

INTERVENOR MATARA

REBUTTAL TESTIMONY

OF

TIMOTHY D. SCHOECHLE

**IN RE: INTERSTATE POWER AND LIGHT COMPANY
DOCKET NO. TF-2018-0029, TF-2018-0030, TF-2019-0028,**

TF-2019-0029

August 1, 2019

1 **Q: Please state your name.**

2 A: My name is Timothy Schoechle.

3 **Q: By whom are you presently employed and in what capacity?**

4 A: I am an international consultant in computer and communications engineering, policy,
5 and standards. I am self-employed dba Smarhome Laboratories, Ltd., at 3066 Sixth Street,
6 Boulder, Colorado, 80304.

7 **Q: What is your educational and professional background and education?**

8 A: I have an M.S. in Telecommunications from the University of Colorado College of
9 Engineering and Applied Science and a Ph.D. in Communication [policy] from the School of
10 Journalism and Mass Communication at the University of Colorado. I have worked in the field
11 of engineering and policy related to electric power as applied to home and building systems for
12 over 30 years.

13 I was involved during the early 1990s in the engineering development and standardization of
14 remote metering that became ANSI C.12, presently known as Advanced Metering Infrastructure
15 (AMI). My full background and experience is set forth on Exhibit A to this testimony.

16 **Q: Please describe your professional experience.**

17 A: I have been engaged in engineering and development for over 40 years in the field of
18 industrial and home automation, control systems hardware and software, and consumer
19 electronics, and I have started related business ventures. I have also served for over a decade in
20 teaching and course development at the graduate and undergraduate levels at the University of
21 Colorado, Colorado State University, and Regis University. Over the past two decades, I have
22 also conducted studies and prepared public policy papers and books related to communication
23 networks, to electricity and renewable energy, and to technical standards and standardization. I
24 have also developed graduate and undergraduate university courses in cyber-security and
25 privacy. I have written several technology and policy papers related to energy and
26 telecommunications published by the National Institute for Science, Law and Public Policy.

27 **Q: Have you provided testimony in prior regulatory proceedings?**

1 A: I provided testimony to the New Mexico Public Regulation Commission in 2016 and
2 2017. In 2016 I provided a report that was submitted as a part of testimony to the Colorado
3 Public Utilities Commission. Most recently, I provided testimony to the New York Public
4 Service Commission in 2018 and to the Iowa Utilities Board in 2018 in SPU-2018-0007 and in
5 2019 in the Compliance Tariff dockets dealing with the community wide opt out.

6 **Q: On whose behalf are you testifying?**

7 A: I am testifying on behalf of Intervenor Matara.

8 **Q: Are you sponsoring any exhibits and if so please identify them.**

9 A: Yes, the following:

10 Exhibit A: Schoechle CV

11 Exhibit B: Technical paper: Timothy Schoechle, *Smart grid data privacy: key issues and*
12 *third-party institutional dimensions*. University of Colorado. 2012. (35 pages)

13 Exhibit C: Nicole Hong, Liz Hoffman and AnnaMaria Andrtis. “Capital One Reports Data
14 Breach Affecting 100 Million Customers, Applicants.” *The Wall Street Journal*. July 30, 2019. p
15 A1.

16 **Q: Please summarize the issues that you will rebut in your testimony.**

17 A: I will rebut 1) testimony of Bauer in regard to AMI deployment and to two modes of
18 meter operation proposed for community-wide opt out; 2) testimony of Reed in regard to the
19 utilization of AMI for distributed generation; 3) testimony of Reed and Davis in regard to the
20 validity of meter transmission mode testing, and testimony of Davis regard to the testing of meter
21 transmission modes; 4) testimony of Vognsen in regard to the Rider AIMCOO tariff and to
22 testing of meter transmission modes; and Lenzen in regard to IPL privacy policy and data
23 security.

24 REBUTTAL TO BAUER TESTIMONY

25 **Q: Do you have any issues or concerns with of the testimony of Bauer, as well as Davis**
26 **and Reed, regarding the testing of two alternative modes of meter transmission?**

1 A: My primary concern is why we are talking about detailed variations of AMI metering
2 when the basic underlying assumption, the appropriateness of further investment in smart meters
3 by IPL, is deeply problematic. This AMI metering technology has become obsolete, and in view
4 of the growing urgency of a widespread transition in our society to solar and other decentralized
5 renewable electricity sources, often called “distributed energy resources” (DER). Conventional
6 smart meter technology, including AMI, is not considered to be a component of grid
7 modernization today, and radio-based metering networks are inadequate for meeting future needs
8 for high-speed real-time communication (i.e., optical fiber) among premises-based control
9 systems for managing the localized use, generation, and storage of electricity. To see where grid
10 technology is going, it would be wise to look at the initiatives being brought forward by the U.S.
11 Department of Energy and the federal labs such as *Transactive Energy*.¹ It is likely that AMI
12 meters will be superseded within a very few years at best. Ratepayers will likely be burdened
13 with the stranded costs.

14 Another concern I have is that IPL unilaterally chose to deploy AMI throughout its territory
15 without prior authorization by the IUB. IPL should not expect capital cost recovery because they
16 made this choice for their own convenience. Electricity ratepayers should have had a role in this
17 decision and should have had the option of keeping their old analog meters and not paying for
18 IPL’s expensive AMI adventure. IPL is acting as an un-regulated utility monopoly that appears
19 to have proceeded with the expectation of perfunctory retroactive approval of cost recovery by
20 the IUB. This is not how we govern in a democratic society and a market economy.

21 I have a further concern that the two metering options being presented by IPL (i.e., “on-demand”
22 or “opt-out” modes) represent a false choice. A third choice should be to keep the old analog
23 meter, given that thousands of members of the local Fairfield community have voiced a
24 preference for non-radiating meters and have objected to IPL’s unilateral actions. Such actions
25 have exacerbated the lack of trust of IPL within the community in regard to the choice of meter
26 and its operation modes. Regardless of their initial settings, meter operating modes can be
27 changed by IPL at any time, without notice, recourse, or penalty to IPL.

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¹ 2019 IEEE PES Transactive Energy Systems Conference held July 8-10, University of Minnesota, Minneapolis. (note: refer to the opening keynote speaker, NARUC President Nick Wagner, <<https://ieeetesc.org>>)

1 **Q: Do you have issues or concerns with AMI or other smart meters in terms of the**
2 **customer granular meter data they yield?**

3 A: Yes. Bauer notes (Bauer testimony, page 6) that customers with AMI meters in either
4 *on-demand* or *opt-out* mode will not capture granular usage data and he points to the revised IPL
5 privacy policy as beneficial to normal customers. The protection of customer’s personal data
6 would actually be an advantage, rather than a disadvantage. This is further explained later in
7 regard to the Lenzen testimony and the IPL Privacy Policy.

8 **Q: Do you have issues or concerns with AMI or other smart meters in terms of claim**
9 **that it can be useful for distributed generation (i.e., solar PV) customers?**

10 A: Yes. Reed notes (Reed testimony, page 5, line 11) that customers with AMI meters in
11 either *on-demand* or *opt-out* mode will not pick up interval data and readings will be too
12 infrequent to aid distributed generation. This may be correct, however that is the point. The AMI
13 meter network, even when in normal mode is simply too slow, cumbersome, and has too much
14 latency (i.e., delay) to serve any useful role in or solar or DER integration, including demand
15 response. This gets into the topic of grid modernization mentioned previously. The key
16 technologies for DER grid integration will be premises-based control devices for localized
17 premises management of use, generation and storage of electricity, and will be connected by
18 optical fiber to other premises sharing the local distribution grid for the localized trading of
19 energy in real-time (e.g., microgrids, Transactive Energy). In the future, metering will utilized
20 on the premises to manage its energy and will be merely one of many features provided by such
21 premises equipment—sending only the data needed for billing or operations to utilities via secure
22 optical fiber networks.

23 REBUTTAL TO REED AND DAVIS TESTIMONY

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25 **Q: Do you have any issues or concerns with the testimony of Reed and Davis regarding**
26 **the validity of the testing of two alternative modes of meter transmission?**

27 A: Yes. The test was designed and managed by IPL, not by an independent 3rd party
28 laboratory. IPL controlled all aspects of the testing. Aside from the pre-determined mode and
29 meter choice assumptions underlying the testing, the process did not conform to the most basic

1 research ethics requiring an independent investigator, thus compromising the objectivity and
2 credibility of the results from the start. For example, the tests were performed with the “buddy
3 mode” turned off, a factor that could result in a dramatic increase in transmissions under certain
4 circumstances.

5 A broader concern is the need for a network map or architectural drawing that shows the
6 geographical relationship between the towers, repeaters, and the meters, including buddy meters
7 and each of their specific traffic load. This would be needed to understand the projected network
8 traffic pattern and load, as well as how many times a message repeats and for what reasons in
9 order to evaluate the total impact on the population (see Matara testimony).

10 **Q: Do you have additional concerns about the testimony of Davis regarding the testing**
11 **of two alternative modes of meter transmission?**

12 A: Yes. There are a few questions. The meters that did not have a version of 5.A.2.0 of the
13 *Flexnet*TM firmware were physically changed out rather than being updated over the network. If
14 this version was the only one tested, what about other versions? How many of the other versions
15 are in use? If other versions were tested, what would be the difference?

16 REBUTTAL TO VOGNSEN TESTIMONY

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18 **Q: Do you have any issues or concerns with the testimony of Vognsen regarding the**
19 **Rider AIMCOO tariff and testing of two alternative modes of meter transmission?**

20 A: Yes. The Vognsen testimony seems somewhat convoluted and confusing. For example,
21 in the question about community vs. individual billing (Vognsen testimony, page 5, line 20) his
22 answer seems to assume the reverse the sense of the question. He then launches into a critique of
23 community billing, but then later (page 7, line 1) he seems to advocate the Rider AMICOO
24 arrangement as a proper and reasonable community billing arrangement. This entire explanation
25 seems unnecessarily obscure. In summary, the Rider AIMCOO arrangement seems contrived to
26 obstruct any community opt-out.

27 From a broader perspective, the basic question that emerges from this testimony is, if ratepayers
28 are paying for the service, why would they not have a say in what the service is? The concept of

1 community rights is completely eclipsed by the dominant interests of an unfettered private
2 corporation. The people that are buying the electricity are only “ratepayers,” and IPL seems to
3 regard its real “customer” as the regulatory agency, but even they are condescended to.

4 REBUTTAL TO VOGNSEN TESTIMONY

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6 **Q: Do you have any issues or concerns with the testimony of Lenzen regarding the IPL
7 Privacy Policy and meter data privacy and security?**

8 A: Yes. Lenzen notes (Lenzn testimony, page 3) that IPL is “...keenly aware of its
9 responsibility in regard to the substantial amount of personal information it receives, uses, and
10 manages on behalf of its more than one million customers.” AMI meters will capture a
11 prodigious amount of granular usage data and she points to the revised IPL privacy policy as
12 beneficial to normal customers. This is interesting for several reasons:

- 13 1) Granular meter data is not useful for energy management, but represents “surveillance
14 data” that creates a significant privacy risk to the customer (see Exhibit B, pages 5-6).
15 Granular meter data exposes a window on the most intimate details of customer’s lives.
16 Many consider it an invasion of the privacy of the customer’s home. In recent years, data
17 collection, big data analytics, and behavioral modification (e.g., advertising) have
18 transformed the IT/big tech industry into a new business model and its economy of
19 “surveillance capitalism”—monetizing our personal lives and predicting and shaping our
20 behavior. This new model is characterized and described in detail in a new book by
21 Harvard Business School Professor Shoshana Zuboff.²
- 22 2) Lenzen draws a distinction between personally identifiable information and “aggregate or
23 de-identified data” (page 4 and 6) and the different policies that apply to these data.
24 Despite Lenzen’s or IPL’s assumption, data cannot be de-identified or anonymized by
25 aggregation, or any other means (see Exhibit B, page 12, section 3.1.2).
- 26 3) Privacy policies are a form of unilateral “contract” which Professor Zuboff characterizes
27 as an un-contract, or a unilateral declaration over which the customer has no control and

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² Shoshana Zuboff. *The age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power*. New York: Public Affairs/Perseus Books. 2019. (691 pages).

1 who must tacitly accept in order to receive the service. Zuboff likens these to the click-
2 through user agreements universally employed by the computer software industry, and
3 she compares such “agreements” or “contracts” to the *Requirimiento*, the legalistic
4 recitations of the Spanish Conquistadors as they invaded and appropriated the indiginous
5 communities of the New World.³ Similarly, the IPL privacy policy appropriates the data
6 and privacy of its customers for its own purposes, without recourse or remedy.

7 4) Despite the claims of Lenzen (page 7) about the value of “Residential Energy
8 Assessments” and “Residential Behavioral programs,” employing granular data for
9 behavioral targeting of customers, the usefulness of these has been shown to be limited or
10 non-existent. Rather this accumulation of customer data increases the privacy and
11 security risk by turning data over to IPL’s 3rd party vendors, consultants, or other service
12 entities or “other reasonable business reasons” (Lenzen, page 6). For example, the latest
13 in a lengthy trail of data breaches is the Capital One bank hack reported in *The Wall*
14 *Street Journal* on July 30, “Capital One Reports Data Breach Affecting 100 Million
15 Customers, Applicants.” This hack appears to be carried out by a former employee of
16 Amazon Data Services, one of the largest 3rd party cloud service providers.

17 In rebuttal to Lenzen, the data simply cannot be protected in today’s environment. As evidenced
18 above, customer data has grown too valuable to contain. The raw personal behavioral data from
19 meters has become the “gold” in the new economy of surveillance capitalism. If the meter data
20 were needed for some reasonable purpose, such as actually controlling the flow of electricity,
21 load management, or demand response, a reasonable argument might be made to collect such
22 data—however this is not the case. The best way to protect data is to not collect it in the first
23 place. The meter data is not needed to manage electricity and represents an increasingly inviting
24 target to those who would wish to exploit the data of the meter network for purposes unintended
25 by the customer/ratepayer.

26 **Q: Does this conclude your testimony?**

27 **A:** Yes, it does.

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³ Zuboff, page 178.

STATE OF COLORADO)

) SS: AFFIDAVIT OF TIMOTHY D. SCHOECHLE

COUNTY OF BOULDER)

I, Timothy D. Schoechle, being first duly sworn on oath, depose and state that I am the same Timothy D. Schoechle identified in the testimony being filed with this affidavit; that I have caused the testimony and exhibits to be prepared and am familiar with the contents thereof, and that the testimony exhibits are true and correct to the best of my knowledge, information and belief as of the date of this affidavit.

/s/ Timothy D. Schoechle

Timothy D. Schoechle

Subscribed and sworn to before me, A Notary Public, in and for said County and State, this 1st day of August, 2019.

/s/ _____

Notary Public

My Commission expires: