

COMMONWEALTH OF KENTUCKY  
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

ELECTRONIC TARIFF FILING OF LOUISVILLE	)	
GAS AND ELECTRIC COMPANY TO REVISE ITS	)	CASE NO.
LOCAL GAS DELIVERY SERVICE TARIFF	)	2024-00125
	)	

NOTICE OF FILING

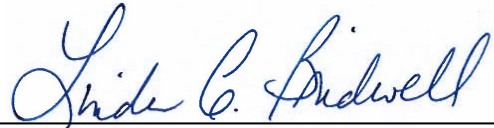
Notice is given to all parties that the following materials have been filed into the record of this proceeding:

- The digital video recording of the evidentiary hearing conducted on November 6, 2024 in this proceeding;
- Certification of the accuracy and correctness of the digital video recording;
- All exhibits introduced at the evidentiary hearing conducted on November 6, 2024 in this proceeding; and
- A written log listing, *inter alia*, the date and time of where each witness's testimony begins and ends on the digital video recording of the evidentiary hearing conducted on November 6, 2024.

A copy of this Notice, the certification of the digital video record, and the hearing log has been served upon all persons listed at the end of this Notice. Parties may view the digital video recording of the hearing at <https://youtu.be/Fgy2FonG3NI>.

Parties may request a copy of the annotated digital video recording of the hearing by submitting a written request by electronic mail to [pscfilings@ky.gov](mailto:pscfilings@ky.gov). A minimal fee will be assessed for a copy of this recording.

Done in Frankfort, Kentucky, on November 25, 2024.

A handwritten signature in blue ink that reads "Linda C. Bridwell". The signature is written in a cursive style with a horizontal line underneath it.

Linda C. Bridwell, PE  
Executive Director

COMMONWEALTH OF KENTUCKY  
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In the Matter of:

ELECTRONIC TARIFF FILING OF LOUISVILLE	)	CASE NO.
GAS AND ELECTRIC COMPANY TO REVISE	)	2024-00125
ITS LOCAL GAS DELIVERY SERVICE TARIFF	)	


CERTIFICATION

I, Candace H. Sacre, hereby certify that:

1. The attached flash drive contains a digital recording of the Formal Hearing conducted in the above-styled proceeding on November 6, 2024. The Formal Hearing Log, Exhibits, and Exhibit List are included with the recording on November 6, 2024;
2. I am responsible for the preparation of the digital recording;
3. The digital recording accurately and correctly depicts the Formal Hearing of November 6, 2024, and;
4. The Formal Hearing Log attached to this Certificate accurately and correctly states the events that occurred at the Formal Hearing of November 6, 2024, and the time at which each occurred.

Signed this 21st day of November, 2024.

  
Candace H. Sacre  
Administrative Specialist Senior

  
Stephanie Schweighardt  
Kentucky State at Large ID# KYNP 64180  
Commission Expires: January 14, 2027



# Session Report - Detail

2024-00125 06Nov2024

Louisville Gas and Electric Company (LG&E)

Date:	Type:	Location:	Department:
11/6/2024	Public Hearing\Public Comments	Hearing Room 1	Hearing Room 1 (HR 1)

Witness: W. James Gellner; Tom Rieth  
 Judge: Angie Hatton; John Will Stacy; Mary Pat Regan  
 Clerk: Candace Sacre

Event Time	Log Event
8:59:57 AM	Session Started
8:59:58 AM	Chairman Hatton Note: Sacre, Candace
	Preliminary remarks.
9:00:23 AM	Chairman Hatton Note: Sacre, Candace
	Hearing recommendations.
9:00:30 AM	Chairman Hatton Note: Sacre, Candace
	Purpose of hearing.
9:00:34 AM	Chairman Hatton Note: Sacre, Candace
	Entry of appearance.
9:00:37 AM	Atty Braun LG&E Note: Sacre, Candace
	Monica Braun.
9:00:45 AM	Atty Judd LG&E Note: Sacre, Candace
	Sarah Judd.
9:00:51 AM	Atty Malone MSD Note: Sacre, Candace
	Matthew Malone.
9:01:06 AM	Staff Atty Lawson PSC Note: Sacre, Candace
	Amanda Lawson and Moriah Tussey.
9:01:12 AM	Chairman Hatton Note: Sacre, Candace
	Public notice.
9:01:27 AM	Chairman Hatton Note: Sacre, Candace
	Motion for Deviation.
9:02:08 AM	Chairman Hatton Note: Sacre, Candace
	Public comments.
9:03:00 AM	Chairman Hatton Note: Sacre, Candace
	Call first witness.
9:03:06 AM	Atty Braun LG&E Note: Sacre, Candace
	Thomas Rieth.
9:03:10 AM	Chairman Hatton Note: Sacre, Candace
	Discussion of testimony.
9:03:47 AM	Chairman Hatton Note: Sacre, Candace
	Witness is sworn.
9:03:55 AM	Chairman Hatton - witness Rieth Note: Sacre, Candace
	Examination. Name and address?
9:04:38 AM	Atty Braun LG&E - witness Rieth Note: Sacre, Candace
	Direct Examination. By whom employed and in what capacity?
9:04:47 AM	Atty Braun LG&E - witness Rieth Note: Sacre, Candace
	Cause filed rebuttal?
9:04:52 AM	Atty Braun LG&E - witness Rieth Note: Sacre, Candace
	Sponsor of data request?
9:04:58 AM	Atty Braun LG&E - witness Rieth Note: Sacre, Candace
	Corrections or update?

9:05:09 AM	Atty Braun LG&E - witness Rieth Note: Sacre, Candace	Adopt prefiled testimony and responses today?
9:05:20 AM	Atty Braun LG&E - witness Rieth Note: Sacre, Candace	Describe service LG&E provides under LGDS tariff?
9:06:10 AM	Atty Braun LG&E - witness Rieth Note: Sacre, Candace	LG&E have customers taking service under tariff?
9:06:15 AM	Atty Braun LG&E - witness Rieth Note: Sacre, Candace	What type revisions proposed to tariff?
9:07:04 AM	Atty Braun LG&E - witness Rieth Note: Sacre, Candace	Information refers to heating value, explain what heating value means?
9:07:43 AM	Atty Braun LG&E - witness Rieth Note: Sacre, Candace	Differences between traditional natural gas and heat content of renewable natural gas?
9:08:26 AM	Atty Braun LG&E - witness Rieth Note: Sacre, Candace	Many mentions of different heating values, seen document before?
9:09:28 AM	Atty Braun LG&E - witness Rieth Note: Sacre, Candace	Describe what is on exhibit?
9:10:56 AM	Atty Braun LG&E - witness Rieth Note: Sacre, Candace	What is on second page of exhibit?
9:10:59 AM	Atty Braun LG&E Note: Sacre, Candace	Move to admit as LG&E Exhibit 1.
9:11:01 AM	Chairman Hatton Note: Sacre, Candace	Objection?
9:11:02 AM	LG&E HEARING EXHIBIT 1 Note: Sacre, Candace Note: Sacre, Candace	ATTY BRAUN LG&E - WITNESS RIETH HEATING VALUES
9:11:22 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Cross Examination. LG&E working with MSD on RNG project since 2022?
9:11:38 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	MSD consulted or input requested prior to filing tariff?
9:12:28 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Basis of heating values in Wobbe Index in original 2016 tariff?
9:12:51 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Explain that a little bit more?
9:13:27 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Telling us Tennessee and Texas Gas, their minimum guidelines are basically 970?
9:13:46 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Could ship gas on system with minimum heating value of 970?
9:14:01 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	LG&E contact RNG entities or advocacy groups prior to filing tariff?
9:14:40 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	So guess answer is no?
9:14:47 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Heating values just passed out, how weighted average 1,060 Btu value calculated?
9:15:20 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Expert talking about ENTRUST?
9:15:38 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Report attached to responses from ENTRUST, reading, correct?

9:15:58 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Propane option to allow for RNG providers meet gas heating requirements?
9:16:13 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Propane systems require storage tank, process piping, instrumentation and controls, and off-loading station?
9:16:26 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Aware store and off-load result in facility being regulated under OSHA?
9:16:55 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Something on radar that are aware of?
9:17:13 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Would capital costs and regulatory requirements for flammable gas storage considered as part of ENTRUST evaluation or other analysis?
9:18:08 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	When LG&E drafted gas quality requirements, LG&E review or consider other RNG carve-out provision allow RNG injection to system similar to other large utilities?
9:18:38 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	LG&E not looked into what Columbia Gas does or any LDCs in Kentucky?
9:19:06 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Consultant worked with not recommend increasing heating value?
9:19:14 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Independently came to decision?
9:19:21 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Aware any other utilities recommending heating value you are?
9:19:46 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	What is acceptable variation under normal operations for individual customers?
9:20:31 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	REEnergy and ENTRUST both evaluations, focused on equalize heating values in Wobbe Index, consider any feasibility metrics acceptance of RNG at lower hearing values?
9:21:38 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Texas and Tennessee Gas allowed ship on your system at value of 970, what happen if Texas Gas started shipping gas at 975?
9:22:53 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Consider heating value impact to customers in more detail than percent RNG?
9:24:17 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Consider heating value impact to customers if majority RNG produced by MSD input onto LG&E system but mostly back into MSD system?
9:26:05 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Picking it out of one day, where coming from, per month?
9:27:48 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Under assumptions, four scenarios, appears LG&E assumed MSD be maximum can produce RNG?
9:28:29 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	If told you maximum monthly RNG production rate only occur one or two days a month, possible in your mind?
9:28:54 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Scenario 4, average warm day?

9:29:17 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Think of experience where gas demand been almost zero?
9:29:54 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Under these scenarios, appears gas diffuse together?
9:30:50 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	If RNG heating content 967 Btu, 49 percent of gas supply to customer under Scenario 3, weighted average to see what making way to customer?
9:31:30 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	.49 times 967, take .51 times 1,035, that's a Btu content of 1,002 go to customer?
9:32:29 AM	Chairman Hatton - witness Rieth Note: Sacre, Candace	Examination. Agreeing with math describing impact?
9:32:41 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Cross Examination (cont'd). Under modeling, is as though was no diffusion?
9:32:52 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Inaccurate?
9:33:27 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Not know for fact, Texas or Tennessee Gas could be shipping gas close to 1,000?
9:33:55 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Rather than inject RNG into distribution system, consider allowing RNG injected into transmission line?
9:34:36 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	How much gas flows through transmission line?
9:34:43 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	A lot more than the distribution?
9:35:05 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Transmission has more gas go through than distribution?
9:35:48 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	As percentage of gas, diffuse more greatly in transmission line?
9:36:06 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Post-hearing data request?
9:36:07 AM	POST-HEARING DATA REQUEST Note: Sacre, Candace Note: Sacre, Candace	ATTY MALONE MSD - WITNESS RIETH GAS DIFFUSE AT HIGHER RATE IN TRANSMISSION LINE
9:36:26 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Agree LG&E issued RFP in May 2024 for new projects from solar wind and hydro providers to begin in 2026?
9:36:39 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Issued RFP in May requesting additional megawatts from solar wind and hydro, familiar with that?
9:37:04 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Familiar PP&L committed net zero emissions by 2050?
9:37:10 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Seventy percent reduction by 2035, 80 percent by 2040, and 100 percent by 2050?
9:37:21 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Agree for PP&L reach net zero energy have to come from variety of sources?
9:40:48 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Familiar with NiSource?

9:40:55 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Foreword statement, reading, as pertains to RNG agree with NiSource?
9:42:41 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Minimum content allowed from Texas and Tennessee is 970, why not be interchangeable?
9:44:20 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	RNG system require transport of gas by LG&E if putting on system?
9:45:03 AM	Chairman Hatton - witness Rieth Note: Sacre, Candace	Examination. And are required to do so?
9:45:36 AM	Chairman Hatton - witness Rieth Note: Sacre, Candace	Believe be able to just refuse to transport?
9:46:28 AM	Atty Malone MSC - witness Rieth Note: Sacre, Candace	Cross Examination (cont'd). RNG gas goes on system, LG&E not making revenue from transportation at all?
9:46:47 AM	Atty Malone MSC - witness Rieth Note: Sacre, Candace	LG&E considered revenue transport of RNG used for offsets of financial impacts discussing?
9:47:40 AM	Atty Malone MSC Note: Sacre, Candace	Move to introduce.
9:47:44 AM	Atty Braun LG&E Note: Sacre, Candace	No objection.
9:47:50 AM	Chairman Hatton Note: Sacre, Candace	Let it be admitted.
9:47:51 AM	INTERVENOR HEARING EXHIBIT 1 Note: Sacre, Candace Note: Sacre, Candace	ATTY MALONE MSD - WITNESS RIETH NISOURCE TARGETS INCREASING USE OF RNG AS PART OF SUSTAINABILITY COMMITMENT MARCH 11 2024
9:47:55 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Agree virtually impossible any RNG producer alone without propane able meet minimum heating value?
9:48:20 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	LG&E serves largest number customers in Kentucky?
9:48:30 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Commonwealth production and use of RNG greatly impacted?
9:49:22 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Mentioned safety, increased customer cost, not sure have safety concern, minimum value in excess to what allowed?
9:50:20 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Familiar MSD had plan in place removing contaminants, familiar with that?
9:51:39 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Assuming LG&E plans reach net zero by 2050, not including RNG and transition to clean energy?
9:51:56 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Familiar with NIPSCO?
9:52:03 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	If told you their minimum heating value 967 for RNG, agree?
9:52:13 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Familiar with Columbia Gas of Kentucky?
9:52:17 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	If told you their minimum heating value is 967 for RNG, agree?
9:52:24 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Familiar with Public Service Company of North Carolina?



9:52:42 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	If told you minimum heating value 980 for RNG, agree?
9:52:46 AM	Chairman Hatton Note: Sacre, Candace	Staff?
9:53:08 AM	Staff Atty Lawson PSC - witness Rieth Note: Sacre, Candace	Cross Examination. The word "local" used specifically in tariff, Response gave definition of local gas, define what "local" means?
9:53:42 AM	Staff Atty Lawson PSC - witness Rieth Note: Sacre, Candace	As far as definition, in Response, Staff First, Question 4?
9:54:43 AM	Staff Atty Lawson PSC - witness Rieth Note: Sacre, Candace	Local in reference other areas of tariff, proposed revised areas of tariff, availability section, local production?
9:55:38 AM	Staff Atty Lawson PSC - witness Rieth Note: Sacre, Candace	Can connect directly to LG&E system?
9:55:42 AM	Staff Atty Lawson PSC - witness Rieth Note: Sacre, Candace	Who makes determination defining that term in that area?
9:55:54 AM	Staff Atty Lawson PSC - witness Rieth Note: Sacre, Candace	Refer to Staff First, Question 4(c), stated LG&E not capable of accepting gas by virtual pipeline and LG&E not performed analysis, explain what virtual pipeline is?
9:57:18 AM	Staff Atty Lawson PSC - witness Rieth Note: Sacre, Candace	Since filing of response, LG&E looked into accepting gas via virtual pipeline?
9:57:30 AM	Staff Atty Lawson PSC - witness Rieth Note: Sacre, Candace	Explain if be logistical changes or equipment additions LG&E need to make to accommodate virtual pipeline?
9:58:12 AM	Staff Atty Lawson PSC - witness Rieth Note: Sacre, Candace	LG&E have plans to perform that type of analysis?
9:58:20 AM	Staff Atty Lawson PSC - witness Rieth Note: Sacre, Candace	What most common alternative transportation method LG&E encounters would constitute virtual pipeline?
9:58:43 AM	Staff Atty Lawson PSC - witness Rieth Note: Sacre, Candace	Rebuttal testimony, page 4, line 10, state, reading, correct?
9:59:26 AM	Staff Atty Lawson PSC - witness Rieth Note: Sacre, Candace	Foresee additional RNG producers requesting service?
9:59:42 AM	Staff Atty Lawson PSC - witness Rieth Note: Sacre, Candace	Page 4, line 20, and to page 5, stated, reading, mentioned lowest was 970, explain range of values that is injected in Texas Gas and Tennessee pipelines?
10:01:08 AM	Staff Atty Lawson PSC - witness Rieth Note: Sacre, Candace	Even though minimum 970, might not be lowest?
10:01:22 AM	Staff Atty Lawson PSC - witness Rieth Note: Sacre, Candace	Updates on minimum heating values gas taken in 2024?
10:01:23 AM	POST-HEARING DATA REQUEST Note: Sacre, Candace	STAFF ATTY LAWSON PSC - WITNESS RIETH UPDATES ON MINIMUM HEATING VALUES OF GAS TAKEN IN 2024
10:01:37 AM	Staff Atty Lawson PSC - witness Rieth Note: Sacre, Candace	As far as heating values from Texas and Tennessee Gas, how often those change?
10:02:23 AM	Staff Atty Lawson PSC - witness Rieth Note: Sacre, Candace	Page 5, Rebuttal, line 3, reading, no customer receives lower than lowest value?
10:03:53 AM	Staff Atty Lawson PSC - witness Rieth Note: Sacre, Candace	Billing model bills out on heat volume rather than heat content?

10:04:05 AM Staff Atty Lawson PSC - witness Rieth  
Note: Sacre, Candace If were to switch model to charge by heat content, what entail?

10:04:42 AM Staff Atty Lawson PSC - witness Rieth  
Note: Sacre, Candace Page 14, Rebuttal, give opinions on option leaving heating value at 967 to 1,110 Btu, detail how affect pipeline safety and reliability?

10:05:20 AM Staff Atty Lawson PSC - witness Rieth  
Note: Sacre, Candace Page 14, summary of opinions, more detail?

10:07:53 AM Staff Atty Lawson PSC - witness Rieth  
Note: Sacre, Candace Conducted cost benefit analysis customer costs under proposed heating values?

10:08:06 AM Staff Atty Lawson PSC - witness Rieth  
Note: Sacre, Candace LG&E have plans to do so?

10:08:16 AM Staff Atty Lawson PSC - witness Rieth  
Note: Sacre, Candace Conducted cost benefit analysis comparing customer costs impact customers of different classes under proposed heating values compared to current?

10:08:59 AM Staff Atty Lawson PSC - witness Rieth  
Note: Sacre, Candace Describe inquiries and characteristics of producers inquiring about LGDS service?

10:09:55 AM Staff Atty Lawson PSC - witness Rieth  
Note: Sacre, Candace Any inquiries from entities already producing RNG?

10:10:20 AM Staff Atty Lawson PSC - witness Rieth  
Note: Sacre, Candace Know why none of RNG producer inquiries resulted in customers requesting service?

10:10:43 AM Staff Atty Lawson PSC - witness Rieth  
Note: Sacre, Candace What is process to ensure pipeline quality gas injected into system?

10:11:26 AM Staff Atty Lawson PSC - witness Rieth  
Note: Sacre, Candace Which party responsible for ensuring gas is pipeline quality and mechanisms in place ensure gas injected meets qualifications?

10:12:19 AM Staff Atty Lawson PSC - witness Rieth  
Note: Sacre, Candace Went over process ensure pipeline quality gas, aware whether chromatographs at injection point?

10:12:54 AM Staff Atty Lawson PSC  
Note: Sacre, Candace Need to be in confidential.

10:13:04 AM Private Mode Activated

10:13:04 AM Private Recording Activated

10:25:15 AM Normal Mode Activated

10:25:15 AM Public Recording Activated

10:25:19 AM Chairman Hatton  
Note: Sacre, Candace Commissioner Regan?

10:25:29 AM Commissioner Regan - witness Rieth  
Note: Sacre, Candace Examination. What cause average Btu to decrease from 1060 to 970?

10:26:38 AM Commissioner Hatton  
Note: Sacre, Candace Commissioner Stacy?

10:26:42 AM Commissioner Stacy - witness Rieth  
Note: Sacre, Candace Examination. Is this your handout?

10:26:49 AM Commissioner Stacy - witness Rieth  
Note: Sacre, Candace Average heating value is 1,050?

10:27:03 AM Commissioner Stacy - witness Rieth  
Note: Sacre, Candace But minimum 1,035?

10:27:14 AM Commissioner Stacy - witness Rieth  
Note: Sacre, Candace Went down to 1,030 at one point?

10:27:28 AM	Commissioner Stacy - witness Rieth Note: Sacre, Candace	Explain this process of MSD proposal to inject gas into pipeline, describe that?
10:28:19 AM	Commissioner Stacy - witness Rieth Note: Sacre, Candace	Talk about connection and how connection made?
10:29:03 AM	Commissioner Stacy - witness Rieth Note: Sacre, Candace	Part of mechanism allowing gas injected into system, some kind of system putting propane in that make sure minimum heating quality?
10:29:45 AM	Commissioner Stacy - witness Rieth Note: Sacre, Candace	Would ask sewer district to add that to the system before injected?
10:29:54 AM	Commissioner Stacy - witness Rieth Note: Sacre, Candace	They bear cost for that?
10:30:02 AM	Commissioner Stacy - witness Rieth Note: Sacre, Candace	Who bears cost for each little part?
10:30:32 AM	Commissioner Stacy - witness Rieth Note: Sacre, Candace	Sewer district pay all costs associated with facilities, mechanisms, everything, pay for all that?
10:31:01 AM	Commissioner Stacy - witness Rieth Note: Sacre, Candace	One of main concerns is quality of gas and heating content of downstream customers on system?
10:31:23 AM	Commissioner Stacy - witness Rieth Note: Sacre, Candace	How determine how far down system able determine somebody getting inferior product?
10:32:16 AM	Commissioner Stacy - witness Rieth Note: Sacre, Candace	Have ability sample certain distances or intervals?
10:32:30 AM	Commissioner Stacy - witness Rieth Note: Sacre, Candace	May not know which one of those customers affected except based upon modeling?
10:33:05 AM	Commissioner Stacy - witness Rieth Note: Sacre, Candace	How big is system in length and miles or whatever?
10:33:19 AM	Commissioner Stacy - witness Rieth Note: Sacre, Candace	If starts where propose put gas in it and go farthest end away, how far estimate that be?
10:34:14 AM	Commissioner Stacy - witness Rieth Note: Sacre, Candace	From one end of it to other, starts in?
10:34:39 AM	Commissioner Stacy - witness Rieth Note: Sacre, Candace	In modeling, take into consideration between downtown Louisville and Metcalf Co could be large variations affect whole system?
10:35:25 AM	Commissioner Stacy - witness Rieth Note: Sacre, Candace	Could be big variation between local areas?
10:36:37 AM	Commissioner Stacy - witness Rieth Note: Sacre, Candace	When received 1,030 Btu gas, adjust billing to customers on line from where connected to Texas Gas until said inferior gas intermingled, adjust those rates to account for that?
10:37:30 AM	Commissioner Stacy - witness Rieth Note: Sacre, Candace	Saying to them based upon heat content?
10:38:19 AM	Commissioner Stacy - witness Rieth Note: Sacre, Candace	In fact, using one standard for outgoing gas volume used and asking them produce gas that is certain heating standard?
10:38:49 AM	Commissioner Stacy - witness Rieth Note: Sacre, Candace	Reason not looked into more possibilities for virtual pipeline gas, how describe virtual pipeline?

10:39:28 AM	Commissioner Stacy - witness Rieth Note: Sacre, Candace	One of questions was kind of a push for more those kinds of things, not said is a little push for that let's look into it, not worthwhile at this time?
10:40:08 AM	Commissioner Stacy - witness Rieth Note: Sacre, Candace	Just asking why not looked into that?
10:40:45 AM	Commissioner Stacy - witness Rieth Note: Sacre, Candace	If put inferior gas in line, how long take to intermingle until not tell difference between it and what putting in from Texas Gas?
10:41:42 AM	Chairman Hatton - witness Rieth Note: Sacre, Candace	Examination. This is first time had request for RNG supply into LG&E pipeline?
10:42:08 AM	Chairman Hatton - witness Rieth Note: Sacre, Candace	First time is this application?
10:42:20 AM	Chairman Hatton - witness Rieth Note: Sacre, Candace	First time had request like this in Kentucky?
10:42:40 AM	Chairman Hatton - witness Rieth Note: Sacre, Candace	Look at public comments?
10:42:49 AM	Chairman Hatton - witness Rieth Note: Sacre, Candace	One took issue with fact LG&E not allow delivery of gas by truck, address that?
10:43:38 AM	Chairman Hatton - witness Rieth Note: Sacre, Candace	What would that entail?
10:44:23 AM	Commissioner Regan - witness Rieth Note: Sacre, Candace	Examination. Need special trucks if have to do that?
10:44:55 AM	Chairman Hatton - witness Rieth Note: Sacre, Candace	Examination. Might address issue of discriminatory rates?
10:45:46 AM	Chairman Hatton - witness Rieth Note: Sacre, Candace	Another of comments filed from Synthica, approached LG&E/KU about injecting different interconnection site different county, proposal in this case exceeds any other heating value across county, know if true?
10:47:11 AM	Chairman Hatton - witness Rieth Note: Sacre, Candace	Any other injection point that could be used?
10:47:46 AM	Chairman Hatton - witness Rieth Note: Sacre, Candace	Changes cost and feasibility for MSD, change necessity for heat value and tariff proposing?
10:48:15 AM	Chairman Hatton - witness Rieth Note: Sacre, Candace	Assume proposed rate based on average of four scenarios?
10:48:49 AM	Chairman Hatton - witness Rieth Note: Sacre, Candace	Be a bit conservative, I guess?
10:48:58 AM	Chairman Hatton - witness Rieth Note: Sacre, Candace	Any thought given to a true-up if impact is less than expect?
10:49:26 AM	Chairman Hatton Note: Sacre, Candace	Follow-up?
10:49:31 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Recross Examination. Injecting into service line, explain what talking about?
10:50:09 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Asked about heating value and how work, what are you saying?
10:50:43 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Flow back into MSD?
10:50:49 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	Asked whether modeled that, and answer was no?

10:51:07 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	As post-hearing data request, with information from MSD possible model that impact to system collection areas?
10:52:34 AM	Atty Malone MSD - witness Rieth Note: Sacre, Candace	If got past first stage pressure cut, flow back?
10:53:10 AM	Chairman Hatton Note: Sacre, Candace	Staff?
10:53:15 AM	Chairman Hatton Note: Sacre, Candace	Redirect?
10:53:17 AM	Atty Braun LG&E - witness Rieth Note: Sacre, Candace	Redirect Examination. Heating values experienced, set forth in tariff and what actually received as far as deliveries, how many years LG&E received pipeline Btu gas in that 1030 and up range?
10:53:48 AM	Atty Braun LG&E - witness Rieth Note: Sacre, Candace	Close to a decade?
10:53:50 AM	Atty Braun LG&E - witness Rieth Note: Sacre, Candace	Remember a year LG&E received pipeline gas in 970 range?
10:54:15 AM	Atty Braun LG&E - witness Rieth Note: Sacre, Candace	Anticipate any significant change in Btu content of gas receiving from either interstate pipeline?
10:54:32 AM	Atty Braun LG&E - witness Rieth Note: Sacre, Candace	Say that happens, Tennessee and Texas start delivering gas at 970 or 980, what LG&E do regard tariff if happens?
10:54:57 AM	Atty Braun LG&E - witness Rieth Note: Sacre, Candace	Reason LG&E come back goal of this is so gas put on system is comparable to gas received from pipeline?
10:55:20 AM	Atty Braun LG&E - witness Rieth Note: Sacre, Candace	Talked about minimum, natural gas pulled out of well may be hotter, what that producer have to do?
10:55:46 AM	Atty Braun LG&E - witness Rieth Note: Sacre, Candace	Call that stripping?
10:55:51 AM	Atty Braun LG&E - witness Rieth Note: Sacre, Candace	Regardless low end or high end, treated the same under tariff?
10:56:00 AM	Atty Braun LG&E - witness Rieth Note: Sacre, Candace	Impact to customers, LG&E bills on volume basis?
10:56:17 AM	Atty Braun LG&E - witness Rieth Note: Sacre, Candace	In order for house stay same temperature, what do?
10:56:28 AM	Atty Braun LG&E - witness Rieth Note: Sacre, Candace	Negative financial consequence?
10:56:33 AM	Atty Braun LG&E - witness Rieth Note: Sacre, Candace	Neighborhoods on west side of expressway, those are customers expect have to incur greater cost?
10:57:00 AM	Atty Braun LG&E - witness Rieth Note: Sacre, Candace	Have financial benefit to LG&E?
10:57:07 AM	Atty Braun LG&E - witness Rieth Note: Sacre, Candace	Why here saying, no, think it needs to be 1035 and 1070?
10:57:25 AM	Atty Braun LG&E - witness Rieth Note: Sacre, Candace	Who should have to bear cost of making gas comparable?
10:58:02 AM	Commissioner Stacy - witness Rieth Note: Sacre, Candace	Examination. Understand what proposal is pay all costs, set standards for what gas accept?
10:58:16 AM	Commissioner Stacy - witness Rieth Note: Sacre, Candace	If set standards and they pay all cost, wash to any customer?

10:59:11 AM	Commissioner Stacy - witness Rieth Note: Sacre, Candace	Saying inferior product be purchasing?
10:59:18 AM	Commissioner Stacy - witness Rieth Note: Sacre, Candace	Thought set standard?
10:59:50 AM	Commissioner Stacy - witness Rieth Note: Sacre, Candace	So be no cost?
10:59:55 AM	Chairman Hatton Note: Sacre, Candace	Follow-up?
11:00:02 AM	Chairman Hatton Note: Sacre, Candace	Back at 11:17.
11:00:16 AM	Session Paused	
11:17:48 AM	Session Resumed	
11:17:52 AM	Chairman Hatton Note: Sacre, Candace	Back on the record.
11:18:04 AM	Chairman Hatton Note: Sacre, Candace	Mr. Malone, call your witness.
11:18:19 AM	Chairman Hatton Note: Sacre, Candace	Witness is sworn.
11:18:25 AM	Atty Malone MSD - witness Gellner Note: Sacre, Candace	Direct Examination. Name and address?
11:18:40 AM	Atty Malone MSD - witness Gellner Note: Sacre, Candace	What position?
11:18:47 AM	Atty Malone MSD - witness Gellner Note: Sacre, Candace	Address connection between Hazen & Sawyer and MSD?
11:19:15 AM	Atty Malone MSD - witness Gellner Note: Sacre, Candace	Cause filed direct testimony?
11:19:23 AM	Atty Malone MSD - witness Gellner Note: Sacre, Candace	Cause filed data request responses?
11:19:28 AM	Atty Malone MSD - witness Gellner Note: Sacre, Candace	Alterations, corrections, additions?
11:19:40 AM	Chairman Hatton Note: Sacre, Candace	Staff?
11:19:52 AM	Chairman Hatton Note: Sacre, Candace	LG&E?
11:20:07 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	Cross Examination. Nature of project, at Morris Forman wastewater goes through treatment process, returned to environment?
11:20:55 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	Biosolids created, sold as fertilizer?
11:23:24 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	Already biosolids being created and sold, Louisville Green?
11:24:07 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	Where available sold on market, described upgrades to these biosolid processing solutions?
11:24:22 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	Two components, \$250 million bioprocessing, Class A fertilizer?
11:24:58 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	That's the \$250 million project, and RNG project \$30 million, is additional?
11:25:32 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	As a result of process, eventually treated water returned, biosolids sold or landfilled, and is gas created by process?
11:25:52 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	MSD doing with that gas at present, digester gas?

11:26:45 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	Listed few different potential uses for digester gas, combined heat and power services?
11:29:56 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	Confirm, if MSD does inject RNG, purpose is would be new revenue stream for MSD?
11:30:20 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	Tax credits, what does MSD have to do with digester gas to get tax credits?
11:31:34 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	Your understanding MSD has to place RNG onto gas distribution or transmission system to receive tax credits?
11:32:24 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	Fair to say MSD wishes to engage in activity, use of RNG, in a way maximizes profits and lowers expenses?
11:33:31 AM	Chairman Hatton - witness Gellner Note: Sacre, Candace	Examination. MSD a for-profit corporation?
11:33:37 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	Cross Examination (cont'd). Response, Staff First, MSD-7, MSD compares three alternatives, you present cumulative net revenue?
11:34:10 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	RNG have greatest benefit \$39 million dollars over 20-year project horizon, mean profit?
11:35:33 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	But fair to say MSD selected alternative because has greatest financial benefit?
11:35:48 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	In hearing room when Rieth testifying?
11:35:56 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	Hear testimony as result of lower heat content, if came in maximum number, customer impact energy value difference \$200,000?
11:36:17 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	Response, PSC 1-7, \$39 million over 20 years, divided by 20, about ten percent of benefit a year MSD seeing be paid by LG&E retail customers?
11:39:07 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	Going back to first point, MSD plan to credit on customer bills percentage of revenues from RNG sold?
11:40:50 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	Testimony page 5 state, reading, LG&E asked for financial analysis regarding project, including cost increase Btu value, anticipate net revenue \$5.6 million a year?
11:41:57 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	\$5.6 million anticipated revenue to MSD and O&M cost is \$700,000 a year, 12 1/2 percent difference?
11:42:33 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	Assuming minimum heating value 1035, know percentage of propane needed to be added?
11:43:47 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	If MSD blends RNG with propane, still 95 percent or greater RNG placed into system?
11:45:47 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	Has MSD prepared site feasibility study show the valuation of blending propane on site?

11:46:44 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	PSC 1-3, in this answer, MSD states, reading, correct?
11:47:58 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	Looking subpart (a), link to a residential gas consumption EIA, see that?
11:48:17 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	Clicked that link and it produced ten-page PDF, information that you reviewed?
11:49:11 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	Show me where 53.3 CCF where found that?
11:49:47 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	If look at beginning of document, first chart calculating average energy usage for US and by each state, correct?
11:50:08 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	Second chart, average volume consumption all homes and each state, if look at average site energy consumption for Kentucky lists CCF as 533 not 53.3?
11:50:41 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	Would have substantial impact on calculation of homes usage?
11:50:56 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	Also use data in chart to calculate average heat content for each state?
11:51:19 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	Average energy usage divided by the CCFs and that produces average heat content per CCF?
11:51:41 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	If do that for Kentucky, site consumption 54.60 million Btu, if go back and look at average site energy consumption saw that was 533 CCF for Kentucky, right?
11:53:08 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	If do math, average energy usage and divide by CCF, for Kentucky, average is 1,024 Btu?
11:53:28 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	Did for US, looked at average Btu content see how compared with Kentucky, average energy usage is 56.3 all homes?
11:53:48 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	Divide by 560 CCF, so for US is 1,005 Btu value, Kentucky Btu content is greater on average than US?
11:54:09 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	Noticed in MSD Response, Staff First, No. 2, mentioned Atlas pipeline in Texas accepting substantial RNG since 1999, site consumption is 35.3?
11:54:45 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	Their natural gas usage is 357?
11:54:53 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	Average heat content in Texas is 989, Btu content much closer to 970 see with straight RNG?
11:55:41 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	LG&E transports gas but also delivers to residential and commercial customers?
11:55:54 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	Aware LG&E tariff contains average hearing value will supply customers?



11:56:18 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	LG&E tariff heating value that it says all customers receive over 12-month period Btu is 1,050, aware of that?
11:56:37 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	The 1035 lower range of LGDS tariff, lower than 1050?
11:56:53 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	LG&E not proposing RNG has to be at level agreed provide to customers?
11:57:07 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	Proposing average lower than average receiving from interstate pipelines at 1060?
11:57:28 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	LG&E asked questions where mentioned flow of RNG result in negligible impact, what does negligible mean, response, reading, correct?
11:58:35 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	But agree LG&E submitted analysis that does measure impact?
11:58:46 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	Under four static cases, average cold day, 2500 customers receive up to 49 percent RNG?
11:59:06 AM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	Average warm day increases to 13,000 customers?
11:59:22 AM	Chairman Hatton Note: Sacre, Candace	Staff?
11:59:29 AM	Asst Gen Counsel Tussey PSC - witness Gellner Note: Sacre, Candace	Cross Examination. Beginning of testimony, talked about had worked with MSD on Morris Forman biosolids processing solution project in owner's advisory role, explain what is?
12:01:29 PM	Asst Gen Counsel Tussey PSC - witness Gellner Note: Sacre, Candace	In role, does Hazen & Sawyer have financial interest in seeing project through?
12:02:36 PM	Asst Gen Counsel Tussey PSC - witness Gellner Note: Sacre, Candace	Mentioned advise many different water districts or companies, have any clients have production RNG in place?
12:03:39 PM	Asst Gen Counsel Tussey PSC - witness Gellner Note: Sacre, Candace	Propane, questions about tax credit, what needed qualify, mentioned renewable aspect but not say which part of request cause issues, more specific what issue point to may not qualify?
12:05:37 PM	Asst Gen Counsel Tussey PSC - witness Gellner Note: Sacre, Candace	Claimed could endanger \$50 million in tax credits if required implement changes under proposed tariff?
12:08:13 PM	Asst Gen Counsel Tussey PSC - witness Gellner Note: Sacre, Candace	When made statements, nothing specifically point to as far as tariff amendment but are aspects of feasibility and cost affected?
12:09:04 PM	Asst Gen Counsel Tussey PSC - witness Gellner Note: Sacre, Candace	Discussed timeline, appeared undertaken some activity toward accomplishing project, have to start construction in order to qualify?
12:11:25 PM	Asst Gen Counsel Tussey PSC - witness Gellner Note: Sacre, Candace	Had chance review draft interconnect agreement LG&E submitted?
12:11:47 PM	Asst Gen Counsel Tussey PSC - witness Gellner Note: Sacre, Candace	Response, Staff Fourth, page 10 of 28, Item 1, answer in data request, will include that, can put question in post-hearing data request, both questions.
12:11:48 PM	POST-HEARING DATA REQUEST Note: Sacre, Candace	ASST GEN COUNSEL TUSSEY PSC - WITNESS GELLNER

12:12:56 PM	Note: Sacre, Candace Asst Gen Counsel Tussey PSC - witness Gellner	QUESTIONS CONCERNING RESPONSE, STAFF FOURTH
	Note: Sacre, Candace	Other questions relate back to propane, page 3 of testimony, reading, describe that more fully what view of health and safety hazards are?
12:14:36 PM	Asst Gen Counsel Tussey PSC - witness Gellner	
	Note: Sacre, Candace	Several places describe hazards as significant, page 6 discussing RNG gas flow, how define significant as relates to way use it on this page and generally?
12:17:44 PM	Asst Gen Counsel Tussey PSC - witness Gellner	
	Note: Sacre, Candace	What MSD plan if adopted without modification?
12:18:22 PM	Asst Gen Counsel Tussey PSC - witness Gellner	
	Note: Sacre, Candace	Aware of interstate or intrastate pipeline or LDC with RNG Btu requirement as high as 1035 requirement LG&E recommending?
12:18:46 PM	Asst Gen Counsel Tussey PSC - witness Gellner	
	Note: Sacre, Candace	Does minimum requirement eliminate RNG being injected into LG&E system?
12:19:52 PM	Asst Gen Counsel Tussey PSC - witness Gellner	
	Note: Sacre, Candace	Braun asked about TCR-1 exhibit, mentioned not have reason disagree with modeling based on information LG&E used?
12:20:40 PM	Asst Gen Counsel Tussey PSC - witness Gellner	
	Note: Sacre, Candace	Some particular feature of models believe not accurately represent what happen if MSD injected RNG into system?
12:21:28 PM	Review of 11/6/2024 12:20:46 PM	
12:24:50 PM	Asst Gen Counsel Tussey PSC - witness Gellner	
	Note: Sacre, Candace	Mentioned not want negatively impact LG&E ratepayers, what if MSD runs modeling and indicates injection of RNG adversely affect 8500 customers, what MSD position be then?
12:25:59 PM	Chairman Hatton	
	Note: Sacre, Candace	Commissioner Regan?
12:26:03 PM	Chairman Hatton	
	Note: Sacre, Candace	Commissioner Stacy?
12:26:10 PM	Commissioner Stacy - witness Gellner	
	Note: Sacre, Candace	Examination. Describe how described interest based upon her question?
12:27:20 PM	Commissioner Stacy - witness Gellner	
	Note: Sacre, Candace	Describe yourself as ownership interest?
12:27:42 PM	Commissioner Stacy - witness Gellner	
	Note: Sacre, Candace	Indicated had one other project similar to this, where was that?
12:27:57 PM	Commissioner Stacy - witness Gellner	
	Note: Sacre, Candace	Does it use propane?
12:28:01 PM	Commissioner Stacy - witness Gellner	
	Note: Sacre, Candace	What difference, one uses propane and other opposes use propane?
12:28:35 PM	Commissioner Stacy - witness Gellner	
	Note: Sacre, Candace	What is source of gas?
12:28:43 PM	Commissioner Stacy - witness Gellner	
	Note: Sacre, Candace	Similar to this?
12:29:03 PM	Commissioner Stacy - witness Gellner	
	Note: Sacre, Candace	Not enough space for propane storage and creates safety concern?
12:29:45 PM	Commissioner Stacy - witness Gellner	
	Note: Sacre, Candace	Not consider acquiring more property?
12:29:53 PM	Commissioner Stacy - witness Gellner	
	Note: Sacre, Candace	But haven't yet?
12:30:16 PM	Commissioner Stacy - witness Gellner	
	Note: Sacre, Candace	Credits talking about, credits can be sold and traded?

12:30:33 PM	Commissioner Stacy - witness Gellner Note: Sacre, Candace	Particular market or place credits sold?
12:30:43 PM	Commissioner Stacy - witness Gellner Note: Sacre, Candace	Particular market entity are sold on?
12:31:02 PM	Commissioner Stacy - witness Gellner Note: Sacre, Candace	Have idea what credits selling for now?
12:31:35 PM	Commissioner Stacy - witness Gellner Note: Sacre, Candace	Safe say market trending up for this product?
12:32:01 PM	Commissioner Stacy - witness Gellner Note: Sacre, Candace	Been selling between low 20s to high 20s?
12:32:20 PM	Commissioner Stacy - witness Gellner Note: Sacre, Candace	Market conditions affect this project and how you looked at in case not work with LG&E could sell those?
12:33:05 PM	Commissioner Stacy - witness Gellner Note: Sacre, Candace	Make assumption not work out deal here move ahead and capture this product and sell on market?
12:34:35 PM	Commissioner Stacy - witness Gellner Note: Sacre, Candace	But when say prefer use gas on site rather than sell, wasteful use of product?
12:35:49 PM	Commissioner Stacy - witness Gellner Note: Sacre, Candace	Based upon revenue forecast, project is feasible whether into LG&E pipeline or keep on site or sell product on market, safe assumption, feasible either way?
12:37:14 PM	Commissioner Stacy - witness Gellner Note: Sacre, Candace	Have forecasts shown project feasible either way?
12:37:38 PM	Commissioner Stacy - witness Gellner Note: Sacre, Candace	If transport it, did study on this had to come up with some kind of transport method, this project still feasible that way, too?
12:38:09 PM	Commissioner Stacy - witness Gellner Note: Sacre, Candace	But is financially viable?
12:38:19 PM	Commissioner Stacy - witness Gellner Note: Sacre, Candace	Is it still financially viable?
12:38:37 PM	Commissioner Stacy - witness Gellner Note: Sacre, Candace	If keep gas on site, still sell credits?
12:38:45 PM	Commissioner Stacy - witness Gellner Note: Sacre, Candace	Guess can assume whether or not put in pipeline and give to LG&E or do some other method, still is viable project here?
12:39:21 PM	Chairman Hatton - witness Gellner Note: Sacre, Candace	Examination. Along those lines, credits trending upward, projections done whether trend upward or value continues?
12:40:32 PM	Chairman Hatton - witness Gellner Note: Sacre, Candace	Thinking might have been worth lot more, projection maybe depending if different result from election, still viable?
12:42:40 PM	Chairman Hatton - witness Gellner Note: Sacre, Candace	Are all affected LG&E customers also MSD customers?
12:43:00 PM	Chairman Hatton - witness Gellner Note: Sacre, Candace	Adding propane not eliminate tax credits?
12:43:08 PM	Chairman Hatton - witness Gellner Note: Sacre, Candace	Might reduce them?
12:43:24 PM	Chairman Hatton - witness Gellner Note: Sacre, Candace	Heard say if this tariff adopted as proposed that MSD not be interested in going forward with project, is that Hazen & Sawyer or speaking for MSD?
12:44:16 PM	Chairman Hatton - witness Gellner Note: Sacre, Candace	Are speaking for MSD?

12:44:30 PM	Chairman Hatton - witness Gellner Note: Sacre, Candace	Is there another injection point for RNG downstream, look at alternatives for other injection points?
12:45:10 PM	Chairman Hatton - witness Gellner Note: Sacre, Candace	Not want to pay increased tariff rate and not want to inject propane, if make do either of those things, no longer feasible?
12:45:35 PM	Chairman Hatton - witness Gellner Note: Sacre, Candace	Not going to do either one of them?
12:46:18 PM	Chairman Hatton - witness Gellner Note: Sacre, Candace	How much cost, estimated cost be over a year, over a month, over any time period do you know what cost be adding propane?
12:46:40 PM	Chairman Hatton - witness Gellner Note: Sacre, Candace	Per year?
12:46:49 PM	Chairman Hatton - witness Gellner Note: Sacre, Candace	Have adjacent site for propane storage?
12:47:31 PM	Chairman Hatton - witness Gellner Note: Sacre, Candace	Eliminate safety concerns but back to?
12:48:17 PM	Chairman Hatton - witness Gellner Note: Sacre, Candace	By Rieth reckoning, still be revenue even with additional propane cost?
12:48:55 PM	Chairman Hatton - witness Gellner Note: Sacre, Candace	Representation is not accept smaller revenue than exact proposed?
12:49:38 PM	Chairman Hatton - witness Gellner Note: Sacre, Candace	Even with value of tax credits rising, the margin is that small, either implement proposal as it without additional tariff and likely discriminate against customers depending on where they are, going to pull out?
12:50:31 PM	Chairman Hatton - witness Gellner Note: Sacre, Candace	It is for us?
12:51:05 PM	Chairman Hatton - witness Gellner Note: Sacre, Candace	Not overbearing, that is decision faced with here?
12:51:15 PM	Chairman Hatton - witness Gellner Note: Sacre, Candace	I mean, mentioned different ways might have been compromise, didn't really look at that?
12:51:34 PM	Chairman Hatton - witness Gellner Note: Sacre, Candace	You did?
12:51:42 PM	Chairman Hatton - witness Gellner Note: Sacre, Candace	If specific on reason not do that, might have missed it if other than it cost more?
12:52:26 PM	Chairman Hatton Note: Sacre, Candace	Redirect?
12:52:32 PM	Atty Malone MSD - witness Gellner Note: Sacre, Candace	Redirect Examination. Blending propane in, OSHA concern with that?
12:53:15 PM	Atty Malone MSD - witness Gellner Note: Sacre, Candace	Referencing Clean Air Act and RMP rules, something familiar with?
12:53:36 PM	Atty Malone MSC - witness Gellner Note: Sacre, Candace	Stacy asked about other project in Raleigh, aware what minimum heating value is for that project?
12:54:00 PM	Atty Malone MSC - witness Gellner Note: Sacre, Candace	Not run into same problem in Raleigh?
12:54:25 PM	Atty Malone MSD - witness Gellner Note: Sacre, Candace	Hatton asked whether or not familiar with other utilities across as high Btu value as LG&E proposing, what is likelihood any other RNG providers want to do this with propane?

12:54:55 PM	Atty Braun LG&E Note: Sacre, Candace	Object, call for speculation.
12:55:02 PM	Chairman Hatton Note: Sacre, Candace	I think he can answer if he knows.
12:55:25 PM	Atty Malone MSD - witness Gellner Note: Sacre, Candace	Familiar with projects blending in propane?
12:55:42 PM	Atty Malone MSD - witness Gellner Note: Sacre, Candace	Several questions injection points, is way by which MSD feed gas into LG&E system and also take gas at fairly high level?
12:56:42 PM	Chairman Hatton Note: Sacre, Candace	Follow up?
12:56:47 PM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	Recross Examination. In option just mentioned, if gas be fed into service line and returned back to MSD, only amounts MSD consuming passed back through?
12:57:35 PM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	Problem in scenario is, if directed back to MSD, cannot be additional gas put on in excess of what taken, over-pressurization, result in safety concern to MSD and LG&E?
12:58:25 PM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	Thought talking about scenario all go back to MSD, if goes back into system have same problem discriminatory rates and impact other customers?
12:59:41 PM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	Is not other solution to that, solution have MSD continue flare ten, that difference, what doing now?
1:00:05 PM	Atty Braun LG&E - witness Gellner Note: Sacre, Candace	Either use it or flare it and then no impact to customers?
1:00:30 PM	Chairman Hatton Note: Sacre, Candace	Follow up?
1:00:40 PM	Asst Gen Counsel Tussey PSC - witness Gellner Note: Sacre, Candace	Recross Examination. If MSD injects into pipeline under current tariff and not amended, position quality of gas all customers receiving in system is same?
1:01:31 PM	Chairman Hatton Note: Sacre, Candace	Anything further?
1:01:34 PM	Chairman Hatton Note: Sacre, Candace	Further redirect?
1:01:44 PM	Chairman Hatton Note: Sacre, Candace	Exhibits.
1:01:54 PM	Atty Braun LG&E Note: Sacre, Candace	Failed to move to introduce data response and chart.
1:01:58 PM	LG&E HEARING EXHIBIT 2 Note: Sacre, Candace Note: Sacre, Candace	ATTY BRAUN LG&E - WITNESS GELLNER RESPONSE TO COMMISSION STAFF 1, ITEM 3, DATED JULY 17 2024 AND ATTACHMENT
1:03:03 PM	Chairman Hatton Note: Sacre, Candace	Motions.
1:03:06 PM	Chairman Hatton Note: Sacre, Candace	Post-hearing data requests.
1:04:18 PM	Chairman Hatton Note: Sacre, Candace	Briefs.
1:04:40 PM	Chairman Hatton Note: Sacre, Candace	Anything else?

1:04:47 PM

Chairman Hatton

Note: Sacre, Candace

Hearing adjourned.

1:05:03 PM

Session Ended



## Exhibit List Report

2024-00125 06Nov2024

Louisville Gas and Electric  
Company (LG&E)

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<b>Name:</b>	<b>Description:</b>
INTERVENOR HEARING EXHIBIT 1	NI SOURCE TARGETS INCREASING USE OF RNG AS PART OF SUSTAINABILITY COMMITMENT MARCH 11 2024
LG&E HEARING EXHIBIT 1	HEATING VALUES
LG&E HEARING EXHIBIT 2	RESPONSE TO COMMISSION STAFF 1, ITEM 3, WITH ATTACHMENT

**NEWS**

Monday, March 11, 2024

# NiSource targets increasing use of RNG as part of sustainability commitment

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RNG News

An important part of NiSource's sustainability plan involves increasing the use of Renewable Natural Gas (RNG). (<https://www.nisource.com/company/sustainability>). As an alternate, pipeline gas, RNG is fully interchangeable with conventional natural gas and we believe provides many of the same safe and reliable usage benefits for customers. In some ways it could provide a greater benefit than conventional natural gas because it captures more greenhouse gases than it emits.

RNG is a byproduct of the decomposition of organic matter from sources such as landfills, livestock operations, and wastewater treatment facilities. Because it comes from organic sources that once absorbed carbon dioxide, RNG is carbon neutral. It is produced from organic waste that would otherwise decay and emit methane emissions into the atmosphere.

Since RNG is fully interchangeable with natural gas, no additional updates are needed to our existing natural gas distribution infrastructure. RNG is available now, and the supply is growing all the time. By continuing to expand our energy mix, NiSource is expected to meet the sustainable energy needs of our customers for well into the future.



Today, all NiSource operating companies offer RNG producers the option to interconnect with our gas distribution systems, where the NiSource companies can transport RNG to the market. Each company has high quality gas standards set in place specifically for RNG that enters our systems. To streamline the process, each NiSource company allows RNG producers to submit applications through the company websites.

To date, some companies have already begun to offer customers RNG as an option for their energy needs. Our subsidiaries, NIPSCO and Columbia Gas of Virginia (CVA) offer the voluntary Green Path<sup>SM</sup> program. This program offers various levels of RNG and carbon offsets for customers to neutralize all or part of their carbon emissions from their natural gas usage. NiSource plans to continue to seek approval from state regulatory commissions to offer the program across other service territories.

Additionally, NiSource companies are building strategies to advocate for favorable and supportive policies that enable investments in additional sustainable fuel sources. At the state level, NiSource is engaged with chambers of commerce, business roundtables, farm bureaus, and restaurant associations to advance legislation that is expected to enable the development of renewable energy and low-carbon and no-carbon fuels.

As an example, CVA worked with stakeholders to pass the Virginia Energy Innovation Act in June 2022, which allows for the robust development of renewable natural gas in the commonwealth of Virginia. This law allows gas utilities to invest in and own RNG processing facilities. The statute also includes recovery of operations and maintenance expenses associated with producing RNG. The law opens potential opportunities for CVA to produce RNG for its natural gas customers in the state. It also could lead to the decarbonization of the natural gas system in Virginia without significant impact to customers' bills. Added benefits could include the reduction of Scope 3 emissions and the potential for job creation and economic development opportunities for Virginia.

While the value and necessity of natural gas will remain an important part of our energy future for generations to come, the addition of renewable energy options, such as, RNG, will be vital in the transition to a more diverse mix of energy resources that are safe, reliable, and environmentally responsible.

#### **Forward-Looking Statements**

This article contains "forward-looking statements," within the meaning of Section 27A of the Securities Act of 1933, as amended (the "Securities Act"), and Section 21E of the Securities Exchange Act of 1934, as amended (the "Exchange Act"). Investors and prospective investors should understand that many factors govern whether any forward-looking statement contained herein will be or can be realized. Any one of those factors could cause actual results to differ materially from those projected. These forward-looking statements include, but are not limited to, statements concerning our plans, strategies, objectives, goals, expected performance, including sustainability commitments, and any and all underlying assumptions and other statements that are other than statements of historical fact. Expressions of future goals and expectations and similar expressions, including "may," "will," "should," "could," "would," "aims," "seeks," "expects," "plans," "anticipates," "intends," "believes," "estimates," "predicts," "potential," "targets," "forecast," and "continue," reflecting something other than historical fact are intended to identify forward-looking statements. All forward-looking statements are based on assumptions that management believes to be reasonable; however, there can be no assurance that actual results will not differ materially.

Factors that could cause actual results to differ materially from the projections, forecasts, estimates and expectations discussed in this article include, among other things: our ability to execute our business plan or growth strategy, including utility infrastructure investments; potential incidents and other operating risks associated with our business; our ability to work successfully with our third-party investors; our ability to adapt to, and manage costs related to, advances in technology, including alternative energy sources and changes in laws and regulations; our increased dependency on technology; impacts related to our aging infrastructure; our ability to obtain sufficient insurance coverage and whether such coverage will protect us against significant losses; the success of our electric generation strategy; construction risks and supply risks; fluctuations in demand from residential and commercial customers; fluctuations in the price of energy commodities and related transportation costs or an inability to obtain an adequate, reliable and cost-effective fuel supply to meet customer demand; our ability to attract, retain or re-skill a qualified, diverse workforce and maintain good labor relations; our ability to manage new initiatives and organizational changes; the actions of activist stockholders; the performance and quality of third-party suppliers and service providers; potential cybersecurity attacks or security breaches; increased requirements and costs related to cybersecurity; any damage to our reputation; the impacts of natural disasters, potential terrorist attacks or other catastrophic events; the physical impacts of climate change and the transition to a lower carbon future; our ability to manage the financial and operational risks related to achieving our carbon emission reduction goals, including our Net Zero Goal; our debt obligations; any changes to our credit rating or the credit rating of certain of our subsidiaries; adverse economic and capital market conditions, including increases in inflation or interest rates, recession, or changes in investor sentiment; economic regulation and the impact of regulatory rate reviews; our ability to obtain expected financial or regulatory outcomes; economic conditions in certain industries; the reliability of customers and suppliers to fulfill their payment and contractual obligations; the ability of our subsidiaries to generate cash; pension funding obligations; potential impairments of goodwill; the outcome of legal and regulatory proceedings, investigations, incidents, claims and litigation; compliance with changes in, or new interpretations of applicable laws, regulations and

tariffs; the cost of compliance with environmental laws and regulations and the costs of associated liabilities; changes in tax laws or the interpretation thereof; and other matters set forth in Item 1, "Business," Item 1A, "Risk Factors" and Part II, Item 7, "Management's Discussion and Analysis of Financial Condition and Results of Operations," of our Annual Report on Form 10-K for the fiscal year ended December 31, 2023, and any subsequent filings made with the Securities and Exchange Commission, some of which risks are beyond our control.

All forward-looking statements are expressly qualified in their entirety by the foregoing cautionary statements. We undertake no obligation to, and expressly disclaim any such obligation to, update or revise any forward-looking statements to reflect changed assumptions, the occurrence of anticipated or unanticipated events or changes to the future results over time or otherwise, except as required by law.

Posted In Company, Customers

Need more info on this story? [Contact our media relations team \(mailto:media@NISource.com\)](mailto:media@NISource.com).

#### **CORPORATE HEADQUARTERS**

801 E. 86th Avenue

Merrillville, IN 46410 [Map](#)

<https://www.google.com/maps/place/801+E+86th+Ave,+Merrillville,+IN+46410/@41.4614568,-87.3279096,17z/data=!3m1!4b1!4m5!3m4!1s0x881eeede44c8669:0x17c752f05d873257066>

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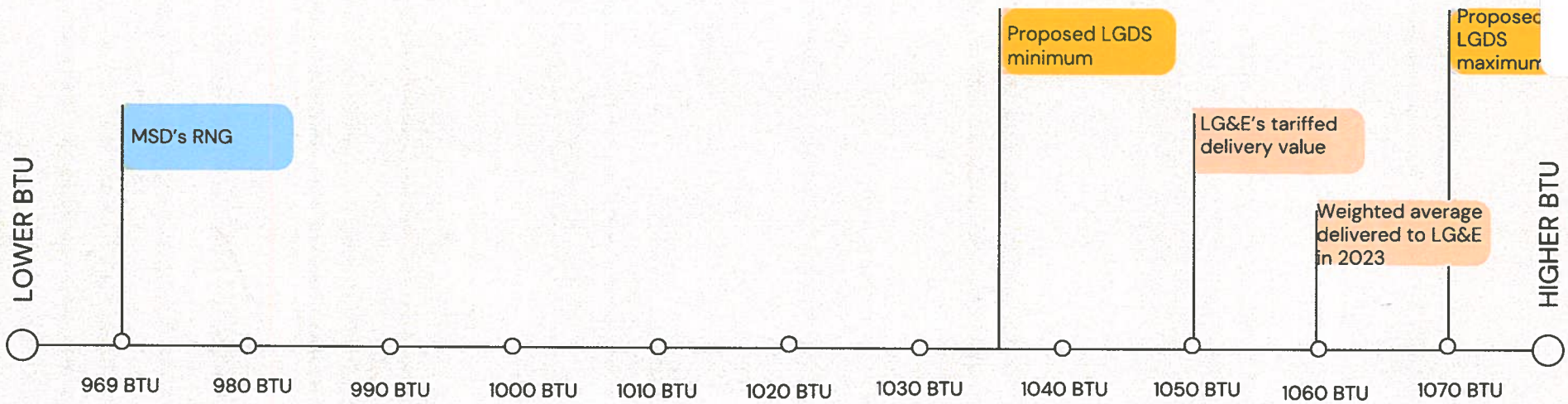
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# HEATING VALUES



LEGEND:

- MSD RNG
- LGDS Proposed
- Other Relevant Values

**SOURCE TABLE**

<b>Data Point</b>	<b>BTU/SCF</b>	<b>Source</b>
MSD RNG	969	Gellner Direct Testimony, p. 6, lines 15-20
Proposed LGDS Minimum	1035	LG&E'S March 29, 2024 Tariff Filing
LG&E's Tariffed Delivery Value	1050	P.S.C. Gas No. 13, Original Sheet No. 99  Company will normally supply natural gas having an average heating value of approximately 1,050 Btu per cubic foot for any twelve (12) month period.
Weighted Average Delivered to LG&E in 2023	1060	Rieth Rebuttal Testimony, p. 4, lines 18-21
Proposed LGDS Maximum	1070	LG&E'S March 29, 2024 Tariff Filing

**LOUISVILLE METROPOLITAN SEWER DISTRICT  
RESPONSE TO COMMISSION STAFF'S  
FIRST REQUEST FOR INFORMATION  
DATED JULY 17, 2024**

3. Refer to the Gellner Direct Testimony, page 4, lines 34–38. Explain the volume of RNG MSD expects to produce annually.
- Identify MSD's expected average household usage of RNG.
  - Identify the number of households that MSD expects to supply RNG to on an annual basis.

**Response:**

- RNG produced by Louisville MSD would be injected into an LG&E pipeline to demonstrate a pathway for the gas to a customer who would use it as renewable vehicle fuel, which would make the RNG eligible for Renewable Identification Number (RIN) credits. Louisville MSD does not have the data required to calculate expected average household usage of RNG in the Louisville Metro area. However, based on the 2020 Residential Energy Consumption Survey from the US Energy Information Administration Office of Energy Demand and Integrated Statistics, the average U.S. household uses 53.3 centum cubic feet (CCF) or 5330 cubic feet (CF) of natural gas annually (Residential Gas Consumption - eia). This unit conversion was used in the calculation in (b) below.
- Average RNG production is estimated to be approximately 320 million CF per year. By dividing this figure by the annual average household usage, we can determine the number of households supplied on an annual basis.

$$\begin{aligned} \text{Number of households (max)} &= \frac{320,000,000 \text{ CF}}{1 \text{ year}} \times \frac{1 \text{ house}}{5,330 \frac{\text{CF}}{\text{year}}} \\ &= 60,037 \text{ households supplied per year} \end{aligned}$$

The RNG saved at Morris Forman will be able to supply **60,000 houses per year** with an average household usage of 53.3 CCF per year. Further calculations can be performed if the necessary data is made available from LG&E.

Data release date: March 2023

Annual household site fuel consumption in U.S. homes by state—totals and averages, 2020

	Number of housing units (million)		Total site energy consumption <sup>a</sup> (trillion Btu and percentages of totals)					Average site energy consumption <sup>a</sup> (million Btu per household using the fuel)							
	Total U.S. <sup>b</sup>	Total	Electricity	Natural gas	Propane	Fuel oil or kerosene	Total	Electricity	Natural gas	Propane	Fuel oil or kerosene				
<b>All homes</b>	123.53	9,481.1	4,453.3	47%	4,240.7	45%	391.4	4%	395.7	4%	76.8	36.1	56.3	35.2	69.7
Alabama	1.90	122.4	89.5	73%	28.1	23%	4.4	4%	Q	Q	64.4	47.1	33.9	16.9	Q
Alaska	0.26	32.2	6.5	20%	18.9	59%	0.4	1%	6.3	20%	125.1	25.4	118.0	15.7	92.3
Arizona	2.68	166.2	124.2	75%	38.5	23%	3.3	2%	Q	Q	62.1	46.40	28.00	19.40	Q
Arkansas	1.14	86.5	52.					4%	N	N	75.7	45.7	53.6	19.7	N
California	13.18	707.5	291.5	41%	395.6	56%	20.1	3%	Q	Q	53.7	22.1	34.1	32.0	Q
Colorado	2.26	197.6	62.8	32%	127.0	64%	7.7	4%	Q	Q	87.5	27.8	67.7	64.9	Q
Connecticut	1.38	127.0	36.7	29%	37.7	30%	5.0	4%	47.5	37%	91.9	26.6	56.2	26.6	86.4
Delaware	0.38	27.4	14.5	53%	8.9	32%	2.2	8%	1.9	7%	72.0	38.00	50.00	26.50	48.40
District of Columbia	0.32	16.0	7.6	47%	8.3	52%	Q	Q	Q	Q	50.7	24.0	35.2	Q	Q
Florida	8.06	408.3	384.8	94%	19.5	5%	4.0	1%	N	N	50.6	47.7	15.5	10.5	N
Georgia	3.88	286.7	175.7	61%	102.2	36%	8.2	3%	Q	Q	73.9	45.3	48.3	20.2	Q
Hawaii	0.47	14.4	12.9	90%	0.9	6%	0.5	4%	N	N	30.3	27.2	12.1	9.2	N
Idaho	0.66	58.5	24.8	42%	30.4	52%	3.0	5%	Q	Q	89.2	37.80	71.10	46.70	Q
Illinois	4.90	486.7	141.3	29%	328.1	67%	17.1	4%	Q	Q	99.3	28.8	79.5	80.5	Q
Indiana	2.60	250.1	103.2	41%	132.6	53%	13.7	5%	Q	Q	96.2	39.7	72.3	56.7	Q
Iowa	1.28	126.9	44.9	35%	66.2	52%	15.0	12%	Q	Q	99.0	35.0	70.6	77.2	Q
Kansas	1.13	101.9	41.6	41%	54.3	53%	6.0	6%	N	N	90.4	36.9	64.6	50.2	N
Kentucky	1.74	129.6	79.1	61%	45.6	35%	4.0	3%	Q	Q	74.6	45.50	54.60	22.00	Q
Louisiana	1.73	117.0	87.1	74%	28.4	24%	1.6	1%	N	N	67.8	50.4	35.1	16.3	N
Maine	0.56	50.1	13.6	27%	6.4	13%	6.4	13%	23.8	47%	88.8	24.0	50.8	31.0	77.9
Maryland	2.28	171.2	89.7	52%	69.7	41%	1.9	1%	9.8	6%	75.0	39.3	55.9	14.2	58.6
Massachusetts	2.71	238.0	67.0	28%	104.8	44%	6.6	3%	59.5	25%	87.7	24.7	60.7	31.5	85.0
Michigan	3.92	424.4	111.9	26%	272.9	64%	32.4	8%	7.2	2%	108.3	28.60	86.60	76.60	61.40
Minnesota	2.23	223.7	71.0	32%	126.3	56%	24.0	11%	Q	Q	100.3	31.8	79.0	59.9	Q
Mississippi	1.08	76.9	52.0	68%	18.8	24%	5.9	8%	Q	Q	70.9	48.0	43.9	28.6	Q

**Annual household site fuel consumption in U.S. homes by state—totals and averages, 2020**

	Number of housing units (million)		Total site energy consumption <sup>a</sup> (trillion Btu and percentages of totals)						Average site energy consumption <sup>a</sup> (m illbn Btu per household using the fuel)						
	Total U.S. <sup>b</sup>	Total	Electricity	Natural gas	Propane	Fuel oil or kerosene	Total	Electricity	Natural gas	Propane	Fuel oil or kerosene				
<b>All homes</b>	123.53	9,481.1	4,453.3	47%	4,240.7	45%	391.4	4%	395.7	4%	76.8	36.1	56.3	35.2	69.7
Missouri	2.43	215.8	99.3	46%	108.0	50%	8.4	4%	N	N	88.8	40.9	69.9	38.1	N
Montana	0.43	38.0	13.8	36%	21.3	56%	2.6	7%	Q	Q	87.6	31.8	77.7	50.2	Q
Nebraska	0.77	67.6	28.0	41%	37.5	56%	2.1	3%	N	N	88.4	36.50	66.60	45.10	N
Nevada	1.14	87.4	43.1	49%	41.2	47%	3.1	4%	N	N	76.7	37.9	47.2	47.3	N
New Hampshire	0.54	49.0	13.4	27%	9.3	19%	7.5	15%	18.9	38%	91.1	24.8	56.0	41.1	81.2
New Jersey	3.39	349.3	96.2	28%	234.6	67%	3.1	1%	15.4	4%	102.9	28.3	84.4	20.8	58.1
New Mexico	0.79	60.6	22.1	37%	35.1	58%	3.3	5%	N	N	76.9	28.1	54.7	40.8	N
New York	7.52	619.3	177.5	29%	319.8	52%	27.4	4%	94.7	15%	82.3	23.60	54.60	34.70	69.30
North Carolina	4.01	251.6	171.1	68%	65.1	26%	12.2	5%	3.1	1%	62.7	42.6	44.4	23.3	33.7
North Dakota	0.32	29.8	12.7	43%	12.5	42%	3.8	13%	0.8	3%	94.3	40.4	76.6	66.2	67.0
Ohio	4.74	443.5	166.2	37%	242.2	55%	24.8	6%	10.3	2%	93.6	35.1	73.1	55.9	70.3
Oklahoma	1.49	126.3	69.2	55%	52.9	42%	4.2	3%	N	N	84.6	46.3	57.1	28.1	N
Oregon	1.65	111.5	62.8	56%	45.6	41%	1.8	2%	Q	Q	67.4	38.00	56.70	15.60	Q
Pennsylvania	5.13	459.1	179.3	39%	205.5	45%	21.8	5%	52.5	11%	89.5	35.0	70.0	30.6	67.4
Rhode Island	0.42	41.0	9.9	24%	19.9	48%	0.6	1%	10.7	26%	98.0	23.6	77.0	14.2	80.3
South Carolina	1.97	121.6	90.9	75%	26.2	22%	4.2	3%	Q	Q	61.7	46.1	33.6	17.7	Q
South Dakota	0.35	30.2	12.7	42%	14.0	46%	3.1	10%	Q	Q	87.1	36.8	64.5	57.3	Q
Tennessee	2.66	194.1	128.9	66%	59.8	31%	4.6	2%	Q	Q	73.0	48.50	54.20	20.30	Q
Texas	10.26	679.4	470.3	69%	195.0	29%	13.7	2%	Q	Q	66.2	45.9	35.3	22.9	Q
Utah	1.04	96.7	32.3	33%	63.7	66%	Q	Q	N	N	93.0	31.1	68.1	Q	N
Vermont	0.26	22.9	6.0	26%	3.9	17%	3.3	15%	9.7	42%	88.6	23.0	58.5	33.3	71.2
Virginia	3.24	243.9	143.1	59%	82.6	34%	9.8	4%	8.3	3%	75.2	44.1	57.1	21.9	44.7
Washington	2.94	197.2	110.2	56%	81.4	41%	5.1	3%	Q	Q	67.1	37.50	61.70	21.80	Q
West Virginia	0.70	57.2	32.0	56%	22.3	39%	1.7	3%	Q	Q	82.1	45.9	67.3	18.3	Q
Wisconsin	2.39	218.7	68.7	31%	126.9	58%	20.0	9%	Q	Q	91.5	28.8	70.9	66.5	Q
Wyoming	0.23	22.3	7.1	32%	13.2	59%	2.0	9%	N	N	98.6	31.30	78.4	84.9	N

**Annual household site fuel consumption in U.S. homes by state—totals and averages, 2020**

	Number of housing units (million)	Total site energy consumption <sup>a</sup> (trillion Btu and percentages of totals)					Average site energy consumption <sup>a</sup> (million Btu per household using the fuel)								
		Total U.S. <sup>b</sup>	Total	Electricity	Natural gas	Propane	Fuel oil or kerosene	Total	Electricity	Natural gas	Propane	Fuel oil or kerosene			
<b>All homes</b>	123.53	9,481.1	4,453.3	47%	4,240.7	45%	391.4	4%	395.7	4%	76.8	36.1	56.3	35.2	69.7

Data source: U.S. Energy Information Administration, Office of Energy Demand and Integrated Statistics, Forms EIA-457A, D, E, F, & G of the 2020 Residential Energy Consumption Survey

Notes: Because of rounding, data may not sum to totals. Percentages are calculated on unrounded numbers. See RECS Terminology for the definitions of terms used in these tables. Differences in estimates between states may not be statistically significant.

Btu=British thermal units

<sup>a</sup> Consumption and expenditures for biomass (wood), coal, district steam, and solar thermal are excluded. Electricity consumption from on-site solar photovoltaic generation (i.e., solar panels) is included.

<sup>b</sup> Total U.S. includes all primary occupied housing units in the 50 states and the District of Columbia. Vacant housing units, seasonal units, second homes, military houses, and group quarters are excluded.

Q = Data withheld because either the relative standard error (RSE) was greater than 50% or fewer than 10 households in reporting sample.

N = No households in reporting sample.



Data release date: March 2023

**Annual household site fuel consumption in U.S. homes by state—totals and averages, 2020**

	Number of housing units (million)	Total site energy consumption <sup>a</sup>				Average site energy consumption <sup>a</sup> (per household using the fuel)			
		Electricity (billion kWh)	Natural gas (billion cf)	Propane (million gallons)	Fuel oil or kerosene (million gallons)	Electricity (kWh)	Natural gas (ccf)	Propane (gallons)	Fuel oil or kerosene (gallons)
Total U.S. <sup>b</sup>	123.53	1,305.2	4,217.4	4,280.1	2,880.3	10,566	560	384	507
Alabama	1.90	26.2	27.8	48.4	Q	13810	335	185	Q
Alaska	0.26	1.9	19.4	4.3	45.9	7452	1211	172	672
Arizona	2.68	36.4	40.6	35.9	Q	13603	296	212	Q
Arkansas	1.14	15.3	31.2	34.0	N	13395	536	216	N
California	13.18	85.4	390.2	219.9	Q	6482	336	350	Q
Colorado	2.26	18.4	144.5	84.4	Q	8144	770	709	Q
Connecticut	1.38	10.8	36.9	54.3	345.7	7794	549	290	629
Delaware	0.38	4.2	8.6	23.9	13.6	11135	484	290	352
District of Columbia	0.32	2.2	8.1	Q	Q	7020	343	Q	Q
Florida	8.06	112.8	19.1	43.3	N	13990	151	115	N
Georgia	3.88	51.5	102.5	90.1	Q	13270	484	221	Q
Hawaii	0.47	3.8	1.0	5.8	N	7976	128	101	N
Idaho	0.66	7.3	33.1	33.2	Q	11086	774	511	Q
Illinois	4.90	41.4	324.4	187.1	Q	8451	786	880	Q
Indiana	2.60	30.3	129.3	150.0	Q	11638	705	621	Q

## Annual household site fuel consumption in U.S. homes by state—totals and averages, 2020

	Number of housing units (million)	Total site energy consumption <sup>a</sup>				Average site energy consumption <sup>a</sup> (per household using the fuel)			
		Total U.S. <sup>b</sup>	Electricity (billion kWh)	Natural gas (billion cf)	Propane (million gallons)	Fuel oil or kerosene (million gallons)	Electricity (kWh)	Natural gas (ccf)	Propane (gallons)
<b>All homes</b>	123.53	1,305.2	4,217.4	4,280.1	2,880.3	10,566	560	384	507
Iowa	1.28	13.2	64.0	164.5	Q	10262	683	844	Q
Kansas	1.13	12.2	55.0	65.2	N	10829	653	549	N
Kentucky	1.74	23.2	44.5	43.2	Q	13330	533	240	Q
Louisiana	1.73	25.5	27.9	17.1	N	14779	345	178	N
Maine	0.56	4.0	6.2	69.8	173.1	7048	491	339	567
Maryland	2.28	26.3	67.8	21.2	71.3	11526	544	155	426
Massachusetts	2.71	19.6	102.5	72.2	433.4	7237	593	345	619
Michigan	3.92	32.8	264.9	353.9	52.6	8370	840	838	447
Minnesota	2.23	20.8	123.7	262.3	Q	9331	774	655	Q
Mississippi	1.08	15.3	18.5	64.0	Q	14062	431	312	Q
Missouri	2.43	29.1	108.5	92.2	N	11983	703	416	N
Montana	0.43	4.0	22.8	27.9	Q	9308	831	549	Q
Nebraska	0.77	8.2	37.2	23.1	N	10712	660	493	N
Nevada	1.14	12.6	44.4	33.6	N	11094	509	518	N
New Hampshire	0.54	3.9	9.1	82.1	137.2	7273	547	450	591
New Jersey	3.39	28.2	227.0	34.2	112.0	8305	817	227	423
New Mexico	0.79	6.5	41.7	36.1	N	8234	649	446	N
New York	7.52	52.0	313.4	300.0	689.1	6916	535	379	505
North Carolina	4.01	50.2	64.6	133.7	22.7	12498	440	255	245
North Dakota	0.32	3.7	12.3	41.3	5.5	11841	755	724	488

**Annual household site fuel consumption in U.S. homes by state—totals and averages, 2020**

	Number of housing units (million)	Total site energy consumption <sup>a</sup>				Average site energy consumption <sup>a</sup> (per household using the fuel)			
		Electricity (billion kWh)	Natural gas (billion cf)	Propane (million gallons)	Fuel oil or kerosene (million gallons)	Electricity (kWh)	Natural gas (ccf)	Propane (gallons)	Fuel oil or kerosene (gallons)
Total U.S. <sup>b</sup>									
<b>All homes</b>	123.53	1,305.2	4,217.4	4,280.1	2,880.3	10,566	560	384	507
Ohio	4.74	48.7	234.0	271.6	75.2	10278	706	612	512
Oklahoma	1.49	20.3	53.2	46.4	N	13579	575	308	N
Oregon	1.65	18.4	44.6	19.4	Q	11132	554	170	Q
Pennsylvania	5.13	52.6	203.3	238.3	382.3	10248	693	335	491
Rhode Island	0.42	2.9	19.4	6.6	77.9	6913	751	155	585
South Carolina	1.97	26.7	25.9	45.8	Q	13526	331	194	Q
South Dakota	0.35	3.7	13.9	34.0	Q	10779	640	627	Q
Tennessee	2.66	37.8	59.4	50.0	Q	14220	538	222	Q
Texas	10.26	137.8	197.6	149.4	Q	13440	357	251	Q
Utah	1.04	9.5	72.1	Q	N	9116	771	Q	N
Vermont	0.26	1.7	3.8	36.6	70.6	6746	568	364	518
Virginia	3.24	41.9	79.6	107.4	60.8	12937	550	239	326
Washington	2.94	32.3	76.5	56.0	Q	10990	579	238	Q
West Virginia	0.70	9.4	21.2	18.2	Q	13462	642	200	Q
Wisconsin	2.39	20.1	125.3	218.9	Q	8432	700	728	Q
Wyoming	0.23	2.1	15.1	22.1	N	9180	898	929	N

## Annual household site fuel consumption in U.S. homes by state—totals and averages, 2020

Number of housing units (million)	Total site energy consumption <sup>a</sup>				Average site energy consumption <sup>a</sup> (per household using the fuel)				
	Total U.S. <sup>b</sup>	Electricity (billion kWh)	Natural gas (billion cf)	Propane (million gallons)	Fuel oil or kerosene (million gallons)	Electricity (kWh)	Natural gas (ccf)	Propane (gallons)	Fuel oil or kerosene (gallons)
All homes	123.53	1,305.2	4,217.4	4,280.1	2,880.3	10,566	560	384	507

Data source: U.S. Energy Information Administration, Office of Energy Demand and Integrated Statistics, Forms EIA-457A, D, E, F, & G of the *2020 Residential Energy Consumption Survey*

Notes: Because of rounding, data may not sum to totals. See RECS Terminology for the definitions of terms used in these tables. Differences in estimates between states may not be statistically significant.

kWh=kilowatthours

cf=cubic feet

ccf=hundred cubic feet

<sup>a</sup> Consumption and expenditures for biomass (wood), coal, district steam, and solar thermal are excluded. Electricity consumption from on-site solar photovoltaic generation (i.e., solar panels) is included.

<sup>b</sup> *Total U.S.* includes all primary occupied housing units in the 50 states and the District of Columbia. Vacant housing units, seasonal units, second homes, military houses, and group quarters are excluded.

Q = Data withheld because either the relative standard error (RSE) was greater than 50% or fewer than 10 households in reporting sample.

N = No households in reporting sample.

Data release date: March 2023

**Relative standard errors (RSE) for Annual household site fuel consumption in U.S. homes by state—totals and averages, 2020**

	RSEs for total site energy consumption <sup>a</sup>					RSEs for average site energy consumption <sup>a</sup>									
	Total U.S. <sup>b</sup>	Total	Electricity	Natural gas	Fuel oil or kerosene	Total	Electricity	Natural gas	Propane	Fuel oil or kerosene					
<b>All homes</b>	0.00	0.40	0.38	0.45	0.91	0.61	3.80	3.77	3.43	3.48	0.40	0.38	0.72	2.94	2.14
Alabama	0.00	3.73	3.68	2.92	12.04	10.17	24.97	24.89	91.22	91.24	3.73	3.68	7.02	20.40	107.05
Alaska	0.00	3.51	3.42	3.65	5.45	3.86	36.68	36.34	12.10	11.38	3.51	3.42	4.35	33.51	7.45
Arizona	0.00	2.13	2.70	1.57	4.82	4.65	22.90	22.29	101.21	101.18	2.13	2.70	4.04	17.20	0.00
Arkansas	0.00	4.60	4.18	3.36	9.16	5.98	23.10	23.20	0.00	0.00	4.60	4.18	5.76	17.75	0.00
California	0.00	1.29	1.47	1.30	2.01	1.15	16.78	16.86	101.19	101.19	1.29	1.47	1.95	13.73	0.00
Colorado	0.00	2.51	2.82	2.63	3.62	2.36	37.92	37.65	101.76	101.73	2.51	2.82	2.78	26.19	0.00
Connecticut	0.00	4.17	3.73	3.57	9.62	8.65	19.11	19.71	8.73	6.53	4.17	3.73	6.84	16.65	5.58
Delaware	0.00	4.61	4.33	5.25	13.14	10.33	20.81	20.24	29.18	28.70	4.61	4.33	8.63	15.35	16.46
District of Columbia	0.00	5.61	4.33	4.22	8.69	4.01	100.01	100.22	54.36	54.13	5.61	4.33	8.15	0.00	31.46
Florida	0.00	2.39	2.26	0.63	12.02	11.07	27.62	27.24	0.00	0.00	2.39	2.26	8.70	24.00	0.00
Georgia	0.00	3.29	2.95	3.00	7.75	5.49	20.40	20.30	97.30	97.34	3.29	2.95	5.36	13.79	122.16
Hawaii	0.00	3.62	4.13	1.58	15.07	15.28	24.59	24.35	0.00	0.00	3.62	4.13	10.56	17.61	0.00
Idaho	0.00	4.04	3.66	3.09	6.14	3.22	23.74	23.44	69.59	69.96	4.04	3.66	4.61	18.34	54.29
Illinois	0.00	2.08	2.79	2.78	2.97	1.70	22.10	21.89	97.51	97.52	2.08	2.79	2.49	11.12	87.18
Indiana	0.00	2.55	2.67	2.77	4.43	3.00	21.39	20.99	69.23	69.22	2.55	2.67	3.29	12.19	61.20
Iowa	0.00	2.86	3.51	3.57	5.68	4.21	14.62	14.56	100.80	100.73	2.86	3.51	3.64	7.03	0.00
Kansas	0.00	3.79	3.62	3.45	6.04	3.47	23.20	22.87	0.00	0.00	3.79	3.62	3.73	14.20	0.00
Kentucky	0.00	2.66	2.48	2.09	5.38	3.71	19.16	18.82	55.07	54.99	2.66	2.48	4.65	15.50	45.40
Louisiana	0.00	3.78	2.52	2.77	11.80	8.83	37.85	37.84	0.00	0.00	3.78	2.52	8.92	27.64	0.00
Maine	0.00	3.80	3.70	4.03	16.88	16.76	13.80	13.30	7.23	5.05	3.80	3.70	10.70	10.18	3.99
Maryland	0.00	3.63	3.51	3.31	7.24	4.97	28.48	28.37	19.34	18.88	3.63	3.51	5.00	23.63	9.63
Massachusetts	0.00	2.09	1.80	2.11	5.14	4.38	18.62	18.74	7.36	6.92	2.09	1.80	3.49	13.85	3.71
Michigan	0.00	3.08	3.19	2.58	4.59	2.65	17.41	17.48	33.06	33.40	3.08	3.19	3.40	8.90	20.53
Minnesota	0.00	2.97	3.72	3.36	5.05	3.49	13.39	13.16	46.71	46.82	2.97	3.72	3.59	9.64	15.26
Mississippi	0.00	4.05	4.00	3.65	13.40	11.60	27.05	26.32	101.02	101.27	4.05	4.00	8.34	20.59	0.00

Relative standard errors (RSE) for Annual household site fuel consumption in U.S. homes by state—totals and averages, 2020

	RSEs for number of housing units		RSEs for total site energy consumption <sup>a</sup>								RSEs for average site energy consumption <sup>a</sup>				
	Total U.S. <sup>b</sup>	Total	Electricity		Natural gas		Propane		Fuel oil or kerosene		Total	Electricity	Natural gas	Propane	Fuel oil or kerosene
All homes	0.00	0.40	0.38	0.45	0.91	0.61	3.80	3.77	3.43	3.48	0.40	0.38	0.72	2.94	2.14
Missouri	0.00	3.32	3.22	3.89	6.73	4.23	20.87	21.21	0.00	0.00	3.32	3.22	3.88	11.10	0.00
Montana	0.00	5.41	5.95	5.61	8.76	5.60	36.06	35.82	68.42	68.98	5.41	5.95	5.63	23.45	76.06
Nebraska	0.00	4.10	5.37	4.57	6.55	3.84	32.48	33.43	0.00	0.00	4.10	5.37	4.85	22.12	0.00
Nevada	0.00	4.41	4.13	3.46	7.54	4.72	31.77	31.65	0.00	0.00	4.41	4.13	5.97	20.71	0.00
New Hampshire	0.00	4.36	4.51	4.64	15.71	15.96	15.98	14.95	11.19	9.23	4.36	4.51	10.08	13.30	5.34
New Jersey	0.00	3.52	2.96	2.79	4.60	1.97	33.07	32.63	19.10	19.02	3.52	2.96	4.23	25.02	11.17
New Mexico	0.00	4.31	5.46	4.41	6.46	4.01	31.93	32.00	0.00	0.00	4.31	5.46	5.04	18.40	0.00
New York	0.00	1.86	2.11	1.93	3.25	2.73	14.15	13.53	9.62	9.33	1.86	2.11	2.78	11.72	5.33
North Carolina	0.00	2.42	2.13	2.10	7.53	6.20	20.98	20.34	37.46	37.84	2.42	2.13	4.61	17.28	20.87
North Dakota	0.00	3.94	3.67	3.89	7.89	5.92	14.84	13.66	39.96	39.80	3.94	3.67	5.55	8.41	17.23
Ohio	0.00	2.75	3.30	3.44	4.76	3.31	18.72	18.16	33.31	33.12	2.75	3.30	3.75	10.96	19.60
Oklahoma	0.00	3.37	3.98	3.40	6.63	4.87	26.63	26.41	0.00	0.00	3.37	3.98	4.30	22.38	0.00
Oregon	0.00	3.82	3.57	3.66	8.21	5.46	28.82	29.00	47.70	48.07	3.82	3.57	5.32	19.59	24.00
Pennsylvania	0.00	2.31	2.92	2.88	4.62	3.42	15.01	14.79	10.51	10.29	2.31	2.92	3.89	12.42	6.88
Rhode Island	0.00	4.81	4.60	4.59	9.51	6.98	32.42	32.71	11.58	11.09	4.81	4.60	7.79	17.50	5.86
South Carolina	0.00	3.07	2.95	2.25	9.57	8.00	22.01	21.55	100.18	100.22	3.07	2.95	6.67	17.50	0.00
South Dakota	0.00	4.57	4.61	4.32	8.50	6.44	22.16	21.15	74.35	74.30	4.57	4.61	6.15	12.55	55.51
Tennessee	0.00	3.94	3.07	2.50	8.83	5.75	21.24	21.60	57.47	57.89	3.94	3.07	7.09	15.59	47.96
Texas	0.00	1.48	1.52	1.29	4.21	3.31	16.86	17.11	79.06	79.16	1.48	1.52	3.20	13.05	14.83
Utah	0.00	4.22	4.25	4.00	5.58	2.25	71.60	71.70	0.00	0.00	4.22	4.25	5.01	49.49	0.00
Vermont	0.00	3.35	3.78	3.45	13.69	13.76	13.09	13.43	8.50	6.60	3.35	3.78	9.04	10.58	4.90
Virginia	0.00	2.95	2.39	2.70	7.20	5.30	19.24	18.77	23.78	23.32	2.95	2.39	5.50	16.68	15.87
Washington	0.00	3.11	2.91	2.85	6.32	4.20	25.59	25.12	100.22	100.29	3.11	2.91	3.90	19.63	0.00
West Virginia	0.00	4.52	4.55	4.84	10.35	7.63	36.82	36.79	44.97	44.19	4.52	4.55	5.37	32.03	31.28
Wisconsin	0.00	2.45	3.14	2.76	3.95	2.99	14.21	13.69	51.02	51.03	2.45	3.14	2.47	8.34	43.43
Wyoming	0.00	4.21	5.40	5.09	7.00	5.45	29.96	29.25	0.00	0.00	4.21	5.40	5.20	20.99	0.00

**Relative standard errors (RSE) for Annual household site fuel consumption in U.S. homes by state—totals and averages, 2020**

	RSEs for number of housing units	RSEs for total site energy consumption <sup>a</sup>					RSEs for average site energy consumption <sup>a</sup>								
		Total U.S. <sup>b</sup>	Total	Electricity	Natural gas	Propane	Fuel oil or kerosene	Total	Electricity	Natural gas	Propane	Fuel oil or kerosene			
<b>All homes</b>	0.00	0.40	0.38	0.45	0.91	0.61	3.80	3.77	3.43	3.48	0.40	0.38	0.72	2.94	2.14

Data source: U.S. Energy Information Administration, Office of Energy Demand and Integrated Statistics, Forms EIA-457A, D, E, F, & G of the 2020 Residential Energy Consumption Survey

Notes: See RECS Terminology for definition of terms used in these tables.

<sup>a</sup> Consumption and expenditures for biomass (wood), coal, district steam, and solar thermal are excluded. Electricity consumption from on-site solar photovoltaic generation (i.e., solar panels) is included.

<sup>b</sup> Total U.S. Includes all primary occupied housing units in the 50 states and the District of Columbia. Vacant housing units, seasonal units, second homes, military houses, and group quarters are excluded.

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