Florida, 392 U.S. 378 (https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=cas&court=us&vol=392&invol=378) (1968).

[Footnote 137] Bananti v. United States, 355 U.S. 96 (https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=cas&court=us&vol=355&invol=96) (1957).

[Footnote 138] 316 U.S. 129 (https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=cas&court=us&vol=316&invol=129) (1942).

[Footnote 139] Silverman v. United States, 365 U.S. 505 (https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=cas&court=us&vol=365&invol=505) (1961). See also Clinton v. Virginia, 377 U.S. 158 (https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=cas&court=us&vol=377&invol=158) (1964) (physical trespass found with regard to amplifying device stuck in a partition wall with a thumb tack).

[Footnote 140] 388 U.S. 41 (https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=cas&court=us&vol=388&invol=41) (1967).

[Footnote 141] Id. at 50-53.

[Footnote 142] Id. at 58-60. Justice Stewart concurred because he thought that the affidavits in this case had not been sufficient to show probable cause, but he thought the statute constitutional in compliance with the Fourth Amendment. Id. at 68. Justice Black dissented, arguing that the Fourth Amendment was not applicable to electronic eavesdropping but that in any event the "search" authorized by the statute was reasonable. Id. at 70. Justice Harlan dissented, arguing that the statute with its judicial gloss was in compliance with the Fourth Amendment. Id. 89. Justice White thought both the statute and its application in this case were constitutional. Id. at 107.

[Footnote 143] Id. at 71, 113.

[Footnote 144] 389 U.S. 347 (https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=cas&court=us&vol=389&invol=347) (1967).

[Footnote 145] Id. at 353. "We conclude that the underpinnings of Olmstead and Goldman have been so eroded by our subsequent decisions that the 'trespass' doctrine there enunciated can no longer be regarded as controlling. The Government's activities in electronically listening to and recording the petitioner's words violated the privacy upon which he justifiably relied while using the telephone booth and thus constituted a 'search and seizure' within the meaning of the Fourth Amendment." Id.

[Footnote 146] Id. at 354. The "narrowly circumscribed" nature of the surveillance was made clear by the Court in the immediately preceding passage. "[The Government agents] did not begin their electronic surveillance until investigation of the petitioner's activities had established a strong probability that he was using the telephone in question to transmit gambling information to persons in other States, in violation of federal law. Moreover, the surveillance was limited, both in scope and in duration, to the specific purpose of establishing the contents of the petitioner's unlawful telephonic communications. The agents confined their surveillance to the brief periods during which he used the telephone booth, and they took great care to overhear only the  
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of the petitioner himself." Id. For similar emphasis upon precision and fair law circumscription, see *Osborn v. United States*, 385 U.S. 323, 329 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=385&invol=323#329>)-30 (1966).

[Footnote 147] "A conventional warrant ordinarily serves to notify the suspect of an intended search . . . . In omitting any requirement of advance notice, the federal court . . . simply recognized, as has this Court, that officers need not announce their purpose before conducting an otherwise authorized search if such an announcement would provoke the escape of the suspect or the destruction of critical evidence." 389 U.S. at 355 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=389&page=355#355>), n.16.

[Footnote 148] Id. at 357-58. Justice Black dissented, feeling that the Fourth Amendment applied only to searches for and seizures of tangible things and not conversations. Id. at 364. Two "beeper" decisions support the general applicability of the warrant requirement if electronic surveillance will impair legitimate privacy interests. Compare *United States v. Knotts*, 460 U.S. 276 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=460&invol=276>) (1983) (no Fourth Amendment violation in relying on a beeper, installed without warrant, to aid in monitoring progress of a car on the public roads, since there is no legitimate expectation of privacy in destination of travel on the public roads), with *United States v. Karo*, 468 U.S. 705 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=468&invol=705>) (1984) (beeper installed without a warrant may not be used to obtain information as to the continuing presence of an item within a private residence).

[Footnote 149] Title III of the Omnibus Crime Control and Safe Streets Act of 1968, 82 Stat. 211, 18 U.S.C. Sec. Sec. 2510-20.

[Footnote 150] The Court has interpreted the statute several times without reaching the constitutional questions. *United States v. Kahn*, 415 U.S. 143 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=415&invol=143>) (1974); *United States v. Giordano*, 416 U.S. 505 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=416&invol=505>) (1974); *United States v. Chavez*, 416 U.S. 562 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=416&invol=562>) (1974); *United States v. Donovan*, 429 U.S. 413 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=429&invol=413>) (1977); *Scott v. United States*, 436 U.S. 128 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=436&invol=128>) (1978); *Dalia v. United States*, 441 U.S. 238 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=441&invol=238>) (1979); *United States v. New York Telephone Co.*, 434 U.S. 159 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=434&invol=159>) (1977); *United States v. Caceres*, 440 U.S. 741 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=440&invol=741>) (1979). *Dalia supra*, did pass on one constitutional issue, whether the Fourth Amendment mandated specific warrant authorization for a surreptitious entry to install an authorized "bug." See also *Smith v. Maryland*, 442 U.S. 735 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=442&invol=735>) (1979) (no reasonable expectation of privacy in numbers dialed on one's telephone, so Fourth Amendment does not require a warrant to install "pen register" to record those numbers).

[Footnote 151] 389 U.S. 347, 363 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=389&invol=347#363>)-64 (1967) (concurring opinion). Justices Douglas and Brennan rejected the suggestion. Id. at 359-60 (concurring opinion). When it enacted its 1968 electronic surveillance statute, Congress alluded to the problem in ambiguous fashion, 18 U.S.C. Sec. 2511(3), which the Court subsequently interpreted as having expressed no congressional position at all. *United States v. United States District Court*, 407 U.S. 297, 302 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=407&invol=297#302>)-08 (1972).

[Footnote 152] *United States v. United States District Court*, 407 U.S. 297 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=407&invol=297>) (1972). Chief Justice Burger concurred in the result and Justice White concurred on the ground that the 1968 law required a warrant in this case, and therefore did not reach the constitutional issue. Id. at 340. Justice Rehnquist did not participate. Justice Powell carefully noted that the case required "no judgment on the scope of the President's surveillance power with respect to the activities of foreign powers, within or without this country." Id. at 308.

[Footnote 153] The case contains a clear suggestion that the Court would approve a congressional provision for a different standard of probable cause in national security cases. "We recognize that domestic security surveillance may involve different policy and practical considerations from the surveillance of 'ordinary crime.' The gathering of security intelligence is often long range and involves the interrelation of various sources and types of information. The exact targets of such surveillance may be more difficult to identify than in surveillance operations against many types of crimes specified in Title III. Often, too, the emphasis of domestic intelligence gathering is on the prevention of unlawful activity or the enhancement of the Government's preparedness for some future crisis or emergency. . . . Different standards may be compatible with the Fourth Amendment if they are reasonable both in relation to the legitimate need of Government for intelligence information and the protected rights of our citizens. For the warrant application may vary according to the governmental interest to be enforced and the nature of citizen rights deserving protection. . . . It may be that Congress, for example, would judge that the application and affidavit showing probable cause need not follow the exact requirements of Sec. 2518 but should allege other circumstances more appropriate to domestic security cases. . . ." Id. at 322-23.

[Footnote 154] Id. at 313-24.

[Footnote 155] Id. at 320.

[Footnote 156] See United States v. Butenko, 494 F.2d 593 (3d Cir.), cert. denied, 419 U.S. 881 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=419&invol=881>) (1974); Zweibon v. Mitchell, 516 F.2d 594 (D.C. Cir. 1975), cert. denied, 425 U.S. 944 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=425&invol=944>) (1976), appeal after remand 565 F.2d 742 (D.C. Cir. 1977), on remand, 444 F. Supp. 1296 (D.D.C. 1978), aff'd. in part, rev'd. in part, 606 F.2d 1172 (D.C. Cir. 1979), cert. denied, 453 U.S. 912 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=453&invol=912>) (1981); Smith v. Nixon, 606 F.2d 1183 (D.C. Cir. 1979), cert. denied, 453 U.S. 912 (<https://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=453&invol=912>) (1981); United States v. Truong Dinh Hung, 629 F.2d 908 (4th Cir. 1980), after remand, 667 F.2d 1105 (4th Cir. 1981); Halkin v. Helms, 690 F.2d 977 (D.C. Cir. 1982).

[Footnote 157] Foreign Intelligence Surveillance Act of 1978, Pub. L. No. 95-511, 92 Stat. 1797, 50 U.S.C. Sec. Sec. 1801-1811. See United States v. Belfield, 692 F.2d 141 (D.C. Cir. 1982) (upholding constitutionality of disclosure restrictions in Act).

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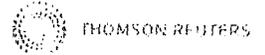
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Exhibit E1  
pg 1

## **EXPOSED - Electronic Utility Meters A Fire Safety, Health, Privacy and Security Threat**

Michele Hertz, Founder - Stop Smart Meters NY

### **Introduction**

In the mid-2000s, utility companies launched a mass effort to replace electro-mechanical analog utility meters with "smart" electronic utility meters.

Utilities and government regulators, with the support of several large environmental groups, including the Environmental Defense Fund, the Natural Resources Defense Council and the Sierra Club, rushed to embrace electronic utility meters. This was done with no public input. It was done without considering the health and safety risks of imposing millions of electronic communication metering devices on an electric utility system that was set up for non-electronic analog meters.

This paper exposes the reckless decision, by meter manufacturers, utility companies and government regulators to eliminate life-saving electrical safety features from the design of electronic meters.

### **Dangerous Electronic Meters vs. Safer Analog Meters**

Electronic meters that contain electronic components are also named "smart," AMR, ERT, AMI, digital opt-out, digital radio-off, Power Line Carrier (PLC) and more. Electronic meters are designed to harvest personal utility usage data from consumers to sell to third parties and for cutting meter-reading costs. These meters consume electricity and have no proven environmental benefits.

Electronic meters contain fragile miniaturized electronic circuit boards that are prone to igniting and exploding when exposed to utility-side electrical fire risk events and outdoor weather conditions. These meters pose unacceptable hazards because they lack essential electrical safety components - circuit breakers<sup>1</sup> and surge arrestors.<sup>2</sup>

The installation of electronic meters on homes and businesses has resulted in hundreds of thousands of reported health,<sup>3</sup> fire,<sup>4</sup> electrical,<sup>5</sup> privacy,<sup>6</sup> and overbilling complaints and incidents. According to cyber-security experts, electronic meters are an unaddressed and looming threat to the utility grid and public safety.<sup>7</sup> Many thousands of these meters have been recalled.<sup>8</sup>

By contrast, mechanical analog utility meters have been in place in the United States for decades. They have been the subject of few, if any, reported complaints or unsafe incidents. Analog meters are *electrical*<sup>9</sup> and contain no ignitable or energy consuming *electronic*<sup>10</sup> components. Analog meters protect privacy and pose no cyber-security breach risks. Analog meters have no history of being recalled.

#### **Missing Safety Features Raise Red Flags on Electronic Utility Meter Scheme**

Electronic meters are a threat to public health and safety because they lack surge arrestors and circuit breakers. Without these essential electrical safety features electronic meters are an open portal for dangerous electrical fire risk conditions to enter into and overwhelm a consumers' electrical system.

That is among the reasons why, after less than a decade of use, electronic utility meters have caused personal injuries and deaths,<sup>11</sup> interior and exterior home and business fires, extensive property damage and electrical equipment damage.

#### **Electronic Meters Lack Surge Arrestors**

Missing from electronic meters are adequate surge arrestors. Surge arrestors protect electronics from extreme voltage surges. This in turn prevents fires and electrical equipment damage.

Although the tiny electronic components inside electronic meters may be fitted with tiny surge arrestors, there is no evidence that these surge arrestors were designed to withstand extreme voltage surges from the utility-side electrical grid. Nor would these tiny surge arrestors help protect consumer-side electrical circuitry from extreme utility-side voltage surges.

By contrast, an analog meter contains surge arrestors that are appropriately designed to specifically protect consumer-side electrical circuitry from the damaging effects of utility-side voltage surges. The surge arrestors inside analog meters are part of a conductive metal design that intercepts and directs utility-side electrical surges to ground before these damaging surges enter the consumer's electrical system. An analog meter does in fact act as a surge arrestor and protects consumers' electrical circuitry.

#### **Electronic Meters Lack Circuit Breakers**

Another distressing oversight in the design of electronic meters is the lack of circuit breaker protection. Contrary to common assumptions, circuit breaker panels in homes and businesses do not provide protection from electrical fire hazards that originate upstream from a circuit breaker panel on the utility grid or at an electronic meter.

From: Paula Hughes pepchughes@yahoo.com  
Subject: deck picture from when we bought the house in 2017  
Date: Jun 30, 2019 at 11:20:08 PM  
To: pepchughes@yahoo.com

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meter  
= location

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Subject: deck picture from when we bought the house in 2017  
Date: Jun 30, 2019 at 11:20:42 PM  
To: pepchughes@yahoo.com

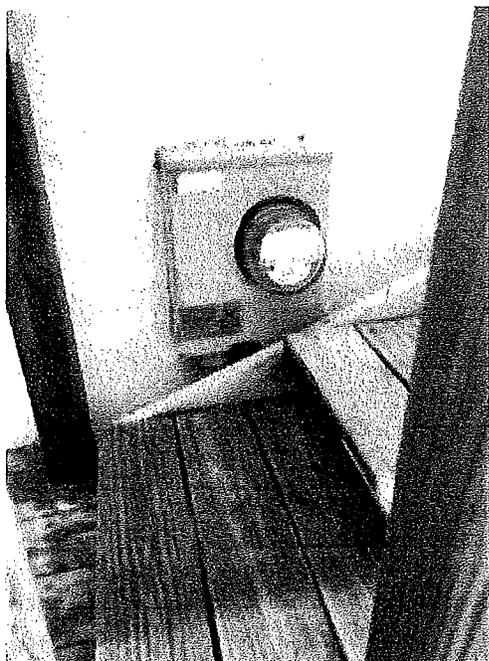


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### The American Academy of Environmental Medicine Calls for Immediate Caution regarding Smart Meter Installation

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Wichita, KS- The American Academy of Environmental Medicine today released its position paper on electromagnetic field (EMF) and radiofrequency (RF) health effects calling for immediate caution regarding smart meter installations. Citing several peer-reviewed scientific studies, the AAEM concludes that "significant harmful biological effects occur from non-thermal RF exposure" showing causality. The AAEM also expresses concern regarding significant, but poorly understood quantum field effects of EMF and RF fields on human health.

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"More independent research is needed to assess the safety of 'Smart Meter' technology," said Dr. Amy Dean, board certified internist and President-Elect of the AAEM. "Patients are reporting to physicians the development of symptoms and adverse health effects after 'Smart Meters' are installed on their homes. Immediate action is necessary to protect the public's health."

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Dr. William J. Rea, past president of AAEM says, "Technological advances must be assessed for harmful effects in order to protect society from the ravages of end-stage disease like cancer, heart disease, brain dysfunction, respiratory distress, and fibromyalgia. EMF and wireless technology are the latest innovations to challenge the physician whose goal is to help patients and prevent disease." Rea, a thoracic and cardiovascular surgeon and environmental physician adds, "A more thorough review of technological options to achieve society's worthwhile communications objectives must be conducted to protect human health."

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The AAEM calls for:

- Immediate caution regarding "Smart Meter" installation due to potentially harmful RF exposure
- Accommodation for health considerations regarding EMF and RF exposure, including exposure to wireless "Smart Meter" technology
- Independent studies to further understand health effects from EMF and RF exposure

#### Executive Director

De Rodgers Fox

- Use of safer technology, including for "Smart Meters", such as hard-wiring, fiber optics or other non-harmful methods of data transmission
- Independent studies to further understand the health effects from EMF and RF exposures
- \* • Recognition that electromagnetic hypersensitivity is a growing problem worldwide
- Consideration and independent research regarding the quantum effects of EMF and RF on human health
- Understanding and control of this electrical environmental bombardment for the protection of society

The AAEM's position paper on electromagnetic and radiofrequency fields can be found at:  
[http://aaemonline.org/emf\\_rf\\_position.html](http://aaemonline.org/emf_rf_position.html)

AAEM is an international association of physicians and other professionals dedicated to addressing the clinical aspects of environmental health. More information is available at [www.aaemonline.org](http://www.aaemonline.org).

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**About AAEM:** The American Academy of Environmental Medicine was founded in 1965, and is an international association of physicians and other professionals interested in the clinical aspects of humans and their environment. The Academy is interested in expanding the knowledge of interactions between human individuals and their environment, as these may be demonstrated to be reflected in their total health. The AAEM provides research and education in the recognition, treatment and prevention of illnesses induced by exposures to biological and chemical agents encountered in air, food and water.

###



## American Academy of Environmental Medicine

### Electromagnetic and Radiofrequency Fields Effect on Human Health

For over 50 years, the American Academy of Environmental Medicine (AAEM) has been studying and treating the effects of the environment on human health. In the last 20 years, our physicians began seeing patients who reported that electric power lines, televisions and other electrical devices caused a wide variety of symptoms. By the mid 1990's, it became clear that patients were adversely affected by electromagnetic fields and becoming more electrically sensitive. In the last five years with the advent of wireless devices, there has been a massive increase in radiofrequency (RF) exposure from wireless devices as well as reports of hypersensitivity and diseases related to electromagnetic field and RF exposure. Multiple studies correlate RF exposure with diseases such as cancer, neurological disease, reproductive disorders, immune dysfunction, and electromagnetic hypersensitivity.

The electromagnetic wave spectrum is divided into ionizing radiation such as ultraviolet and X-rays and non-ionizing radiation such as ultrasound and radiofrequency (RF), which includes WiFi, cell phones, and Smart Meter wireless communication. It has long been recognized that ionizing radiation can have a negative impact on health. However, the effects of non-ionizing radiation on human health recently have been seen. Discussions and research of non-ionizing radiation effects centers around thermal and non-thermal effects. According to the FCC and other regulatory agencies, only thermal effects are relevant regarding health implications and consequently, exposure limits are based on thermal effects only.<sup>1</sup>

While it was practical to regulate thermal bioeffects, it was also stated that non-thermal effects are not well understood and no conclusive scientific evidence points to non-thermal based negative health effects.<sup>1</sup> Further arguments are made with respect to RF exposure from WiFi, cell towers and smart meters that due to distance, exposure to these wavelengths are negligible.<sup>2</sup> However, many *in vitro*, *in vivo* and epidemiological studies demonstrate that significant harmful biological effects occur from non-thermal RF exposure and satisfy Hill's criteria of causality.<sup>3</sup> Genetic damage, reproductive defects, cancer, neurological degeneration and nervous system dysfunction, immune system

dysfunction, cognitive effects, protein and peptide damage, kidney damage, and developmental effects have all been reported in the peer-reviewed scientific literature.

Genotoxic effects from RF exposure, including studies of non-thermal levels of exposure, consistently and specifically show chromosomal instability, altered gene expression, gene mutations, DNA fragmentation and DNA structural breaks.<sup>4-11</sup> A statistically significant dose response effect was demonstrated by Mashevich *et al.*, who reported a linear increase in aneuploidy as a function of the Specific Absorption Rate (SAR) of RF exposure.<sup>11</sup> Genotoxic effects are documented to occur in neurons, blood lymphocytes, sperm, red blood cells, epithelial cells, hematopoietic tissue, lung cells and bone marrow. Adverse developmental effects due to non-thermal RF exposure have been shown with decreased litter size in mice from RF exposure well below safety standards.<sup>12</sup> The World Health Organization has classified RF emissions as a group 2 B carcinogen.<sup>13</sup> Cellular telephone use in rural areas was also shown to be associated with an increased risk for malignant brain tumors.<sup>14</sup>

The fact that RF exposure causes neurological damage has been documented repeatedly. Increased blood-brain barrier permeability and oxidative damage, which are associated with brain cancer and neurodegenerative diseases, have been found.<sup>4,7,15-17</sup> Nittby *et al.* demonstrated a statistically significant dose-response effect between non-thermal RF exposure and occurrence of albumin leak across the blood-brain barrier.<sup>15</sup> Changes associated with degenerative neurological diseases such as Alzheimer's, Parkinson's and Amyotrophic Lateral Sclerosis (ALS) have been reported.<sup>4,10</sup> Other neurological and cognitive disorders such as headaches, dizziness, tremors, decreased memory and attention, autonomic nervous system dysfunction, decreased reaction times, sleep disturbances and visual disruption have been reported to be statistically significant in multiple epidemiological studies with RF exposure occurring non-locally.<sup>18-21</sup>

Nephrotoxic effects from RF exposure also have been reported. A dose response effect was observed by Ingole and Ghosh in which RF exposure resulted in mild to extensive degenerative changes in chick embryo kidneys based on duration of RF exposure.<sup>24</sup> RF emissions have also been shown to cause isomeric changes in amino acids that can result in nephrotoxicity as well as hepatotoxicity.<sup>25</sup>

Electromagnetic field (EMF) hypersensitivity has been documented in controlled and double blind studies with exposure to various EMF frequencies. Rea *et al.* demonstrated that under double blind placebo controlled conditions, 100% of subjects showed reproducible reactions to that frequency

to which they were most sensitive.<sup>22</sup> Pulsed electromagnetic frequencies were shown to consistently provoke neurological symptoms in a blinded subject while exposure to continuous frequencies did not.<sup>23</sup>

Although these studies clearly show causality and disprove the claim that health effects from RF exposure are uncertain, there is another mechanism that proves electromagnetic frequencies, including radiofrequencies, can negatively impact human health. Government agencies and industry set safety standards based on the narrow scope of Newtonian or "classical" physics reasoning that the effects of atoms and molecules are confined in space and time. This model supports the theory that a mechanical force acts on a physical object and thus, long-range exposure to EMF and RF cannot have an impact on health if no significant heating occurs. However, this is an incomplete model. A quantum physics model is necessary to fully understand and appreciate how and why EMF and RF fields are harmful to humans.<sup>26,27</sup> In quantum physics and quantum field theory, matter can behave as a particle or as a wave with wave-like properties. Matter and electromagnetic fields encompass quantum fields that fluctuate in space and time. These interactions can have long-range effects which cannot be shielded, are non-linear and by their quantum nature have uncertainty. Living systems, including the human body, interact with the magnetic vector potential component of an electromagnetic field such as the field near a toroidal coil.<sup>26,28,29</sup> The magnetic vector potential is the coupling pathway between biological systems and electromagnetic fields.<sup>26,27</sup> Once a patient's specific threshold of intensity has been exceeded, it is the frequency which triggers the patient's reactions.

Long range EMF or RF forces can act over large distances setting a biological system oscillating in phase with the frequency of the electromagnetic field so it adapts with consequences to other body systems. This also may produce an electromagnetic frequency imprint into the living system that can be long lasting.<sup>26,27,30</sup> Research using objective instrumentation has shown that even passive resonant circuits can imprint a frequency into water and biological systems.<sup>31</sup> These quantum electrodynamic effects do exist and may explain the adverse health effects seen with EMF and RF exposure. These EMF and RF quantum field effects have not been adequately studied and are not fully understood regarding human health.

Because of the well documented studies showing adverse effects on health and the not fully understood quantum field effect, AAEM calls for exercising precaution with regard to EMF, RF and general frequency exposure. In an era when all society relies on the benefits of electronics, we must find ideas and technologies that do not disturb bodily function. It is clear that the human body uses electricity from the chemical bond to the nerve impulse and obviously this orderly sequence can be

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