**STATE OF NORTH CAROLINA**
**UTILITIES COMMISSION**
**RALEIGH**
**DOCKET NO. E-100, SUB 161**

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

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| In the Matter of<br>Commission Rules Related to Electric Customer Billing Data | )<br>)<br>)<br>)<br>)<br>) | SUPPLEMENTAL REPLY COMMENTS OF THE ATTORNEY GENERAL'S OFFICE |

Regulations addressing data access and privacy balance sometimes-competing considerations. Those can include:

- Privacy: Privacy is important, particularly here, where the data are sensitive, and consumers cannot simply choose a provider with different privacy policies. Thus, any regulations should be sure to minimize privacy impacts.

- Benefits of sharing raw data or other privacy-protected data for energy-efficiency-related reasons: Smart meter data can, among other things, help to enable and to measure the effectiveness of energy-efficiency programs and help to design programs to reduce peak demand.

- Giving consumers access to their own data: Consumers who provide raw data to firms expect that they will be able to access their own data. Regulators should consider how consumers get access to that data, how they can get the data to third parties, and whether the provided data must be interoperable.

The rule proposed by the Attorney's General Office (AGO) would let consumers access their own data in a usable format that is easily transferable to third parties (for example, energy-efficiency experts), if the consumer so chooses. It would also provide privacy protections for data that are easily identifiable and potentially problematic, while allowing appropriate research uses of larger, more "raw" sets of data to inform, enable, and measure use of energy efficiency programs.

## I. Customers should be able to grant meaningful access to their identifiable data.

All parties agree that customers should be able to access their own data. To make that access meaningful, it must (1) be paired with the ability to grant access to others and (2) provide interoperable data.

First, the ability to download is insufficient. Most internet access happens over a mobile device.[1] Downloading and then re-accessing a document on a cell phone or tablet is not particularly easy. Imagine going through the process flow for getting that data. The Download My Data option that Duke Energy provides downloads into your phone's files as an XML file. Where would you look on your phone to find the XML file? How would you describe that to a family member if they asked? It's simply not a usable option.

Next, the data must be interoperable. Otherwise, it is nearly useless.

The AGO's proposed rule takes care of these issues. Consumers could choose with whom to share their data. Those providers would then be able to obtain the data from the utilities on the consumers' behalf. And those data would be in a usable format.

The AGO has slightly modified its proposed rule as it relates to customer access. The comments respond to other parties' suggestions and critiques. The AGO has provided a clean copy of its proposed rule and a redline marked against its 2020 version, with explanations in the comments.

## II. The AGO's rule protects consumer privacy.

In the AGO's last two rounds of comments, it highlighted the risks of reidentification. In short, appliances have discernible "load signatures," so someone

[1] StatCounter, *Desktop vs Mobile vs Tablet Market Share United States of America*, https://gs.statcounter.com/platform-market-share/desktop-mobile-tablet/united-states-of-america (showing mobile phones and tablets had a combined 53.62% of US market share in October 2022, as compared to desktops).

looking at smart-meter data can determine what appliance a consumer was using and when.[2]

Advertisers, insurers, and many other third parties would like, for various reasons, to have access to these data to infer the private actions of individuals.[3] "[A]nyone with access to a resident's [smart-meter data] could review the load signature to determine what time the person arrives and leaves home, if the security system is activated, if one cooks with a microwave or the stove, the presence of certain medical equipment, how much and when the household watches television, if someone gets up in the middle of the night and uses the computer, which equipment is left on 24/7, etc."[4] The data are also valuable to businesses seeking a competitive advantage: the usage data also can be used for "corporate espionage" because one's competitors can infer "confidential processes or proprietary data."[5] That is because smart-meter data of industrial and commercial users "can reveal highly sensitive information, for example the technologies used, manufacturing output, sales events, etc."[6]

All parties' original proposals incorporated the 15/15 rule. That rule, originally adopted in California in a different context,[7] has since been subjected to further study and criticized for a number of reasons. Earlier this year, researchers described a "fundamental

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[2] Guidelines for Smart Grid Cybersecurity Vol 2 – Privacy and the Smart Grid, Nat'l Inst. of Stds. & Tech., at 10–11 (PDF pages 306–08) (rev. 1 2014), available at https://go.usa.gov/xScRE ("NIST Volume 2") (describing how appliance load monitoring can be used to determine what appliances were used and when, and how that can then be used to infer private characteristics); *see also* Sung-Wook Park et al, Electric Load Signature Analysis for Home Energy Monitoring System, 12 Int'l J. of Fuzzy Logic & Intelligent Sys. 3, 193–97 (2012), available at https://tinyurl.com/ms9w9u6n (showing that with 30-minute snapshots, researchers could accurately identify five appliances 94% of the time); Elias Leake Quinn, Privacy and the New Energy Infrastructure, Center for Energy & Env. Sec. Working Paper No. 09-001, 21–32 (2009), available at https://ssrn.com/abstract=1370731 (literature review containing numerous other examples).

[3] *See id.* at 32–34 (chart with "Concern Type" and "Related Questions Answered by Detailed Usage Data"); NIST Volume 2, §§ 5.3.1, 5.6.

[4] Cheryl Dancey Balough, *Privacy Implications of Smart Meters*, 86 Chi.-Kent L. Rev. 161, 167 (2011).

[5] *See* NIST Volume 2 at 32 (PDF page 328).

[6] Rajenda Kumar Pandey et al., *Cyber Security Threats – Smart Grid Infrastructure*, 2016 Nat'l Power Sys. Conf. 1, 6 (2016), *available at* https://www.iitk.ac.in/npsc/Papers/NPSC2016/1570293178.pdf.

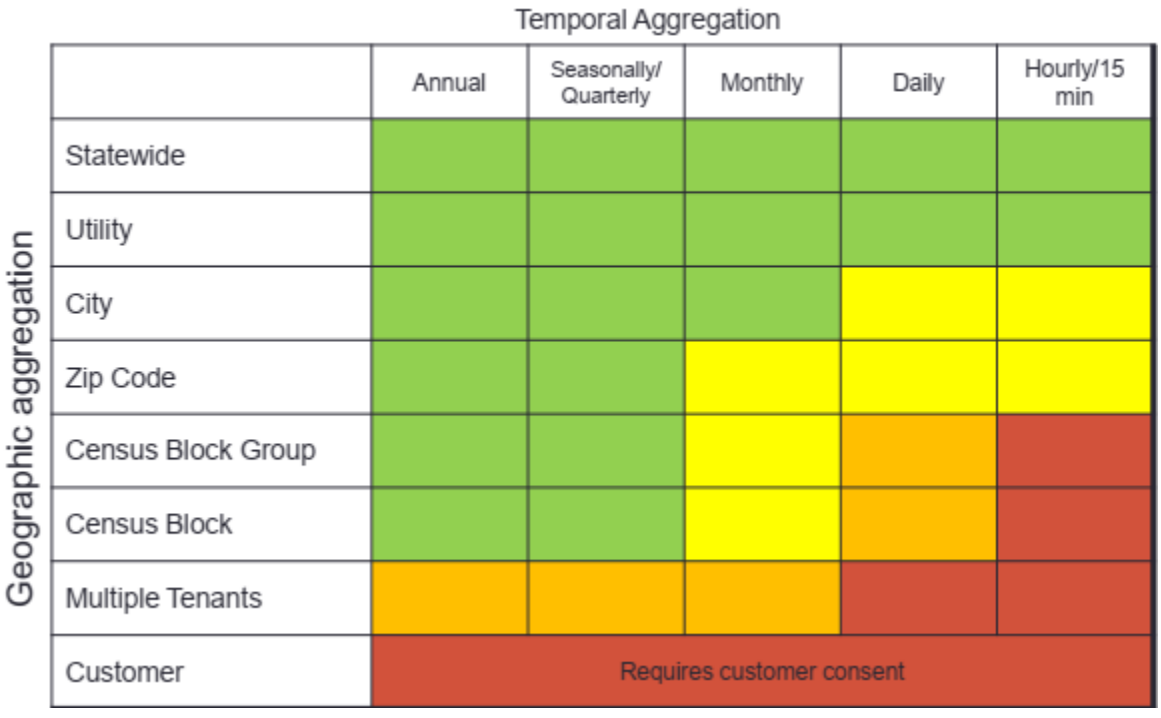
[7] *See Resolution E-4535*, Cal. Pub. Util. Comm'n, at 10 n. 38, *available at* https://go.usa.gov/xSTRR (noting utility's proposed rule "relies on the '15/15 Rule' which was adopted in the context of availability of data for Direct Access; [the utility] has made no showing as to why a standard used in the context of retail choice should be a requirement in making aggregated data available to third parties").

flaw" in the rule: an individual can be reidentified "by simple algebra."[8] By getting similar datasets, a recipient of aggregated data can reidentify individual customers by looking at the changes between the data sets.[9] The AGO's July 22, 2022 comments provided a more complete description of the issue.[10]

The AGO proposes protecting customer privacy by treating different data differently. Following frameworks suggested by Alexandra Klass and Elizabeth Wilson proposed in their article *Remaking Energy: The Critical Role of Energy Consumption Data*,[11] the AGO proposes two different ways for third parties to get data: from the utility itself or from a repository.

A. Obtaining data from a utility.

First, one could get the data from the utility directly. The utility would provide the data (1) publicly, if privacy is not at risk; (2) to only some third parties and subject to a




[8] Nikhil Ravi et al., *Differentially Private K-Means Clustering Applied to Meter Data Analysis and Synthesis*, IEEE Transactions on Smart Grid (2022) *available at* https://arxiv.org/pdf/2112.03801.pdf.
[9] *See id.*
[10] *See* Supplemental Comments of the AGO, July 22, 2022, at 5-11.
[11] 104 Cal. L. Rev. 1095 (2016).

limited nondisclosure agreement, if there are surmountable privacy risks but substantial social gains; or (3) in all other cases, only if the customer consents. As shown in the chart below from Klass and Wilsons' article,[12] the utilities would provide publicly the data listed in green. In the AGO's rule, we call this Publicly Available Aggregated Data.

The "Multiple Tenants" line is designed to deal with buildings seeking EnergyStar benchmarking and ranking. Pacific Northwest National Laboratory researchers have shown that when viewing a commercial building's energy use, reidentification becomes substantially harder once there are four or five meters in a building. Accordingly, like New York has done before, owners or operators of a building should be able to obtain monthly, whole-building data if there are at least four accounts and no one account represents more than 50% of the total load.[13]

The remaining yellow and orange boxes remain valuable, but widespread disclosure could expose private information. Accordingly, academic researchers and government agencies who wish to obtain that data should be required to enter into limited nondisclosure agreements. It is appropriate to begin with these public interest-oriented groups, while over time, the exact list of permitted entities may change.

Recipients would need to enter into limited nondisclosure agreements approved by the Commission. The rule provides minimum standards the nondisclosure agreements must meet and generally (1) limit the usage of the data to specified reasons, (2) limit transfers of the data, (3) prohibit reidentification, and (4) require the recipients to safeguard the data.

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[12] *Id.* at 1155.

[13] *See* N.Y. P.S.C. Docket No. 16-M-0411, Order Adopting Whole Building Energy Data Aggregation Standard (April 19, 2018), available at https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={4C4CE28E-54CC-4514-967D-B513678E3F37}.

B. Central repository.

The other aspect of the AGO's rule, also supported by Klass and Wilson's article, involves utilizing a central repository of energy data. Previously, this was not a realistic option in North Carolina because there was no clear funding source. The Inflation Reduction Act, section 60107 of which may provide funding for this project, changes the analysis, and the AGO now proposes this framework.[14] Indeed, several other states also have dedicated repositories. The California Energy Commission—which differs from its public utility commission—serves as California's repository.[15] The Electric Reliability Council of Texas (ERCOT) also provides aggregated reports for Texas's electric use.[16] New York has a partial data set at the Utility Energy Registry.[17] University of San Diego Law School has served as a repository for San Diego Gas and Electric. North Carolina does not yet have such a repository. The Commission could permit public universities to fill that role.

The proposed rule permits public universities to obtain data from the utilities and perform their own first-party research or provide the data to third parties if privacy can be sufficiently protected. The rule contemplates the repositories using differential privacy, which is a statistical technique that adds noise to data to render it more private. Because any public university obtaining the data would need to obtain a Commission-approved nondisclosure agreement, the Commission could still exercise control over the usage. There

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[14] P.L. 117-169, *available at* https://www.congress.gov/117/plaws/publ169/PLAW-117publ169.pdf.

[15] *Energy Almanac*, California Energy Commission, https://www.energy.ca.gov/data-reports/energy-almanac ("The California Energy Commission serves as California's central repository for the collection and storage of data on all forms of energy supply, demand …. The Energy Almanac provides current and historical energy-related data."); *see also California Electricity Data*, Cal. Energy Comm'n, https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data (providing different types of aggregated reports, including current supply and demand in California).

[16] *See Backcasted (Actual) Load Profiles – Historical*, ERCOT, https://www.ercot.com/mktinfo/loadprofile/alp (showing amount of electricity used in certain sections of the state in 15-minute increments); *Market Participants*, ERCOT, https://www.ercot.com/mp (showing current supply and demand of energy in Texas).

[17] Utility Energy Registry, *Explore Data*, New York State Energy Research and Development Authority, https://utilityregistry.org/app/#/.

is at least one public university in North Carolina that has a potential interest in serving as the repository.[18]

Privacy-related issues can be addressed. The proposed regulations would require the public university to enter into a nondisclosure agreement that requires the university to use commercially reasonable cybersecurity measures. And these transfers are possible. The North American Energy Standards Board has created standards that permit securely sharing smart-meter data. As noted in *Remaking Energy*, researchers obtain secure access to census data, and similar protections can be applied here.[19]

## III. The AGO's rule promotes economic efficiency because it best maximizes the safe uses of the data.

These data are valuable, particularly to those who wish to reduce energy demand. Currently, only the utilities have substantial access to the data. Yet other potential uses—and users—abound. Researchers may want to compare home-energy use before and after home renovations, such as installing new insulation or solar panels. Municipalities may want to determine what they can do to reduce energy demand in their town and then measure their programs' effectiveness. City planners may want to know what time people charge their electric vehicles and how much energy they use when they charge. Such answers require data.

The proposed rule—particularly the repository possibility—provides the greatest amount of safe benefits. The public-university repository, once set up, could maximize the amount of beneficial research on the data. It allows for granular studies that otherwise could not be conducted. As noted, researchers could run in-depth, matched-pair studies, observing similar homes before and after installations. This type of research is exceedingly difficult to do when requesting the data from utilities, particularly if operating within the

[18] The AGO suggests public universities to fill the role given their roles as research institutions in the state who could apply for the necessary funding and fulfill the administrative duties a repository requires. However, the AGO is also open to the Commission or other appropriate party filling this role.

[19] *See* Klass, 104 Cal. L. Rev. at 1157.

15/15 framework. The repository could also look directly at the raw data—as the utilities currently can, but are not fully incentivized to—to identify more granular suggestions for improving energy efficiency.

Finally, the proposed rule balances costs and benefits. The utilities expressed discomfort with a previous version of the proposed rule, arguing that costs would be excessive. This version requires fewer updates than in examples previously circulated. As New York does with its Utility Energy Registry, it requires updates to most types of aggregated data only every six months.[20] The draft rule also requires updates to public universities in the same timeframe. As California and Texas provide real-time data for statewide use, so too does this draft rule.

## IV. Conclusion

The AGO's rule balances the benefits of energy data, the privacy impacts, and the costs to the utilities. Accordingly, the Commission should adopt its draft.

[20] *About*, Utility Energy Registry, https://utilityregistry.org/app/#/about ("Utilities report [certain monthly data] on January 31st and July 31st each year for the preceding six month period.").

These supplemental reply comments are respectfully submitted this the 9th day of December, 2022.

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CERTIFICATE OF SERVICE

The undersigned certifies that he has served a copy of the foregoing SUPPLEMENTAL REPLY COMMENTS OF THE ATTORNEY GENERAL'S OFFICE upon the parties of record in this proceeding by email this 9th day of December, 2022.

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