

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

ELECTRONIC JOINT APPLICATION OF)	
KENTUCKY UTILITIES COMPANY AND)	
LOUISVILLE GAS AND ELECTRIC COMPANY)	
FOR CERTIFICATES OF PUBLIC CONVENIENCE)	CASE NO.
AND NECESSITY AND SITE COMPATIBILITY)	2022-00402
CERTIFICATES AND APPROVAL OF A DEMAND)	
SIDE MANAGEMENT PLAN AND APPROVAL OF)	
FOSSIL FUEL-FIRED GENERATING UNIT)	
RETIREMENTS)	

NOTICE OF FILING

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

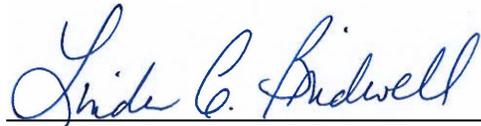
- The digital video recording of the evidentiary hearing conducted on August 23, 2023 in this proceeding;
- Certification of the accuracy and correctness of the digital video recording;
- All exhibits introduced at the evidentiary hearing conducted on August 23, 2023 in this proceeding;
- A written log listing, inter alia, the date and time of where each witness' testimony begins and ends on the digital video recording of the evidentiary hearing conducted on August 23, 2023.

A copy of this Notice, the certification of the digital video record, and hearing log have been served upon all persons listed at the end of this Notice. Parties

desiring to view the digital video recording of the hearing may do so at <https://youtu.be/XoBcnAMrDpA>.

Parties wishing an annotated digital video recording may submit a written request by electronic mail to pscfilings@ky.gov. A minimal fee will be assessed for a copy of this recording.

Done at Frankfort, Kentucky, this 10th day of October 2023.

A handwritten signature in blue ink that reads "Linda C. Bridwell". The signature is written in a cursive style and is positioned above a horizontal line.

Linda C. Bridwell

Executive Director

Public Service Commission of Kentucky

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

ELECTRONIC JOINT APPLICATION OF KENTUCKY)
UTILITIES COMPANY AND LOUISVILLE GAS AND)
ELECTRIC COMPANY FOR CERTIFICATES OF)
PUBLIC CONVENIENCE AND NECESSITY AND SITE)
COMPATIBILITY CERTIFICATES AND APPROVAL)
OF A DEMAND SIDE MANAGEMENT PLAN AND)
APPROVAL OF FOSSIL FUEL-FIRED GENERATING)
UNIT RETIREMENTS)

CASE NO.
2022-00402

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 August 23, 2023. The Formal Hearing Log, Exhibits, and Exhibit List are included with the recording on August 23, 2023;
2. I am responsible for the preparation of the digital recording;
3. The digital recording accurately and correctly depicts the Formal Hearing of August 23, 2023; and
4. The Formal Hearing Log attached to this Certificate accurately and correctly states the events that occurred at the Formal Hearing of August 23, 2023, and the time at which each occurred.

Signed this 6th day of October, 2023.



Candace H. Sacre
Administrative Specialist III



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



Session Report - Detail

2022-00402 23Aug2023

Kentucky Utilities Company and Louisville Gas and Electric Company (KU/LG&E)

Date:	Type:	Location:	Department:
8/23/2023	Public Hearing\Public Comments	Hearing Room 1	Hearing Room 1 (HR 1)

Witness: Lonnie Bellar; Stuart Wilson
 Judge: Kent Chandler; Angie Hatton; Mary Pat Regan
 Clerk: Candace Sacre

Event Time	Log Event
8:35:01 AM	Session Started
8:35:10 AM	Chairman Chandler Note: Sacre, Candace Back on the record.
8:35:15 AM	Chairman Chandler Note: Sacre, Candace Still under oath.
8:35:30 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace Examination (cont'd). Pick up on your response yesterday, said that doesn't sound right what expected happen, thoughts around 2017 assertion not needing generation for next 30 years?
8:40:01 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace Mentioned in 2016 rate case about municipals notice, when did they give notice?
8:40:21 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace Ask it because intervening occurrence caused companies withdraw request for CPCN for Green River combined cycle?
8:40:45 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace Filing was when?
8:41:02 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace When Cane Run 7 into service?
8:41:12 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace CPCN sought same as Green River?
8:41:30 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace Nine, 10, 11, 12 time period?
8:41:36 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace Green River sought same time as Green River and Brown solar battery?
8:42:05 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace Notice, withdraw need for Green, 100 megawatts in excess reserve margin, 7000 MW?
8:42:30 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace Attachment 1 AG 1-13-L provided reference to 7239 MW, sound right?
8:42:50 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace 100 is?
8:42:54 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace What over economic target reserve margin, remember Malloy provided testimony 2018-00005 case, CPCN for advanced metering, remember?
8:43:31 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace Filed in 2016, withdrew, filed 2018, Commission denied, supported business case 2020 rate case for CPCN for AMIs?

8:43:47 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Remember Malloy testimony portion of business case avoided capacity cost being benefit of advanced metering?
8:44:14 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Have appreciation what benefit have been under advanced metering system?
8:44:33 AM	Chairman Chandler Note: Sacre, Candace	Short recess.
8:44:49 AM	Session Paused	
8:50:00 AM	Session Resumed	
8:50:07 AM	Chairman Chandler Note: Sacre, Candace	Back on the record.
8:50:31 AM	Video Conference Deactivated	
8:50:32 AM	Video Conference Activated	
8:50:57 AM	Video Conference Deactivated	
8:51:00 AM	Video Conference Activated	
8:51:26 AM	Video Conference Deactivated	
8:51:28 AM	Video Conference Activated	
8:52:02 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Examination (cont'd). Question about avoided capacity costs of AMI, remember?
8:52:33 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	What context of Malloy business case?
8:53:23 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Broader view, best person answer, context provided helpful, environmental controls almost billion dollars year, sound about right?
8:54:50 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Early amendment to that, '19 through '25 DSM plan, filed late 2017, approved Oct 2018?
8:55:17 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Early 2020 ECR case Mill Creek 1, remember?
8:55:29 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Remembered position was retire Mill Creek 1 not making ELG investment without additional generation?
8:55:54 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Not long but adequate?
8:56:00 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Filed early 2020, case part of this record, assume late 2020 early 2021?
8:56:27 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Oct 2020 finished retirement session?
8:56:36 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Updated retirements for all Mill Creek?
8:56:57 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	All adjusted, Brown 3 2035 to 2028; Ghent 4 2038 to 2037; Mill Creek 1 through 4, respectively, 2032 to 2024, 2034 to 2028, 2038 to 2039, and 2042 to 2039; and Trimble County 1 2050 to 2045, sound right?
8:57:41 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Changing Mill Creek 4 economics and Mill Creek 3 to just align?
8:58:01 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	In 2020, not much time Commission Order and ECR case?

8:58:18 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	At time of DSM filing 2017 through Commission Order 2018, avoided capacity value was zero in retrospect, what know now?
9:00:25 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Reduce amount of investment, dollars recovered from customer, reduced proposed be spent on DSM/EE?
9:01:17 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Had customers continued spend, know what cumulative capacity energy savings be?
9:03:14 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Over study period 900 billion kWh?
9:03:20 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Not think previous program have made \$900 billion dollar kilowatt hour reduction over same 20 years discussing with current proposal?
9:04:01 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Proposed DSM/EE suite alongside CPCNs?
9:04:13 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	If idea avoided capacity cost, why not more reasonable propose DSM/EE in anticipation of needs opposed alongside needs?
9:07:50 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Anticipated savings exact same time build things, why not more reasonable try reduce demand and usage ahead of needing to act to build things?
9:09:45 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Lawson testimony not needing generation 30 years, DSM case?
9:10:10 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Filed late 2017 approved 2018, Mill Creek 1, retire not need additional capacity?
9:10:36 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Did study economic retirement dates of generation?
9:10:50 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Depreciable life?
9:10:56 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Moved forward, brought depreciable retirement date Mill Creek 1?
9:11:23 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Brought expected retirement dates in 2028?
9:11:31 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	When did this Oct 2020 expected Brown 2 Mill Creek 2 economic expect both retired in 2028 with additional generation?
9:12:06 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Oct 2020, knew if retired need additional generation?
9:12:21 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Have ability discount future costs and revenues?
9:12:35 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Wilson seems be expert?
9:12:42 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Concern paying now though need downsize outer year addressed by discounting costs?
9:13:01 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	What knew Oct 2020, what efforts took that point to address DSM/EE programs?
9:15:28 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	When finish analysis in Oct 2020, what knew at that time, believe avoided capacity value zero?

9:16:29 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace When finished report, think avoided capacity value zero dollars still?

9:17:34 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Commission entered Order 2021 approving stipulation settlement agreement?

9:17:50 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Left case open make decision tariff proposal successor net metering rates?

9:18:04 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Remember Commission discussing avoided capacity values?

9:18:24 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Commission taken position on what avoided capacity value was?

9:18:41 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace In 2021?

9:18:45 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Believe avoided capacity value zero?

9:19:15 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Put yourself in Commissioners' shoes, need proposing begins '27 and '28?

9:19:44 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Final answer when need exists?

9:19:59 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Need for energy and capacity subsequent?

9:20:08 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Application filed Jan 6 2023, coming in 2022 asking build '27-28 meet demands '28 through '48, '58, '68?

9:20:35 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace What harm customers defer or downgrade costs if costs exist for decades?

9:22:32 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Other side is question customers have to pay for investment, had DSM/EE implemented negated need for something else pay for?

9:23:55 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace What information informs opinion?

9:24:50 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Got Order 2021 rate case, setting rates, discussed determination on avoided values?

9:25:29 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Think avoided capacity value zero dollars?

9:25:50 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace In 2021, when found out about Ford facility, when have confidence coming to KU territory?

9:26:36 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace In 2021?

9:26:47 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace How many terawatt hours use?

9:26:54 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace A year?

9:27:01 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Almost two billion kilowatt hours?

9:27:13 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace When expected load to start?

9:27:42 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Commission Order 2021, Ford committed two billion kilowatt hours, preplan retirement Mill Creek 1?
9:28:17 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Make company not long not short?
9:28:27 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Starting '23-24, learned Ford coming, felt avoided capacity value zero dollars?
9:29:31 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Both things in 2021, be job direct reassess DSM/EE programs?
9:29:50 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Directed anyone 2021 reassess?
9:31:13 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Hope company reassessing DSM as things change, remember conversation during activities told folks go back and look at DSM/EE programs?
9:32:45 AM	Chairman Chandler Note: Sacre, Candace	Post-hearing data request when direction occurred.
9:32:46 AM	POST-HEARING DATA REQUEST Note: Sacre, Candace Note: Sacre, Candace	CHAIRMAN CHANDLER - WITNESS BELLAR WHEN DIRECTED REASSESSMENT OF DSM/EE PROGRAMS AS CIRCUMSTANCES CHANGED
9:33:04 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Questions when company went out and addressed future DSM/EE advisory group, expectation should have occurred in 2021 or 2022?
9:33:49 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Have idea when appropriate time been address DSM/EE discuss with advisory group?
9:34:47 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	How all come together, start before Schram sent RFP, walk through process?
9:38:43 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	All culminated single proceeding, small CTs number of years?
9:39:19 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	All ended up in same filing, or just make sense?
9:40:57 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Who gives Wilson stay open costs?
9:41:41 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Insofar stay open costs this case different presented to Commission 2020, who best witness questions those differences?
9:43:21 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	When says stay open costs, 2020 ECR case, include categories Wilson uses in testimony, Excel file provided alongside Wilson direct, 20230328 Stay Open Summary, application to retire?
9:45:44 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	SP 4-1, Wilson co-sponsored, looking at same document, Stay Open Costs?
9:46:29 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Include investments required for use of assets?
9:46:48 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Costs represent O&M and capital expenses?
9:47:38 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Expectation column ongoing costs include salaries?
9:47:58 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Brown 3 ongoing costs relatively high?

9:48:13 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Because only one left there?

9:48:25 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Less generators there used to be?

9:49:13 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Avoided costs?

9:49:39 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Aware response provides stay open costs avoidable?

9:50:25 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace If running calculation retires Brown 3, more expensive or less expensive with inclusion of Brown 12 built?

9:51:55 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Part of analysis in 2020 result of investment in 2027 keep unit going, input costs high?

9:52:26 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Those are characteristics of Brown not favorable compared?

9:52:41 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Relative other stations just lower?

9:52:48 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Ignoring overhaul cost in '27 \$92 million investments 2029 and 2031 for life extension, see that?

9:53:25 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Ignore how expensive fuel, limit number of places get it?

9:53:49 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace High because last unit?

9:53:57 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Add Brown 12, column go down?

9:54:10 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Added Brown 12 ongoing costs go down?

9:54:47 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Ongoing costs Brown 1 and 2 operating lower Brown 3?

9:55:33 AM Chairman Chandler
Note: Sacre, Candace Recess until 10:15.

9:55:47 AM Session Paused

10:18:18 AM Session Resumed

10:18:28 AM Chairman Chandler
Note: Sacre, Candace Back on record.

10:18:37 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Examination (cont'd). Exhibit, Table 11, Stay Open costs, document have in front of you?

10:19:21 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Go to 2020-00061, page 188, testimonies in case, direct of Stuart Wilson?

10:20:08 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace SAW-1, 6 of 41, redacted?

10:20:23 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Wilson exhibit part of this case?

10:20:34 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Ghent and Trimble Co?

10:21:02 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Categories of costs different than table in front of you?

10:21:41 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Pick a year just to compare at issue, Mill Creek 2?

10:21:53 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Wilson not come up with info own?

10:22:07 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Provided stay open costs Mill Creek 2

10:22:17 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Go to other document, Table 11?

10:22:27 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Look at Mill Creek 2 in 2024?

10:22:58 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace \$8 million difference?

10:24:02 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace What about \$8 million difference?

10:24:15 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Forty percent difference?

10:24:32 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Ongoing costs, first comparison?

10:25:25 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace LEB-2 not CPCN case anything related to generators?

10:25:37 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace 4.2 read earlier definition total staffing costs?

10:26:01 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace When uses remaintenance and major maintenance, equivalent to overhaul costs standard and overhaul costs life extension?

10:26:36 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Still seeing 4.2 here?

10:26:48 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace After semicolon describe another component, read that?

10:27:06 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Total stay open costs, semicolon?

10:27:21 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Know whether major maintenance overhaul standard and overhaul cost life extension?

10:27:49 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace MC 2, 2024 higher relative to '21 through '25?

10:28:18 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Go to Table 11 of SB 4-1, not seem any years as high, 2026 \$29 million, \$11 million overhaul cost standard, investment moved around?

10:29:23 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Reasonable assume higher costs in 2024 on Table 4 ECR case higher cost 2024 year assumed overhaul standard occur?

10:30:37 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace What possibility overhaul standard could have been delayed from 2024 back to 2026?

10:32:26 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Standard column, not life extension?

10:32:34 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Table 11, SB 4-1, standard for Brown 3 be delayed a year or two?

10:33:37 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Know whether modeled?

10:34:25 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace If Brown 12 added in 2027 and Brown 3 overhaul costs deferred two years, impact both overhaul costs?

10:35:18 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	And ongoing costs?
10:35:36 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Constants in analysis Brown 3 input costs operating basis, fuel expenses?
10:36:14 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Know whether provides Wilson inputs modeling to account degradation and reliability of overhauls?
10:37:24 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Reliability expected go down maintenance deferred, reasonable include in model?
10:38:20 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Who respondent be explanation for differences Table 11 and Table 4 ECR?
10:39:04 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Table 4 provided to Wilson prior to doing retirement estimates?
10:39:24 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Have testimony LEB-2, page 12 of 16?
10:39:39 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Testimony 2020 rate cases?
10:39:46 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	On web site?
10:39:49 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	2020-00350 rate cases?
10:40:08 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	LEB-2, look familiar?
10:40:13 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Stay open policy for MC 2 and BR 3?
10:40:33 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Reassessed economic retirement those units as part of assessment?
10:40:37 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Still have SB 4-1 in paper format?
10:41:03 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Look see what information provided?
10:41:22 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Your retirement assessment says capital and fixed O&M, all costs avoidable if unit retires?
10:41:49 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Be upon retirement go away and not reallocated?
10:42:01 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	MC 2 for 2026, major 10.5 and annual is 26?
10:42:29 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Comparing to Table 11 for Mill Creek 2 ongoing is 18 and overhaul standard is 11?
10:43:23 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Came out with 2020 date MC 2 because expected need NSCR?
10:43:40 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Brown 3 overhaul?
10:43:48 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Big capital costs?
10:43:54 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Stay open costs MC 2 should include environmental SCR costs MC incurring 2022 to 2026?

10:44:48 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Ongoing costs Table 11 synonymous annual costs Table 8?
10:45:17 AM	Chairman Chandler Note: Sacre, Candace	Post-hearing data request.
10:45:18 AM	POST-HEARING DATA REQUEST Note: Sacre, Candace Note: Sacre, Candace	CHAIRMAN CHANDLER - WITNESS BELLAR ONGOING COSTS TABLE 11 SYNONYMOUS WITH ANNUAL COSTS TABLE 8
10:45:38 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	ECR case was?
10:45:54 AM	Chairman Chandler Note: Sacre, Candace	Ask as post-hearing data request for differences in buckets or calculations of different costs for 2020 and 2022 cases.
10:45:55 AM	POST-HEARING DATA REQUEST Note: Sacre, Candace Note: Sacre, Candace	CHAIRMAN CHANDLER - WITNESS BELLAR DIFFERENCES IN CALCULATIONS OF DIFFERENT COSTS FOR 2020 AND 2022 CASES
10:47:04 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Have SC 1, Huddleston went over with you?
10:47:23 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Entitled Winter Storm Elliott Events in LG&E/KU Balancing Authority Area, December 23-24?
10:47:33 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Not go through all generation in balancing area?
10:47:47 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Assets owned or contract?
10:48:25 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Rebuttal where request Goggin?
10:48:40 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Contingency reserve sharing group?
10:48:45 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	LG&E KU TVA?
10:49:04 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Require minimum level transfer capability?
10:49:42 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	NERC requirements certain amount reserves?
10:50:02 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Get to use other calculation?
10:50:13 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Copy of agreement between you and TVA operating reserves?
10:50:14 AM	POST-HEARING DATA REQUEST Note: Sacre, Candace Note: Sacre, Candace	CHAIRMAN CHANDLER - WITNESS BELLAR COPY OF OPERATING RESERVES AGREEMENT BETWEEN KU/LG&E AND TVA
10:50:22 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	External Impact section, ever seen utility go from EEA 0 to EEA 3 as quickly as TVA did?
10:51:00 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	EEA 0 to EEA 3 barely over hour?
10:51:10 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	When hit EEA 3 at 6:12, at 6:26, reading, (click on link for further comments), is CSRG contingency reserve sharing group?
10:51:34 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	MSSC stands for?

10:51:55 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	700 megawatts reserves for CR 7?
10:52:23 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Not count as part of BA?
10:52:49 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Went from having carry portion operating reserves to entirety of operating reserves single largest unit?
10:53:11 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Know if TVA called EEA 3 forced to carry entirety of reserves?
10:53:41 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	EEA 3 have to institute load reductions, have to turn power off?
10:53:59 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Have reduce demand to point so carrying enough reserves equal to single largest contingency?
10:54:31 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Not carrying any reserves at all?
10:54:41 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Get out of EEA 3 when have enough excess equal single largest entity?
10:55:01 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	TVA tell you?
10:55:11 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	LKE both utilities?
10:55:21 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	DSR programs have?
10:55:29 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	What is requested CSR assistance?
10:55:58 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	LKE supplied ???, amount in excess of load?
10:56:25 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Assume case, 233 MW contingency reserves before had issue with Texas Gas?
10:57:38 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Previous page, page 4, not until after 4 started affecting generating units?
10:58:00 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	After gas derates occurred 13:08, and derate at Cane Run 13:47, 13.36 you all called EEA 3?
10:58:38 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Still sending 243 MW requirement under CSRG even when TVA in EEA 3, not read two combined?
10:59:24 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	TVA went back to EEA 2 after went to EEA 3?
10:59:45 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Moved to EEA 2 few minutes after?
10:59:54 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Know did open breakers?
11:00:18 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Voltage reductions?
11:00:33 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	EEA 2 everybody giving amount to CSRG?
11:00:56 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Withdrawal of import back to EEA 3?

11:01:10 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Next day another EEA 3?
11:01:18 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Have to open breakers on 24th?
11:01:41 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	In EEA 3 for 12 hours?
11:01:56 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Whether voltage reductions took place Schram?
11:02:18 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	But for issues weather and not weather related not have to cut customers off?
11:02:51 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Issues with coal plants not have to cut off?
11:03:11 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	But for reduction TVA not have to cut off?
11:03:38 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Coal not single outage?
11:03:45 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Number of issues coal plants?
11:03:50 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	And not single gas plant went off?
11:04:00 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	400 megawatt block from PJM?
11:04:19 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	All issues happened same time caused taking all action loss of load not occur?
11:04:36 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	All caused for same reason?
11:05:13 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Gas all happened loss of pressure?
11:05:21 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Frozen valve?
11:05:26 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Number of coal caused by temperature?
11:06:45 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Is rebuttal specific to Goggin testimony read be not common mode or correlated outages not impact or working mitigate outages?
11:08:42 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Not take testimony mean correlated outages not risk for company not risk need model taking actions mitigate them?
11:10:09 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Think model for probability outages will occur?
11:11:03 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	When say transmission, contingency analysis?
11:11:17 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Probability single unit be out randomized?
11:11:39 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Testimony need move now on no regrets proposal, very few people build?
11:12:07 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	More people depending because replacing with combined cycles?
11:12:30 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Increase demand on gas system?

11:13:52 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Response not accept expect combined cycles and CTs increase?

11:14:33 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace See at EIA.gov?

11:14:38 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace March 2023 data point?

11:14:45 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Read title?

11:15:02 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Record low investment, Annual Intrastate Natural Gas Pipeline Capacity Edition?

11:15:22 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Bar in 2022 lower than every bar back to 1985?

11:15:27 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Second sentence says, reading (click on link for further comments), see that?

11:15:40 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Reading, (click on link for further comments), as general matter, on gas side as well?

11:16:03 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Depend on imports for gas?

11:16:25 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Depend on elsewhere get gas?

11:16:44 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace State to state capacity factor?

11:17:02 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Here at bottom?

11:17:18 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace See Kentucky total?

11:17:36 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace See total fairly static, Row H, 2017?

11:17:50 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace EIA real resource, inflow by state and pipeline, capacity on each, familiar with names?

11:18:33 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace MC 5 what line connecting to?

11:18:40 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Texas Gas, included in two of these?

11:18:48 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Indiana, column G, Texas Gas same capacity since G 2017?

11:19:34 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Other state is Tennessee?

11:19:50 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Same capacity for number of years?

11:20:03 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace If TVA increases combined cycles,

11:20:26 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Enough for us and them?

11:22:16 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Cane Run 7 no notice service?

11:22:29 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace What portion Cane Run 7 no notice?

11:22:46 AM Chairman Chandler - witness Bellar
Note: Sacre, Candace Portion is same, no notice better than firm?

11:23:07 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Have more rights?
11:23:20 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Hint in name?
11:23:27 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Tennessee connect to Brown 12?
11:24:17 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	As bundled rate?
11:24:24 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Tennessee comes from Ohio, Row 254?
11:25:01 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Agree going back years capacity on line not increased?
11:25:11 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Texas Eastern from Ohio increased since 2017?
11:25:20 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	How about Tennessee Gas from Tennessee, increased capacity inflow that pipeline last dozen years?
11:25:35 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Texas Gas Transmission for dozen-plus years?
11:25:50 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Row 266, Tennessee Gas Pipeline only one increased capacity?
11:27:09 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Need determination?
11:27:16 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Certificate from FERC?
11:27:22 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Need for gas transmission more than in
11:27:45 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Taking steps mitigate steps avoid outages, increase demand fuel source has risk?
11:29:45 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Number of coal operators purchase from?
11:29:54 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Duopoly concern?
11:29:58 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Dependent on single line has risk?
11:30:18 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Mitigate risk by diversifying receive that capability?
11:30:40 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Price aside, three baskets?
11:32:00 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Relation to type of risk one pipeline same as Mill Creek where single conveyor bringing in coal, pinch point?
11:32:34 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Stated earlier taken efforts mitigate risk ensure pinch point not affect reliability?
11:33:00 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Clearly within control?
11:33:16 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Be SC-1 attachment to AG 1-13L, conveyor belt not describe external issue?
11:33:49 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Impact external impact?

11:34:01 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Page 18, rebuttal, three improvements, remember that?
11:34:25 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	First one, monitoring?
11:34:35 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Not within control?
11:34:54 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Can monitor but not within control?
11:35:05 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Software Trimble Co mitigate noted by Goggin?
11:35:29 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Reading, (click on link for further comments), read correctly?
11:36:04 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Not saying do, going to analyze those things?
11:36:25 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Item 2 and 3 make current gas plants more reliable?
11:36:40 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Take into account when modeling current reliability without additions?
11:37:11 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Investments make units more reliable?
11:37:24 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Not considering without investments in current proposals?
11:38:09 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Not taking into account calculation?
11:38:28 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Be impossible take into account Elliott type pressure loss?
11:39:12 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	When bids come back?
11:39:24 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Two weeks?
11:39:34 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Not have benefit of those during hearing?
11:40:00 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Believe reasonable in ECR case stress tests determine equilibrium of life, how long open make
11:40:41 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Rules in place as proposed, max 50 percent capacity factor and then abatement zero after that?
11:42:23 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Capacity factor applies to CCs and NGCCs, capacity factor dictates?
11:42:43 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Could run break even of years determine capacity factors in later years?
11:43:08 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Running scenario that solves for proposal, proposed CPCN make sense economically?
11:43:51 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Least cost?
11:43:55 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Run in backwards find out what capacity no longer case?
11:44:15 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Need to start including CTs?

11:44:51 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	48 percent want to know?
11:45:54 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Mentioned root cause exercise, Elliott?
11:46:08 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	What conducted?
11:47:33 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Document indicates determination root cause exercise?
11:48:10 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Single root cause or root causes?
11:49:29 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Know whether Texas Gas pipeline declared a force majeure?
11:50:12 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Failed to meet pressure level required of 500 psi?
11:50:30 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Aware legal actions?
11:51:00 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	What is reliability worth?
11:51:06 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Determine make investment, at what point make for reliability?
11:52:02 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Not modeling risk unavailability of fuel at CCs, how compare incremental reliability benefit?
11:54:33 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Not implicate idea of economic reserve margin not talking about that reliability analysis?
11:55:28 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	One of three improvements based off impacts of Elliott and Goggin correlated outages?
11:56:02 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Not consideration for proposal CPCN?
11:56:37 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Expectation take opportunity dual fuel provides as qualitative determination in case, not quantitative factor?
11:57:55 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Could include incremental capital costs, is less than entire contingency each unit?
11:58:10 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Detailed contingency or just like ten extra?
11:58:26 AM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Short recess 12:30,
11:59:14 AM	Session Paused	
12:40:13 PM	Session Resumed	
12:40:22 PM	Chairman Chandler Note: Sacre, Candace	Back on the record.
12:40:33 PM	Atty Ingram KU/LG&E - witness Bellar Note: Sacre, Candace	Redirect Examination. PSC 1-2, questions about DSM proposal, do those two subparts, b and c, address questions asked?
12:41:33 PM	Atty Ingram KU/LG&E - witness Bellar Note: Sacre, Candace	Summarize what in responses?
12:43:12 PM	Atty Ingram KU/LG&E - witness Bellar Note: Sacre, Candace	On timing when DSM proposal made, not think CPCN request in this case had proposal filed, explain that?

12:43:59 PM Atty Ingram KU/LG&E - witness Bellar
Note: Sacre, Candace Accounts for what propose to achieve?

12:44:14 PM Atty Ingram KU/LG&E - witness Bellar
Note: Sacre, Candace Crockett fuel to be used, VC questions related to public comments, what understanding what customers want?

12:45:49 PM Atty Ingram KU/LG&E - witness Bellar
Note: Sacre, Candace Largest customers industrial?

12:45:58 PM Atty Ingram KU/LG&E - witness Bellar
Note: Sacre, Candace Members of KIUC?

12:46:04 PM Atty Ingram KU/LG&E - witness Bellar
Note: Sacre, Candace Give example who are?

12:46:10 PM Atty Ingram KU/LG&E - witness Bellar
Note: Sacre, Candace What KIUC position?

12:46:33 PM Atty Ingram KU/LG&E - witness Bellar
Note: Sacre, Candace Turn to SB 4 direct, at page 19 to 20, Table 7, remember Malone asking about included part of SB 4 indirect costs?

12:47:22 PM Atty Ingram KU/LG&E - witness Bellar
Note: Sacre, Candace Where in record companies address indirect costs, Table 7 address concept as in SB 4?

12:47:51 PM Atty Ingram KU/LG&E - witness Bellar
Note: Sacre, Candace Reference footnote SAW-1?

12:48:14 PM Atty Ingram KU/LG&E - witness Bellar
Note: Sacre, Candace Have legislation in front of you?

12:48:30 PM Atty Ingram KU/LG&E - witness Bellar
Note: Sacre, Candace Subpart b talks about harm to ratepayers, see that?

12:48:39 PM Atty Ingram KU/LG&E - witness Bellar
Note: Sacre, Candace Reading, (click on link for further comments), read that correctly?

12:48:53 PM Atty Ingram KU/LG&E - witness Bellar
Note: Sacre, Candace Questions rate impact analysis, recall those?

12:49:02 PM Atty Ingram KU/LG&E - witness Bellar
Note: Sacre, Candace Anywhere in SB 4 requires demonstrate issue harm to ratepayers?

12:49:31 PM Atty Ingram KU/LG&E - witness Bellar
Note: Sacre, Candace How revenue requirements help understand impact to ratepayers if projects approved?

12:50:05 PM Atty Ingram KU/LG&E - witness Bellar
Note: Sacre, Candace Crockett got questions yesterday, PSC 5-10, subpart e, reading question?

12:51:19 PM Atty Ingram KU/LG&E - witness Bellar
Note: Sacre, Candace Turn to answer, first paragraph, nothing inappropriate what say here, elaborate detail how is appropriate?

12:55:17 PM Chairman Chandler - witness Bellar
Note: Sacre, Candace Examination. After asked question to Crockett, copy of Data Request Response, flip side would have withdrawn yours if move somebody up, final paragraph e of Response, genesis of question, what chicken and what egg?

12:58:13 PM Chairman Chandler - witness Bellar
Note: Sacre, Candace Project engineering have to ask someone else study transmission impact?

12:59:15 PM Chairman Chandler - witness Bellar
Note: Sacre, Candace TRANServe?

12:59:29 PM Chairman Chandler - witness Bellar
Note: Sacre, Candace Requested studies be completed before put combined cycles in queue?

1:00:00 PM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Second sentence, RFP compare what market offer compared utility self build option be, proposals or have options please give alternatives?
1:01:17 PM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Did Schram group seek two combined cycles separately but in conjunction with RFP or exclusively with RFP?
1:02:29 PM	Chairman Chandler - witness Bellar Note: Sacre, Candace	Not get way answered second sentence first part, see what mean?
1:03:54 PM	Chairman Chandler Note: Sacre, Candace	Mr. Ingram?
1:03:59 PM	Atty Ingram KU/LG&E - witness Bellar Note: Sacre, Candace	Redirect Examination (cont'd). Other weather events going on prior to Elliott had effect?
1:04:53 PM	Atty Ingram KU/LG&E - witness Bellar Note: Sacre, Candace	Talk a bit about service interruptions to customers on regular basis to put into context interruption situation?
1:06:38 PM	Atty Ingram KU/LG&E - witness Bellar Note: Sacre, Candace	Said time to act on proposed facilities is now, anticipated demand for NGCCs and get in line to purchase, gas supply issue that relates whether time is now?
1:07:48 PM	Atty Ingram KU/LG&E - witness Bellar Note: Sacre, Candace	Questions about dual fuel, Commission issue order approved both NGCCs but also allowed dual fuel for NGCCs?
1:09:14 PM	Chairman Chandler Note: Sacre, Candace	Short recess.
1:09:25 PM	Session Paused	
1:12:52 PM	Session Resumed	
1:13:07 PM	Chairman Chandler Note: Sacre, Candace	Back on the record.
1:13:08 PM	Chairman Chandler Note: Sacre, Candace	Next witness?
1:13:12 PM	Atty Crosby KU/LG&E Note: Sacre, Candace	Stuart Wilson.
1:13:15 PM	Chairman Chandler Note: Sacre, Candace	Witness is sworn.
1:13:22 PM	Chairman Chandler - witness Wilson Note: Sacre, Candace	Examination. Name and address?
1:13:34 PM	Atty Crosby KU/LG&E - witness Wilson Note: Sacre, Candace	Direct Examination. By whom employed and capacity?
1:14:08 PM	Atty Crosby KU/LG&E - witness Wilson Note: Sacre, Candace	Testimony and responses?
1:14:16 PM	Atty Crosby KU/LG&E - witness Wilson Note: Sacre, Candace	Corrections?
1:14:22 PM	Atty Crosby KU/LG&E - witness Wilson Note: Sacre, Candace	Asked same questions, answers same?
1:14:37 PM	Atty Crosby KU/LG&E - witness Wilson Note: Sacre, Candace	Adopt today?
1:15:02 PM	Chairman Chandler Note: Sacre, Candace	Mr. Cook?
1:15:15 PM	Asst Atty General Cook - witness Wilson Note: Sacre, Candace	Cross Examination. Author of SAW-1?
1:15:34 PM	Asst Atty General Cook - witness Wilson Note: Sacre, Candace	Section d refers to concept ATC, explain what means?

1:16:16 PM	Asst Atty General Cook - witness Wilson Note: Sacre, Candace	Table in Section b indicate 43 percent not have ability import power?
1:16:50 PM	Asst Atty General Cook - witness Wilson Note: Sacre, Candace	What take cure that?
1:17:07 PM	Asst Atty General Cook - witness Wilson Note: Sacre, Candace	Not just problem with own facilities but also surrounding facilities?
1:17:58 PM	Chairman Chandler Note: Sacre, Candace	Mr. Malone?
1:18:04 PM	Atty Malone KCA - witness Wilson Note: Sacre, Candace	Cross Examination. Consider hybrid case stay on line with SCRs if needed?
1:19:14 PM	Atty Malone KCA - witness Wilson Note: Sacre, Candace	No did not evaluate put SCRs on existing coal units and look for capacity replacement at that point?
1:20:25 PM	Atty Malone KCA - witness Wilson Note: Sacre, Candace	Not do that Mill Creek not build combine cycle there?
1:20:54 PM	Atty Malone KCA - witness Wilson Note: Sacre, Candace	Why?
1:21:52 PM	Atty Malone KCA - witness Wilson Note: Sacre, Candace	When look at SCRs, tie life extension costs with SCRs, explain?
1:22:47 PM	Atty Malone KCA - witness Wilson Note: Sacre, Candace	Asked evaluate residential rates in analysis?
1:23:05 PM	Atty Malone KCA - witness Wilson Note: Sacre, Candace	Explain whether used levelized cost?
1:23:16 PM	Atty Malone KCA - witness Wilson Note: Sacre, Candace	What methodology to develop cost?
1:24:08 PM	Atty Malone KCA - witness Wilson Note: Sacre, Candace	Data not show where find numbers, post-hearing data request?
1:24:09 PM	POST-HEARING DATA REQUEST Note: Sacre, Candace Note: Sacre, Candace	ATTY MALONE KCA - WITNESS WILSON METHODOLOGY USED TO DEVELOP COST
1:24:42 PM	Atty Malone KCA - witness Wilson Note: Sacre, Candace	Medine \$1.7 billion wrong, what right number?
1:25:04 PM	Atty Malone KCA - witness Wilson Note: Sacre, Candace	Compliance cost in SPS?
1:25:15 PM	Atty Malone KCA - witness Wilson Note: Sacre, Candace	Dual fuel not included?
1:25:28 PM	Atty Malone KCA - witness Wilson Note: Sacre, Candace	Reserve margin?
1:25:41 PM	Atty Malone KCA - witness Wilson Note: Sacre, Candace	No firm transportation cost?
1:26:07 PM	Atty Malone KCA - witness Wilson Note: Sacre, Candace	Bids for that?
1:26:17 PM	Atty Malone KCA - witness Wilson Note: Sacre, Candace	Directed consider 22-year depreciation period for gas plant compliant with net zero policy?
1:26:50 PM	Atty Malone KCA - witness Wilson Note: Sacre, Candace	When modeling for case, internally consider it?
1:27:09 PM	Atty Malone KCA - witness Wilson Note: Sacre, Candace	How intend meet interim goals of 80 percent 2035 and net zero '50?
1:27:58 PM	Atty Malone KCA - witness Wilson Note: Sacre, Candace	Agree not meeting increase cost in first 22 years?
1:28:13 PM	Atty Malone KCA - witness Wilson Note: Sacre, Candace	Risk with unknowns, how factor into model?

1:30:30 PM	Atty Malone KCA - witness Wilson Note: Sacre, Candace	Know about Scope 3 emissions?
1:30:59 PM	Atty Malone KCA - witness Wilson Note: Sacre, Candace	CPCN deferred better clarity resource options?
1:31:34 PM	Atty Malone KCA - witness Wilson Note: Sacre, Candace	What do consider small modular reactors?
1:32:15 PM	Atty Malone KCA - witness Wilson Note: Sacre, Candace	Carbon capture coal not considered in 2021 IRP?
1:32:29 PM	Atty Malone KCA - witness Wilson Note: Sacre, Candace	Carbon capture coal not considered in resource assessment?
1:33:01 PM	Atty Malone KCA - witness Wilson Note: Sacre, Candace	Change in tax credits, why not evaluated in '22 resource assessment?
1:33:30 PM	Atty Malone KCA - witness Wilson Note: Sacre, Candace	Explain how?
1:34:56 PM	Atty Malone KCA - witness Wilson Note: Sacre, Candace	Not know where analysis provided?
1:36:13 PM	Chairman Chandler - witness Wilson Note: Sacre, Candace	Scenario referring to?
1:37:33 PM	Atty Malone KCA - witness Wilson Note: Sacre, Candace	Cross Examination (cont'd). Confirm not do carbon capture analysis in 2022 resource assessment?
1:38:37 PM	Atty Malone KCA - witness Wilson Note: Sacre, Candace	Lot of companies that do this, reach out to any those?
1:39:10 PM	Atty Malone KCA - witness Wilson Note: Sacre, Candace	50 percent capacity factor, consider additional systems cost?
1:39:50 PM	Atty Malone KCA - witness Wilson Note: Sacre, Candace	Asking about gas, 50 percent NGCC?
1:40:43 PM	Atty Malone KCA - witness Wilson Note: Sacre, Candace	Coal to gas methodology not in IRP?
1:41:11 PM	Atty Malone KCA - witness Wilson Note: Sacre, Candace	Agree multiple companies provide coal and gas forecasts?
1:41:23 PM	Atty Malone KCA - witness Wilson Note: Sacre, Candace	Why make up own methodology?
1:42:05 PM	Atty Malone KCA - witness Wilson Note: Sacre, Candace	2021 not used, what impetus creating coal to gas methodology thereafter?
1:43:15 PM	Atty Malone KCA - witness Wilson Note: Sacre, Candace	Market coal price based on portfolio of coal procurements?
1:43:36 PM	Atty Malone KCA - witness Wilson Note: Sacre, Candace	Aware anyone uses coal to gas methodology?
1:43:54 PM	Atty Malone KCA - witness Wilson Note: Sacre, Candace	What significance and what basis?
1:45:06 PM	Atty Malone KCA - witness Wilson Note: Sacre, Candace	When deciding and formulating CPCN filing, why not reach out to forecasting company?
1:46:15 PM	Atty Malone KCA - witness Wilson Note: Sacre, Candace	What share gas production goes to power center?
1:46:40 PM	Atty Malone KCA - witness Wilson Note: Sacre, Candace	How about coal?
1:46:59 PM	Chairman Chandler Note: Sacre, Candace	Recess until 2 pm.
1:47:30 PM	Session Paused	
2:07:55 PM	Session Resumed	

2:08:07 PM Chairman Chandler
Note: Sacre, Candace Back on the record.

2:08:11 PM Chairman Chandler
Note: Sacre, Candace Ms. Huddleston?

2:08:23 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Cross Examination. Mystery MSSC, able to resolve?

2:08:38 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Could be Most Severe Single Contingency?

2:08:50 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Commission Staff Supplemental Response 74-C, Round 2, suggest MSSC is Most Severe Single Contingency?

2:10:02 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Correlated outages?

2:10:03 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Remember Bellar correlated outages?

2:10:16 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Explain what correlated outage means to you?

2:10:46 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Idea behind correlated outages available capacity?

2:11:11 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Single unit goes out 300 MW?

2:11:23 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Any single unit going out not independent event, stress on system multiple units go out?

2:11:45 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Really cold multiple units have freezing parts, all off line same time?

2:12:20 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace What happened during Elliott correlated outages really cold extreme weather?

2:12:55 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Multiple resources dependent on common node?

2:13:25 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Due to extreme weather?

2:13:34 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Cold weather, frozen valves?

2:13:42 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Hot weather?

2:14:11 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Who be person?

2:14:20 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Aware other utilities experiencing outages hot weather?

2:14:36 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Texas more regularly hot weather?

2:14:55 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Correlated outage regional flooding?

2:15:07 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Due to lack of fuel?

2:15:13 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace During Elliott, lack of fuel availability?

2:15:34 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Coal transportation?

2:15:40 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Some examples?

2:16:15 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Correlation is not causation?

2:16:31 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace External event that causes A and B to go out?

2:16:45 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace External cause leads to multiple plant outages?

2:16:52 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Independent coin flip if external event affect plant?

2:18:08 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace One in 50 another way coin flip either event causes or leads to issues deleted die, winter storm or flooding, probabilistic analysis?

2:19:21 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Page 4, lines 5-7, taken steps reduce correlated outages?

2:19:47 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Historically talk about Elliott, think of any other?

2:20:30 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Examples led to correlated outages even not enough reserve margin?

2:20:52 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace 2014 cold weather events?

2:21:11 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Where that is?

2:21:16 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Page 83, turn to that?

2:21:26 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Sinclair rebuttal testimony?

2:21:47 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Number of yellow dots, Jan 6 2018?

2:22:04 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Roughly 5800 megawatts?

2:22:12 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Next one Jan 7 2014?

2:22:18 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace How many megawatt hours lost there?

2:22:24 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace What is next one?

2:22:38 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace How many megawatt hours lost?

2:22:49 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Examples of correlated outages?

2:23:41 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Why called cold weather event day?

2:24:14 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace 5800 and 4200, 10,300 megawatt hours lost?

2:24:42 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Total is 12,000?

2:24:52 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace On two days?

2:25:03 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Why would that be?

2:25:57 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Know what percentage each of those due to cold weather?

2:26:10 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Company track information?

2:26:25 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Correlated outages look at percentage of fleet each resource out?

2:26:54 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Companies not do that?

2:27:50 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Rebuttal, page 3, lines 8-11, Goggin argued modeling correlated outages for thermal, overstating capacity?

2:28:20 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Page 3, line 15, page 4, line 2, Astrape report?

2:29:26 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Astrape report have any relevance?

2:29:34 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Said no?

2:29:37 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Correlated outages during Elliott?

2:29:50 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Both for gas and coal?

2:29:57 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Here for Bellar, steps taken following Elliott?

2:30:09 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Related to gas and not coal?

2:30:18 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace No reason thing correlated outages due to coal been solved?

2:30:55 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace How many megawatts shed during Elliott?

2:31:13 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Do that, remember where in record?

2:31:38 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Look at second page, second full paragraph, 317 megawatts?

2:32:06 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Amount of power needed to make up?

2:32:14 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Walking through power lost due to winter weather issues with coal?

2:32:29 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Remember how much due to coal?

2:32:55 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Look at document 3:48 pm Trimble Co 2 derate 269 megawatts due to frozen pump meter?

2:34:15 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Mechanical failure due to weather?

2:34:23 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace 4:13 pm Mill Creek 4 lost coal feeder?

2:34:36 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Caused derate?

2:34:42 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Put over 317 megawatts?

2:34:47 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace If had not happened, not been 317 megawatt glitch?

2:35:11 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Three occurrences each individually made up megawatts?

2:35:15 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace What are those three?

2:35:52 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Not taken steps address coal issues?

2:36:38 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace All steps related to gas?

2:37:03 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Not taken steps reduce outages in coal?

2:37:23 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Not aware of any?

2:37:32 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Led to rolling blackouts?

2:37:41 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Not lead to blackouts in PJM?

2:37:54 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Outages concern for PJM?

2:38:08 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Not identified any failure during Elliott except Texas Gas outages?

2:38:44 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Watch testimony before legislature?

2:38:54 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Identified any failure?

2:39:06 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Don't remember?

2:39:14 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace How customers have confidence that risk of outages low and has been low when taken steps related to gas and not coal?

2:40:33 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Yellow dots say what percentage affiliated to coal, what to gas, what to extreme weather?

2:40:54 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace In EFORE analysis, account for all failures?

2:41:21 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace When Bellar testifying about chart provided Commission, accounts for all weather related events or correlated outages?

2:42:29 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Do not do analysis?

2:43:02 PM Chairman Chandler - witness Wilson
Note: Sacre, Candace Examination. Not have data, looked at one unit available or not available other units not available?

2:44:24 PM Chairman Chandler - witness Wilson
Note: Sacre, Candace Model on random basis, random draw come out at some time, historically correlation one being out and

2:45:02 PM Chairman Chandler - witness Wilson
Note: Sacre, Candace Rolling dice and happened to be two contingencies, where modeling to get them together?

2:45:14 PM Chairman Chandler - witness Wilson
Note: Sacre, Candace In GADDS, these two units seem be out a lot at same time?

2:45:53 PM Chairman Chandler - witness Wilson
Note: Sacre, Candace Four unit coal plant single conveyor, helpful identifying something to mitigate?

2:47:19 PM Chairman Chandler - witness Wilson
Note: Sacre, Candace How become aware correlation units and unavailability?

2:48:15 PM Chairman Chandler - witness Wilson
Note: Sacre, Candace Blue line average?

2:48:23 PM Chairman Chandler - witness Wilson
Note: Sacre, Candace Half of yellow dots above blue line?

2:48:37 PM Chairman Chandler - witness Wilson
Note: Sacre, Candace Be distribution of occurrences above blue line?

2:49:00 PM Chairman Chandler - witness Wilson
Note: Sacre, Candace Day in each year greatest loss of megawatt hours?

2:49:20 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Cross Examination (cont'd). Provide in post-hearing data request?

2:49:21 PM POST-HEARING DATA REQUEST
Note: Sacre, Candace ATTY HUDDLESTON SIERRA CLUB - WITNESS WILSON
Note: Sacre, Candace DAYS OF GREATEST LOSS OF MEGAWATT HOURS EACH YEAR AND REASON FOR LOSS

2:49:40 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Rebuttal, page 4, lines 11-16, question asks, reading (click on link for further comments), correct?

2:50:02 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Respond, reading, (click on link for further comments), correct?

2:50:33 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Identify steps taken utilities in PJM not taken?

2:52:51 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace What type commitment?

2:53:05 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace All utilities have duty of reliability?

2:53:25 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Utilities have duty often experience correlated outages?

2:53:57 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Talked about megawatts off line during Elliott, solved problem other utilities had not?

2:55:00 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Yellow dots highest above blue line, say what one to five dots highest what days had largest number megawatt hours lost?

2:55:32 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Say now?

2:55:34 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Something evaluated already?

2:55:40 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Who would be person?

2:55:59 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Someone identify generators or reasons behind that, related to days most extreme megawatt hours lost?

2:56:44 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Know if outages due to correlated outages?

2:56:59 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Who know now?

2:57:07 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace If not know most extreme days related to correlated outages, how say risk low?

2:57:42 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Look at extreme weather days rather than megawatt hours lost?

2:58:06 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Say whether days with correlated outages among days highest megawatt hours lost?

2:58:32 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Answer no can't speak to days most extreme?

2:58:41 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Page 4, lines 17-22, question states, reading, (click on link for further comments), correct?

2:59:14 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace State, reading, (click on link for further comments), correct?

2:59:41 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace PJM trying to do word not penalizing, probabilistic prediction?

3:00:02 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace PJM based figure on study of generators 1995 to 2018?

3:00:13 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Not specifically for coal plants?

3:00:37 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Reasonable for PJM?

3:00:50 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Discussing back in testimony, when said Astrape report credible?

3:01:59 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Performed similar study of own generators' performance over period of time and determined whether derated accreditation warranted?

3:02:26 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Haven't studied data so don't know?

3:02:44 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Have not performed analysis?

3:02:48 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace 24 percent reduction in winter and 15 percent in summer too high or too low?

3:03:27 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace What data basing on?

3:03:39 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Discussing Elliott performing well?

3:04:00 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace One of steps not taking into account correlated outages?

3:04:29 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Taking into account thermal resource planning derate gas and coal?

3:06:19 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Do not undertake analysis?

3:06:32 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Know no reason not know reason yellow dot days or reason highest?

3:06:58 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Not know days lost megawatt hours?

3:07:08 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Resource planning how reliable resources are and weaknesses in system?

3:07:21 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Analysis PJM undertaken and Goggin recommends allows resource planner to know events talked about likely affect system overall?

3:08:42 PM Chairman Chandler - witness Wilson
Note: Sacre, Candace Examination. UCAP function of ICAP installed capacity reduced by E4E?

3:08:56 PM Chairman Chandler - witness Wilson
Note: Sacre, Candace UCAP in PJM comparable amount modeled in SERVM?

3:09:47 PM Chairman Chandler - witness Wilson
Note: Sacre, Candace Perfect example, megawatts available randomly?

3:10:35 PM Chairman Chandler - witness Wilson
Note: Sacre, Candace Equivalent amount, EFORE randomized outages same EFORE turns capacity amount in PJM into UCAP amount in PJM?

3:11:18 PM Chairman Chandler - witness Wilson
Note: Sacre, Candace UCAP unforced capacity?

3:11:31 PM Chairman Chandler - witness Wilson
Note: Sacre, Candace Distinction be Astrape report says can include megawatts each and every hour being available?

3:12:46 PM Chairman Chandler - witness Wilson
Note: Sacre, Candace Assume 64 megawatts any time?

3:13:01 PM Chairman Chandler - witness Wilson
Note: Sacre, Candace Distinction way you understand it, not saying 100 megawatt unit unavailable randomized five percent of time?

3:13:28 PM Chairman Chandler - witness Wilson
Note: Sacre, Candace Get from intervenor if two units go out same time a lot, doing on randomized basis not only way be looked at?

3:14:20 PM Chairman Chandler - witness Wilson
Note: Sacre, Candace Historically not done that way, just on randomized basis?

3:15:05 PM Chairman Chandler - witness Wilson
Note: Sacre, Candace Monte Carlo, have few hundred random outage scenarios apply?

3:15:38 PM Chairman Chandler - witness Wilson
Note: Sacre, Candace Run possibility same scenario twice?

3:15:41 PM Chairman Chandler - witness Wilson
Note: Sacre, Candace Under yours, no scenario run twice?

3:15:52 PM Chairman Chandler - witness Wilson
Note: Sacre, Candace Some ranges happen include multiple outages?

3:16:02 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Cross Examination (cont'd). Correlated outages, one thing cause if system 100 percent reliant on particular fuel resource?

3:17:00 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Have particular type plant more at risk?

3:17:11 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Portfolio diversification one way address correlated outages?

3:17:41 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace More diverse portfolio less likely have correlated outages?

3:18:20 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace If know particular fuel less likely available, having other sources available help address correlated outages that result?

3:18:59 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace PJM portfolio more diverse?

3:19:05 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Who be familiar?

3:19:15 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Cannot say whether joining PJM add to diversification?

3:19:29 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace System in geographic area, more likely experience event causes more go off line?

3:20:54 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Joining PJM add geographic diversity?

3:21:07 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Also MISO?

3:21:14 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Decreasing likelihood correlated outages?

3:21:28 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Benefits of geographic diversity?

3:22:33 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Say more about that, why is that?

3:23:40 PM Chairman Chandler
Note: Sacre, Candace Recess 15 minutes.

3:24:12 PM Session Paused

3:50:19 PM Session Resumed

3:50:41 PM Chairman Chandler
Note: Sacre, Candace Back on record.

3:50:44 PM Chairman Chandler
Note: Sacre, Candace Still under oath.

3:50:45 PM Chairman Chandler
Note: Sacre, Candace Ms. Huddleston?

3:50:56 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Cross Examination. SAW-1 2022 IRP, page D-20, Section 4.10, reading, (click on link for further comments), correct?

3:51:49 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Reading, (click on link for further comments), correct?

3:52:16 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace \$21,000 per megawatt hour scarcity price?

3:52:32 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Page 22, lines 18-19, Goggin capped at \$2100 at MISO and \$2800 at PJM?

3:52:54 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Discovery 1-8(b), Elliott in excess \$3,000 megawatt hour?

3:53:20 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Scarcity prices?

3:53:32 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace How much in excess?

3:53:38 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Less than \$4,000?

3:53:49 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Not \$20,000 megawatt hour?

3:54:37 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Difference between market prices and prices of supply?

3:54:51 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace During Elliott, market prices \$3,000 and \$4,000?

3:55:09 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Effective load carrying capability practices?

3:55:26 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace ELCC?

3:55:30 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Contribution to create reliability?

3:55:52 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace If have 100 megawatt solar plant, ELCC of 40 percent, solar make 40 MW contribution?

3:56:22 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Measuring against perfect power plant?

3:56:50 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Conducted ELCC analysis?

3:57:39 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Developed capacity contribution based on own load and solar irradiance data?

3:58:16 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Rebuttal, page 15, lines 11-14, reading, (click on link for further comments), correct?

3:59:02 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Provided two attachments, File 18 and 19 under 2-35, have in front of you?

4:01:11 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Peak winter demand normally occurs in 7 AM hour?

4:01:40 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace In evening, be in summer?

4:02:04 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace In morning, can peak most likely hour is 7 AM?

4:02:21 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Second most likely winter at 8 AM?

4:02:43 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Place emphasis on highest demand hour?

4:02:56 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Focus on first hour?

4:03:05 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace In winter, summer is lower?

4:03:16 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Solar less available?

4:03:24 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace All or nothing focusing on first hour?

4:05:03 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Not accounting in PLEXOS that evening hour?

4:05:21 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace If demand is peaking in 8 AM hour, have greater contribution solar?

4:06:09 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace 8 AM hour second, more likely when demand peaks later in hour?

4:06:47 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Taking average solar capacity value not account for demand peaking at 7 to 8?

4:07:13 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Blend entire hour?

4:07:24 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Equally weighted each month in winter?

4:07:37 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Peak winter demand peaks later in winter?

4:07:50 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Jan or Feb sun higher than in December?

4:08:47 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Different ELCC analysis calculate solar value?

4:09:27 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Companies not used seasonal capacity value?

4:09:50 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Only for wind?

4:09:57 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Battery storage, page 15, line 21, rebuttal, reading, (click on link for further comments), correct?

4:10:29 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Based on current generation portfolio?

4:11:18 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Company plans solar generation later decade?

4:11:35 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Solar shortens duration of peak net load?

4:12:19 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Look at solar and battery storage?

4:13:11 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Not think battery storage in ways could have solved this?

4:13:29 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace How model consider that?

4:14:34 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Anything change putting in portfolio?

4:15:01 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Modeling change analysis contribution of battery storage?

4:15:44 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Dispatchability, reading Exhibit SB-4 viewed solar resources as dispatchable?

4:16:46 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Consider solar dispatchable?

4:16:57 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Here when Crockett intermittent not dispatchable?

4:17:05 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace SB 4 it is dispatchable?

4:17:45 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Policy about CCS coal, Response KCA 1.40 report discussed viability coal CCS?

4:19:34 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Introduced by company in different case, familiar with report?

4:20:19 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Report by LG&E/KU?

4:20:26 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Familiar with it, say more about that?

4:20:51 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace How familiar with it?

4:21:15 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Page 9, information relevant, discussion of KGS report, not familiar comment on paragraph?

4:22:14 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Tell us more about study?

4:22:31 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Not speak to geologic storage?

4:23:06 PM Chairman Chandler
Note: Sacre, Candace In responses to Commission order. (Click on link for further comments.)

4:24:14 PM Atty Huddleston Sierra Club
Note: Sacre, Candace Mark as Hearing Exhibit.

4:24:16 PM Chairman Chandler
Note: Sacre, Candace Any objection?

4:24:18 PM Chairman Chandler
Note: Sacre, Candace So marked.

4:24:19 PM SIERRA CLUB HEARING EXHIBIT 2
Note: Sacre, Candace ATTY HUDDLESTON SIERRA CLUB - WITNESS WILSON
Note: Sacre, Candace ANALYSIS OF AVENUES FOR REDUCING UNDEPRECIATED FOSSIL-FUEL GENERATION ASSETS AT RETIREMENT NOVEMBER 30, 2021

4:24:36 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Cross Examination (cont'd). SCR on Ghent, were to install, what year Ghent break even?

4:26:00 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Modeling prior to Greenhouse Gas rule?

4:26:12 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace New Greenhouse Gas rule alter this analysis?

4:26:21 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace New rule require CCS on existing coal fired plants operate past 2040?

4:26:32 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace Include Ghent with SCR?

4:26:48 PM Atty Huddleston Sierra Club - witness Wilson
Note: Sacre, Candace CCS necessary by 2030?

4:27:04 PM Chairman Chandler
Note: Sacre, Candace Ms. McRae?

4:27:26 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Cross Examination. Involved in modeling for 2021 IRP?

4:28:02 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Familiar with comments on IRP?

4:28:15 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Included reviewing Ms. Sommer modeling work?

4:28:32 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Raised concerns software using for resource expansion and production cost modeling?

4:28:56 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Similar models IRP modeling

4:29:47 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace PLEXOS identifies thousands portfolios?

4:30:09 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace If were to use screening, modeling analysis?

4:30:54 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Two categories, resource screening and resource optimization?

4:32:01 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace PLEXOS resource screening of resource optimization thousands portfolios, consideration limited to resources offered?

4:32:41 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace If resource not provided, not offered to PLEXOS as option?

4:32:59 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Someone had to supply input?

4:33:27 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Took a step from team for bid?

4:33:52 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Types of resources offered, inputs characterize realistic operation and cost, PLEXOS settings be determined?

4:34:10 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Limited by settings of model?

4:34:23 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Depends how well each characterized?

4:35:11 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace 2021 IRP PLEXOS resource screening not evaluate DSM/EE savings?

4:35:56 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace In modeling, assumption was existing DSM/EE programs continue to be until 2025?

4:37:17 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Customers save energy outside of DSM/EE programs?

4:37:38 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Say DSM/EE result from utility programs?

4:37:59 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace 2021 IRP approved programs DSM/EE zero incremental savings from programs after that?

4:39:40 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace 2021 IRP in record, speak for itself?

4:39:59 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace PLEXOS resource screening, modeling not include whether increased energy savings DSM/EE portfolio in PLEXOS?

4:40:56 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Refer to Response Joint Inter 2.86, same question, reading, (click on link for further comments), disagreeing?

4:42:25 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Only existing and proposed evaluated as potential resources in PLEXOS?

4:42:50 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace So answer is yes?

4:43:13 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Show you in writing, Joint Intervenors Response 2.46(b)?

4:43:16 PM Chairman Chandler
Note: Sacre, Candace Ask a clarifying question.

4:43:22 PM Chairman Chandler - witness Wilson
Note: Sacre, Candace Examination. Economically chosen PLEXOS or treated same way as battery?

4:43:58 PM Chairman Chandler - witness Wilson
Note: Sacre, Candace Different than how included 125 megawatt battery?

4:44:18 PM Chairman Chandler - witness Wilson
Note: Sacre, Candace Subsequent to Step 3?

4:44:22 PM Chairman Chandler - witness Wilson
Note: Sacre, Candace Simple cycle CTs and NGCCs modeled prior to Step 3?

4:45:18 PM Chairman Chandler - witness Wilson
Note: Sacre, Candace Say we, the model?

4:45:42 PM Chairman Chandler - witness Wilson
Note: Sacre, Candace Enhancing reliability from what level to what level?

4:46:08 PM Chairman Chandler - witness Wilson
Note: Sacre, Candace SAW-1?

4:50:08 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Cross Examination (cont'd). Understanding distinction savings dispatchable and nondispatchable, dispatchable DSM akin to demand response?

4:50:51 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Asking customer reduce load particular time?

4:50:59 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace One point in time?

4:51:08 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Savings help deal with peak demand but not persist across every day and hour?

4:51:24 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Difference from energy efficiency savings?

4:51:37 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Nondispatchable DSM?

4:51:43 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Moves from electric heating to heat pump?

4:51:57 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Savings customer and system experiences exist over time?

4:52:11 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Not one day, not one year?

4:52:18 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Every day customer has heat pump?

4:52:31 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace PLEXOS, consideration of options and characterizations, output see conclusion of most economically optimal portfolio, not tell you second?

4:53:20 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Conclusions see, under one particular scenario?

4:53:45 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace No visibility into one particular fuel type what second place was?

4:54:04 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Not know if had five or six portfolios with close?

4:54:38 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace SERVM modeling impacts of nondispatchable DSM programs reflected in weather year load forecast?

4:55:46 PM Chairman Chandler
Note: Sacre, Candace Recess until 5:50.

4:56:11 PM Session Paused

5:46:16 PM Session Resumed

5:46:18 PM Chairman Chandler
Note: Sacre, Candace Back on the record.

5:46:40 PM Chairman Chandler
Note: Sacre, Candace Mr. Riggs?

5:47:30 PM Chairman Chandler
Note: Sacre, Candace Discussion as to witness order. (Click on link for further comments.)

5:51:49 PM Chairman Chandler
Note: Sacre, Candace Anything else?

5:52:17 PM Chairman Chandler
Note: Sacre, Candace Ms. McRae?

5:52:21 PM Chairman Chandler
Note: Sacre, Candace Still under oath.

5:52:43 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Cross Examination (cont'd). Distributed energy resources?

5:53:02 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Sommer testimony recommendation modeling include distributed resources meet seasonal, page 9?

5:54:20 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Page 10, impact of distributed energy resources in Jones load forecast?

5:54:40 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Entry into PLEXOS?

5:54:52 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Provided load data?

5:55:16 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Jones supply with load forecast data?

5:55:20 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Provided with hourly load forecast data?

5:55:44 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace In 2022?

5:55:53 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace One load forecast in model?

5:56:06 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Every model running on one forecast?

5:56:20 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Every PLEXOS model has same assumptions?

5:56:42 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Rebuttal, page 10, fair say reasonable account for distributed energy resources cannot control customers adoption?

5:57:20 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Companies have no control?

5:57:56 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Judgments you made or Jones made?

5:58:33 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Way always done it and did it again that way?

5:58:45 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Jones and his team Exhibit PAJ-1?

5:59:00 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Familiar with PAJ-1?

5:59:06 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Jones knows factors beyond customer preference?

5:59:26 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace What have some control over?

5:59:33 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Control over when rates increases requested?

5:59:40 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace When rate increases requested?

5:59:49 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Magnitude of rate increase?

6:00:20 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Not have control over fuel prices?

6:00:39 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Gas, international market?

6:00:53 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Forecast fuel prices?

6:01:03 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Forecasted multiple fuel price scenarios for this case?

6:01:23 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace In both PLEXOS and production cost, evaluating how different portfolios perform?

6:01:43 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Not have conviction fuel prices right on nose?

6:02:10 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Ever heard somebody say we know one thing about every forecast not quite right?

6:02:30 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Think that's fair, making best guest based on data?

6:02:51 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Some forecasts are better than others?

6:03:01 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Aware Jones load forecast distributed energy resources assumed distributed generation additions be solar?

6:03:26 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace You think not one customer install battery backup?

6:03:47 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Jones forecast assumed 185 megawatts aggregate distributed generation capacity added by customers, peak load 185 megawatts in 2050 represent?

6:04:33 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace State for record how calculation done?

6:04:56 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Find that number, a little math?

6:05:08 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Flip ahead to page 12, chance to look?

6:06:17 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Looking section B beginning at line 4, Sommer not available?

6:06:50 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Energy Exemplar?

6:06:59 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Updates?

6:07:03 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Piece of software?

6:07:10 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Sometimes a but, Energy Exemplar need to do update to fix bug?

6:07:38 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace If find bug, fix through update?

6:07:47 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Sometimes update add new functionality?

6:07:59 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Improvability of model to represent characteristics of resource?

6:08:18 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Sommer used more recent version?

6:08:31 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Used for production cost modeling?

6:08:42 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace All outputs from ProSim, ABB?

6:08:59 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace When stop support ProSim?

6:09:48 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Date when ABB stopped updates?

6:10:03 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace 2019?

6:10:07 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Not concerned?

6:10:55 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace How many on team?

6:11:02 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace How many software developers?

6:11:15 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace PPL, have any software development business?

6:11:27 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Utility companies, not software developers?

6:11:44 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Use of ProSim?

6:11:58 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace No updates by ABB?

6:12:06 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Report from Sommer provided evaluation Duke Energy done?

6:12:59 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Put on screen for you, slide 2, jog memory?

6:13:43 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Sentence continues, future planning require advanced model features and provides list?

6:14:26 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Feel resources considered by companies getting broader and more complex?

6:16:23 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Because of tax credit changes no longer needed?

6:17:41 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Tax credits dispositive even talking about hybrid, solar, and storage behind same interconnection?

6:18:52 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Thinking about this in terms of getting tax credits?

6:19:28 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace In reality, change how operate resource if sited behind same interconnection?

6:19:53 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Identify another utility utilizes ProSim integrated resource planning?

6:20:11 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Any utility in the country still uses ProSim CPCN proceedings?

6:20:33 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Aware Duke Energy switched?

6:21:07 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Slide 6, trust?

6:22:00 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Keep a list everybody abandoned ProSim?

6:22:17 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Not know who on list?

6:22:28 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Reasons switch, lower production costs?

6:22:41 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Found Encompass lower production costs made switch to Encompass?

6:23:31 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Fact Duke observed lower production costs not tell anything about relative accuracy?

6:24:06 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Page 35 of rebuttal, PDF 37, Table 3, bottom of page, line 15-17, observe production costs lower than ProSim?

6:24:50 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Not tell you anything about accuracy?

6:25:26 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Table 3, ProSim outputs, your modeling?

6:25:47 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace See metric millions of dollars?

6:26:00 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Direct output?

6:26:10 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Direct ProSim output?

6:26:19 PM Atty McRae Joint Intervenor - witness Wilson
Note: Sacre, Candace Outputs from Sommer modeling?

6:26:28 PM Atty McRae Joint Intervenor - witness Wilson
Note: Sacre, Candace Direct outputs?

6:26:33 PM Atty McRae Joint Intervenor - witness Wilson
Note: Sacre, Candace Not put through financial book?

6:27:04 PM Atty McRae Joint Intervenor - witness Wilson
Note: Sacre, Candace Are they in ProSim, are they in PLEXOS, are they happening?

6:27:30 PM Atty McRae Joint Intervenor - witness Wilson
Note: Sacre, Candace Fly ash and gypsum for sale to others?

6:27:53 PM Atty McRae Joint Intervenor - witness Wilson
Note: Sacre, Candace Revenue after output?

6:28:07 PM Atty McRae Joint Intervenor - witness Wilson
Note: Sacre, Candace Revenues not directly calculated at ProSim?

6:28:21 PM Atty McRae Joint Intervenor - witness Wilson
Note: Sacre, Candace Put in financial modeling step?

6:28:40 PM Atty McRae Joint Intervenor - witness Wilson
Note: Sacre, Candace These numbers not yet subtracted revenues assume in mode from sales of flash and gypsum?

6:29:28 PM Atty McRae Joint Intervenor - witness Wilson
Note: Sacre, Candace Slide 9, two parts to table, first score Duke gave total PVRR output, ProSim scored 3 out of 5?

6:30:54 PM Atty McRae Joint Intervenor - witness Wilson
Note: Sacre, Candace PLEXOS and Encompass 5 out of 5?

6:31:13 PM Atty Crosby KU/LG&E
Note: Sacre, Candace Objection. (Click on link for further comments.)

6:34:38 PM Atty McRae Joint Intervenor - witness Wilson
Note: Sacre, Candace Observed in rebuttal, page 35, lines 15-17, consistently lower?

6:35:04 PM Atty McRae Joint Intervenor - witness Wilson
Note: Sacre, Candace See observation Encompass and PLEXOS costs close, no comments offered from ProSim?

6:35:55 PM Atty McRae Joint Intervenor - witness Wilson
Note: Sacre, Candace Making decisions about resources should offer to model?

6:36:48 PM Atty McRae Joint Intervenor - witness Wilson
Note: Sacre, Candace Still on 35, lines 9-11, PLEXOS utilizing heat rate curve?

6:37:09 PM Atty McRae Joint Intervenor - witness Wilson
Note: Sacre, Candace Sommer used same model production costs?

6:37:22 PM Atty McRae Joint Intervenor - witness Wilson
Note: Sacre, Candace Four simulation phases in PLEXOS?

6:37:31 PM Atty McRae Joint Intervenor - witness Wilson
Note: Sacre, Candace Any hours modeling in PLEXOS?

6:37:40 PM Atty McRae Joint Intervenor - witness Wilson
Note: Sacre, Candace If were to show your four phases PLEXOS, which relevant resource and which production?

6:38:34 PM Atty McRae Joint Intervenor - witness Wilson
Note: Sacre, Candace Understand PLEXOS only witness be Sommer?

6:39:04 PM Atty McRae Joint Intervenor - witness Wilson
Note: Sacre, Candace Turn page 32, line 1-4, questioning reasonable increase to capital costs?

6:39:50 PM Atty McRae Joint Intervenor - witness Wilson
Note: Sacre, Candace Costs use in modeling source from RFP bids?

6:40:08 PM Atty McRae Joint Intervenor - witness Wilson
Note: Sacre, Candace Developed by project engineering team?

6:40:20 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Screen between process and production?

6:40:50 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace HDR study, represent contract April 2022, aware study undertaken Bellar team?

6:41:17 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace At what point see HDR study?

6:41:55 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Combined cycle bids project engineering team, on face of bid represent to you certainty of bid were providing?

6:43:01 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Number used input modeling?

6:43:22 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Aware what HDR represented cost certainty bid went in on that?

6:43:51 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Never looked at what reference CC process HDR used?

6:44:18 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Page 10, rebuttal, line 11, testify, reading, (click on link for further comments), see that?

6:45:09 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Phrase our analysis refer to 2022 resource assessment?

6:45:24 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Exhibit SAW-1, when assessment begin?

6:46:14 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Prior conducting analysis for resource assessment around team receiving bids?

6:46:39 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Met once?

6:46:43 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Who requested meeting?

6:47:16 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Page 30, rebuttal, lines 7-8, reading, (click on link for further comments), see that?

6:48:06 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Based on Isaacson analysis or own?

6:48:15 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Taking Isaacson testimony at face value?

6:48:51 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Reading, (click on link for further comments), taking Jones testimony?

6:49:20 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Word significant and ask Isaacson about duplicative, no comparison to amount of energy savings in service territory?

6:50:00 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Not know how Grevatt compare?

6:50:37 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Brown battery energy storage have expectation for number of cycles per year put through?

6:51:08 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Recall expectation for capacity factor of battery storage unit in modeling?

6:51:31 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Note for record information stated in output files from ProSim model and output year?

6:52:06 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace And paper speak for itself?

6:52:17 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Aware Sinclair in DS-2 cycled five times per week?

6:52:41 PM Atty McRae Joint Intervenors - witness Wilson
Note: Sacre, Candace Agree with Sinclair five times per week reasonable?

6:53:12 PM Atty Grundmann Walmart - witness Wilson
Note: Sacre, Candace Cross Examination. Put in references from RFP?

6:53:53 PM Atty Grundmann Walmart - witness Wilson
Note: Sacre, Candace Concept from RFP, current generation resources?

6:54:07 PM Atty Grundmann Walmart - witness Wilson
Note: Sacre, Candace KCA Malone asked about why not model SMR?

6:54:23 PM Atty Grundmann Walmart - witness Wilson
Note: Sacre, Candace SMR not viable technology?

6:54:42 PM Atty Grundmann Walmart - witness Wilson
Note: Sacre, Candace Know commercially not viable?

6:54:49 PM Atty Grundmann Walmart - witness Wilson
Note: Sacre, Candace Assume SMR not commercially viable?

6:54:59 PM Atty Grundmann Walmart - witness Wilson
Note: Sacre, Candace Something would model in resource assessment?

6:55:12 PM Atty Grundmann Walmart - witness Wilson
Note: Sacre, Candace Brown BASS four-hour battery storage?

6:55:22 PM Atty Grundmann Walmart - witness Wilson
Note: Sacre, Candace Model more than four hour?

6:55:29 PM Atty Grundmann Walmart - witness Wilson
Note: Sacre, Candace Great deal of iteration?

6:56:00 PM Atty Grundmann Walmart - witness Wilson
Note: Sacre, Candace Received bid for two-hour, proceed with four-hour?

6:56:14 PM Atty Grundmann Walmart - witness Wilson
Note: Sacre, Candace No modeling other hourly durations?

6:57:20 PM Chairman Chandler - witness Wilson
Note: Sacre, Candace Examination. Where is located in record?

6:57:40 PM Atty Grundmann Walmart - witness Wilson
Note: Sacre, Candace Repeat one more time?

6:57:53 PM Atty Grundmann Walmart - witness Wilson
Note: Sacre, Candace Brown BASS not proposed paired with solar?

6:58:15 PM Atty Grundmann Walmart - witness Wilson
Note: Sacre, Candace Model anything paired with solar?

6:58:26 PM Atty Grundmann Walmart - witness Wilson
Note: Sacre, Candace Tax credit no longer paired with storage?

6:58:36 PM Atty Grundmann Walmart - witness Wilson
Note: Sacre, Candace Also aware system benefits especially high solar exposure charge with excess power?

6:59:12 PM Atty Grundmann Walmart - witness Wilson
Note: Sacre, Candace No analysis whether be more beneficial pair Brown BASS with solar?

6:59:54 PM Atty Grundmann Walmart - witness Wilson
Note: Sacre, Candace Only if only mechanism by which powered is solar?

7:00:04 PM Atty Grundmann Walmart - witness Wilson
Note: Sacre, Candace On location Brown BASS, prohibited putting solar array there?

7:00:26 PM Atty Grundmann Walmart - witness Wilson
Note: Sacre, Candace Not create transmission daytime?

7:00:48 PM Atty Grundmann Walmart - witness Wilson
Note: Sacre, Candace Company wants to own Brown BASS operational experience?

7:01:03 PM	Atty Grundmann Walmart - witness Wilson Note: Sacre, Candace	Own any more battery?
7:01:19 PM	Atty Grundmann Walmart - witness Wilson Note: Sacre, Candace	Not have experience solar paired with battery?
7:01:55 PM	Atty Grundmann Walmart - witness Wilson Note: Sacre, Candace	Always assuming either charge from solar or charge from grid?
7:02:27 PM	Atty Grundmann Walmart - witness Wilson Note: Sacre, Candace	Not trying to limit solely to solar?
7:02:43 PM	Atty Grundmann Walmart - witness Wilson Note: Sacre, Candace	Expand options, one justification pair with battery gain operational experience how manage battery how deal with battery and solar array on one location?
7:03:48 PM	Atty Grundmann Walmart - witness Wilson Note: Sacre, Candace	Other things assess factors take into account upgrades bring resources on line?
7:04:30 PM	Atty Grundmann Walmart - witness Wilson Note: Sacre, Candace	Include costs in cost estimates Brown BASS?
7:04:50 PM	Atty Grundmann Walmart - witness Wilson Note: Sacre, Candace	Draw assumptions most likely charge Brown BASS battery?
7:05:08 PM	Chairman Chandler Note: Sacre, Candace	Mr. Kurtz?
7:05:15 PM	Chairman Chandler Note: Sacre, Candace	Short recess till 7:50.
7:05:54 PM	Session Paused	
7:15:59 PM	Session Resumed	
7:16:28 PM	Chairman Chandler Note: Sacre, Candace	Back on the record.
7:16:30 PM	Chairman Chandler Note: Sacre, Candace	Mr. Kurtz?
7:16:35 PM	Atty Kurtz KIUC Note: Sacre, Candace	Handed out document, have marked as KIUC Exhibit 1.
7:16:40 PM	Chairman Chandler Note: Sacre, Candace	So marked
7:16:41 PM	MARKED - KIUC HEARING EXHIBIT 1 Note: Sacre, Candace Note: Sacre, Candace	ATTY KURTZ KIUC - WITNESS WILSON ATTACHMENT 2 RESPONSE JI-2 QUESTION 60(a), PAGE 52 OF 104, TABLE 31, TOTAL STAY-OPEN COSTS
7:16:44 PM	Atty Kurtz KIUC - witness Wilson Note: Sacre, Candace	Cross Examination. Stay open costs most recent SAW-1, recognize?
7:16:53 PM	Atty Kurtz KIUC - witness Wilson Note: Sacre, Candace	Mill Creek 2 300 megawatt unit?
7:16:59 PM	Atty Kurtz KIUC - witness Wilson Note: Sacre, Candace	Ghent 2 495 megawatt unit?
7:17:10 PM	Atty Kurtz KIUC - witness Wilson Note: Sacre, Candace	Largest power plant in Kentucky?
7:17:17 PM	Atty Kurtz KIUC - witness Wilson Note: Sacre, Candace	All four units 2,000 megawatts?
7:17:22 PM	Atty Kurtz KIUC - witness Wilson Note: Sacre, Candace	Ghent 2 two times Blue Oval?
7:17:41 PM	Atty Kurtz KIUC - witness Wilson Note: Sacre, Candace	Ghent 2 twice size?
7:17:48 PM	Atty Kurtz KIUC - witness Wilson Note: Sacre, Candace	Brown 3 416 megawatts?

7:17:58 PM	Atty Kurtz KIUC - witness Wilson Note: Sacre, Candace	Retire Ghent 2 2028?
7:18:01 PM	Atty Kurtz KIUC - witness Wilson Note: Sacre, Candace	When Ghent 2 to seven months nonozone months stay of Good Neighbor Plan?
7:18:26 PM	Atty Kurtz KIUC - witness Wilson Note: Sacre, Candace	Ongoing costs are?
7:18:55 PM	Atty Kurtz KIUC - witness Wilson Note: Sacre, Candace	What about overhaul cost standard?
7:19:07 PM	Atty Kurtz KIUC - witness Wilson Note: Sacre, Candace	Major maintenance?
7:19:15 PM	Atty Kurtz KIUC - witness Wilson Note: Sacre, Candace	Overhaul cost life extension through 2032?
7:19:26 PM	Atty Kurtz KIUC - witness Wilson Note: Sacre, Candace	Fourth column SCR \$126 million 2026 through 2026?
7:19:36 PM	Atty Kurtz KIUC - witness Wilson Note: Sacre, Candace	If Commission denied retirement request Ghent 2, before get into big ticket costs, appear again in 2033?
7:20:14 PM	Atty Kurtz KIUC - witness Wilson Note: Sacre, Candace	If ran beyond 2028, seven months out of year, agree \$19.25 million per year keep Ghent 2 operational?
7:20:44 PM	Atty Kurtz KIUC - witness Wilson Note: Sacre, Candace	495 MW seven winter months?
7:20:55 PM	Atty Kurtz KIUC - witness Wilson Note: Sacre, Candace	Lot of money, know both companies total revenue over \$3 billion?
7:21:15 PM	Chairman Chandler - witness Wilson Note: Sacre, Candace	Examination. Average inclusive overhaul costs 2027?
7:21:23 PM	Chairman Chandler - witness Wilson Note: Sacre, Candace	Ongoing costs?
7:21:35 PM	Atty Kurtz KIUC - witness Wilson Note: Sacre, Candace	Cross Examination (cont'd). \$19.25 million one-half of one percent electric rates?
7:21:59 PM	Atty Kurtz KIUC - witness Wilson Note: Sacre, Candace	Improved winter reliability?
7:22:08 PM	Atty Kurtz KIUC - witness Wilson Note: Sacre, Candace	496 MW load growth/economic development?
7:22:30 PM	Atty Kurtz KIUC - witness Wilson Note: Sacre, Candace	Off system sales?
7:22:35 PM	Chairman Chandler - witness Wilson Note: Sacre, Candace	Examination. Relative to retirement?
7:22:56 PM	Atty Kurtz KIUC - witness Wilson Note: Sacre, Candace	Cross Examination (cont'd). Only need 14 hours off system sales pay year of stay open costs?
7:23:25 PM	Atty Kurtz KIUC - witness Wilson Note: Sacre, Candace	Not expect that kind of off system sales?
7:23:40 PM	Atty Kurtz KIUC - witness Wilson Note: Sacre, Candace	Make decision on SCR some future date?
7:24:06 PM	Atty Kurtz KIUC - witness Wilson Note: Sacre, Candace	Proposed 111 rule decision about carbon capture in future?
7:24:38 PM	Atty Kurtz KIUC - witness Wilson Note: Sacre, Candace	Optionality as to Ghent 2?
7:25:00 PM	Atty Kurtz KIUC - witness Wilson Note: Sacre, Candace	If retired, over in 2028?

7:25:38 PM	Atty Kurtz KIUC - witness Wilson Note: Sacre, Candace	Not clear SB 4 Commission could unretire?
7:25:58 PM	Atty Kurtz KIUC Note: Sacre, Candace	Move admission.
7:26:03 PM	Chairman Chandler Note: Sacre, Candace	KIUC Exhibit 1.
7:26:04 PM	KIUC HEARING EXHIBIT 1 Note: Sacre, Candace Note: Sacre, Candace	ATTY KURTZ KIUC - WITNESS WILSON ATTACHMENT 2 RESPONSE JI-2 QUESTION 60(a), PAGE 52 OF 104, TABLE 31, TOTAL STAY-OPEN COSTS
7:26:06 PM	Chairman Chandler Note: Sacre, Candace	Questions?
7:26:31 PM	Asst Gen Counsel Bellamy PSC - witness Wilson Note: Sacre, Candace	Cross Examination. Turn to Response, Staff Second, Question 15, sponsored response?
7:27:27 PM	Asst Gen Counsel Bellamy PSC - witness Wilson Note: Sacre, Candace	Brown 3 remain available, explain in more detail, why need be built at Mill Creek as opposed to Brown?
7:28:49 PM	Asst Gen Counsel Bellamy PSC - witness Wilson Note: Sacre, Candace	Need NGCC at Brown 3 until build SCR at Ghent 2?
7:29:51 PM	Asst Gen Counsel Bellamy PSC - witness Wilson Note: Sacre, Candace	Based on timing SCR at Brown 3, also need NGCC makeup retirement Mill Creek 1 and 2?
7:30:17 PM	Chairman Chandler - witness Wilson Note: Sacre, Candace	Examination. Starting in what year?
7:31:00 PM	Asst Gen Counsel Bellamy PSC - witness Wilson Note: Sacre, Candace	Cross Examination (cont'd). If stay push back compliance Good Neighbor Plan, allow time construction combined cycle Brown with SCR, how long move forward constructing that?
7:32:12 PM	Asst Gen Counsel Bellamy PSC - witness Wilson Note: Sacre, Candace	Bellar indicated had to do with cost, difference cost unit at Brown and Mill Creek?
7:33:50 PM	Asst Gen Counsel Bellamy PSC - witness Wilson Note: Sacre, Candace	Analysis done what upgrades needed Brown 3 continue operating with NGCC unit at Brown?
7:34:34 PM	Asst Gen Counsel Bellamy PSC - witness Wilson Note: Sacre, Candace	Relying on back of the napkin this what there this more probably need something?
7:34:59 PM	Asst Gen Counsel Bellamy PSC - witness Wilson Note: Sacre, Candace	Allude keeping Brown 3 open have emission validations, extent overcontrolling or exceeding allowances transferred shifting allowance to Ghent 2?
7:35:54 PM	Asst Gen Counsel Bellamy PSC - witness Wilson Note: Sacre, Candace	Looking at SAW-1, page 55, table 35, analysis done, three scenarios, when costs determined proposed solar facilities included in evaluation whether transmission upgrades needed?
7:37:28 PM	Asst Gen Counsel Bellamy PSC - witness Wilson Note: Sacre, Candace	Ask as post-hearing data request?
7:37:29 PM	POST-HEARING DATA REQUEST Note: Sacre, Candace Note: Sacre, Candace	ASST GEN COUNSEL BELLAMY PSC - WITNESS WILSON WHEN COSTS DETERMINED PROPOSED SOLAR FACILITIES INCLUDED WHETHER TRANSMISSION UPGRADES NEEDED
7:37:42 PM	Asst Gen Counsel Bellamy PSC - witness Wilson Note: Sacre, Candace	Look at Response, Staff Second, Item 53, transmission costs, summarize, transmission upgrades \$900,000?

7:39:37 PM	Asst Gen Counsel Bellamy PSC - witness Wilson Note: Sacre, Candace	Other cost, Response, Part B, same scenario, except NGCC at Mill Creek, upgrades \$39 to \$52 million?
7:40:05 PM	Asst Gen Counsel Bellamy PSC - witness Wilson Note: Sacre, Candace	Solar being in Mercer County, presume why upgrades necessary if CC at Mill Creek address voltage, looking at solar and Brown BESS address issues in lieu of upgrades?
7:40:06 PM	POST-HEARING DATA REQUEST Note: Sacre, Candace Note: Sacre, Candace	ASST GEN COUNSEL BELLAMY PSC - WITNESS WILSON LOOKING AT SOLAR AND BROWN BESS, ADDRESS ISSUES IN LIEU OF UPGRADES
7:41:40 PM	Asst Gen Counsel Bellamy PSC - witness Wilson Note: Sacre, Candace	ITO, something produced by them for you or produce by you?
7:42:15 PM	Asst Gen Counsel Bellamy PSC - witness Wilson Note: Sacre, Candace	Something could get without going to ITO?
7:42:36 PM	Asst Gen Counsel Bellamy PSC - witness Wilson Note: Sacre, Candace	Response, Question 53, indicated NGCC at Mill Creek \$39-\$52 million, on Table 35 SAW-1 same scenario \$34 million, slight discrepancy?
7:43:37 PM	POST-HEARING DATA REQUEST Note: Sacre, Candace Note: Sacre, Candace	ASST GEN COUNSEL BELLAMY PSC - WITNESS WILSON EXPLAIN DISCREPANCY BETWEEN RESPONSE QUESTION 53 NGCC AT MILL CREEK AND TABLE 35 SAW-1
7:43:49 PM	Asst Gen Counsel Bellamy PSC - witness Wilson Note: Sacre, Candace	SAW-1, Table 5, page 23??, what table show?
7:45:42 PM	Asst Gen Counsel Bellamy PSC - witness Wilson Note: Sacre, Candace	Results of first PLEXOS
7:45:58 PM	Asst Gen Counsel Bellamy PSC - witness Wilson Note: Sacre, Candace	And those six scenarios run?
7:46:05 PM	Asst Gen Counsel Bellamy PSC - witness Wilson Note: Sacre, Candace	Model select continue operate Mill Creek 2 or Ghent 2 with SCRs?
7:46:33 PM	Asst Gen Counsel Bellamy PSC - witness Wilson Note: Sacre, Candace	Model chose one CC and continue operate
7:46:57 PM	Asst Gen Counsel Bellamy PSC - witness Wilson Note: Sacre, Candace	PROSYM selected in one but not in other?
7:47:56 PM	Asst Gen Counsel Bellamy PSC - witness Wilson Note: Sacre, Candace	\$34 million transmission into PLEXOS?
7:48:09 PM	Asst Gen Counsel Bellamy PSC - witness Wilson Note: Sacre, Candace	Not in ProSim?
7:48:28 PM	Asst Gen Counsel Bellamy PSC - witness Wilson Note: Sacre, Candace	Table 5, could have selected Mill Creek 2 of Ghent 2, chose retire both units and build NGCCs, indicate between two Ghent 2 is more economic unit?
7:49:13 PM	Asst Gen Counsel Bellamy PSC - witness Wilson Note: Sacre, Candace	When PLEXOS run in original case, Mill Creek 1 retire?
7:49:33 PM	Asst Gen Counsel Bellamy PSC - witness Wilson Note: Sacre, Candace	Model no option keep open?
7:49:40 PM	Asst Gen Counsel Bellamy PSC - witness Wilson Note: Sacre, Candace	Any model done after that keep Mill Creek 1 open?
7:49:51 PM	Asst Gen Counsel Bellamy PSC - witness Wilson Note: Sacre, Candace	How model done?
7:50:12 PM	Asst Gen Counsel Bellamy PSC - witness Wilson Note: Sacre, Candace	Material difference Mill Creek 1 and Mill Creek 2 as far as costs?

7:50:34 PM	Asst Gen Counsel Bellamy PSC - witness Wilson Note: Sacre, Candace	What be?
7:50:57 PM	Asst Gen Counsel Bellamy PSC - witness Wilson Note: Sacre, Candace	Original modeling done in SAW-1, assuming Mill Creek 2 not selected, Mill Creek 1 not selected, Mill Creek 2 not chosen either?
7:51:52 PM	Chairman Chandler - witness Wilson Note: Sacre, Candace	Examination. When did model Table 5 in SAW-1, model permitted retire and retrofit Ghent 2 and Mill Creek 2?
7:52:32 PM	Chairman Chandler - witness Wilson Note: Sacre, Candace	Choose without SCRs?
7:52:49 PM	Chairman Chandler - witness Wilson Note: Sacre, Candace	Modeled in stage one given renewables?
7:52:59 PM	Chairman Chandler - witness Wilson Note: Sacre, Candace	Practical impact of that?
7:53:11 PM	Chairman Chandler - witness Wilson Note: Sacre, Candace	In terms of loss of load, Ghent 2 be complimentary to solar or contracted solar?
7:53:58 PM	Chairman Chandler - witness Wilson Note: Sacre, Candace	Just not do in this stage?
7:54:15 PM	Asst Gen Counsel Bellamy PSC - witness Wilson Note: Sacre, Candace	Cross Examination (cont'd). Modeling reported with respect retirement Mill Creek 1?
7:56:19 PM	Asst Gen Counsel Bellamy PSC - witness Wilson Note: Sacre, Candace	Calculated similar how present value revenue requirement calculated in stage two of the original modeling?
7:56:54 PM	Asst Gen Counsel Bellamy PSC - witness Wilson Note: Sacre, Candace	Mill Creek 1 and Mill Creek 2, similarly sized?
7:57:12 PM	Asst Gen Counsel Bellamy PSC - witness Wilson Note: Sacre, Candace	In same area, same coal supply and transportation?
7:57:16 PM	Asst Gen Counsel Bellamy PSC - witness Wilson Note: Sacre, Candace	Mill Creek 2 needs SCR, and Mill Creek 1 needs both ELG and cooling tower and SCR?
7:57:52 PM	Asst Gen Counsel Bellamy PSC - witness Wilson Note: Sacre, Candace	Table 11, stay open costs, look at ongoing Mill Creek 1 lower than Mill Creek 2?
7:58:21 PM	Asst Gen Counsel Bellamy PSC - witness Wilson Note: Sacre, Candace	Reason for that?
8:00:07 PM	Chairman Chandler - witness Wilson Note: Sacre, Candace	Examination. Page 24 of that document, footnote 44, asked about Brown 3, if Brown 12 shows up, have number of common costs no longer be Brown 3 hold alone, allocated with Brown 12?
8:01:25 PM	Chairman Chandler - witness Wilson Note: Sacre, Candace	Assume both incur them are duplicative?
8:01:58 PM	Chairman Chandler - witness Wilson Note: Sacre, Candace	If model keeps Brown 3 and Brown 12 verse model retires Brown 3 and builds Brown 12, going forward stay open costs of Brown 12 same in both models?
8:02:25 PM	Chairman Chandler - witness Wilson Note: Sacre, Candace	Just asking what options model was provided, same thing with Mill Creek?
8:03:34 PM	Chairman Chandler - witness Wilson Note: Sacre, Candace	When modeled current units included only avoidable stay open costs?
8:03:48 PM	Chairman Chandler - witness Wilson Note: Sacre, Candace	Costs upon retirement no longer be incurred?

8:04:55 PM	Chairman Chandler - witness Wilson Note: Sacre, Candace	Same step or in two different steps?
8:05:22 PM	Chairman Chandler Note: Sacre, Candace	Mr. Bellamy, have more to pick up in the morning? (Click on link for further comments.)
8:05:38 PM	Atty McCrae Joint Intervenors Note: Sacre, Candace	Intended mark and move for admission Joint Intervenors IRP comments. (Click on link for further comments.)
8:06:33 PM	Chairman Chandler Note: Sacre, Candace	Anything else?
8:06:42 PM	Chairman Chandler Note: Sacre, Candace	Recess until 8:30.
8:07:00 PM	Session Ended	



Exhibit List Report

2022-00402 23Aug2023

**Kentucky Utilities Company and
Louisville Gas and Electric
Company (KU/LG&E)**

Name:	Description:
KIUC HEARING EXHIBIT 1	ATTACHMENT 2 RESPONSE JI-2 QUESTION 60(a), PAGE 52 OF 104, TABLE 31, TOTAL STAY-OPEN COSTS
SIERRA CLUB HEARING EXHIBIT 2	ANALYSIS OF AVENUES FOR REDUCING UNDEPRECIATED FOSSIL-FUEL GENERATION ASSETS AT RETIREMENT NOVEMBER 30, 2021

Table 31: Total Stay-Open Costs (\$M)

Year	Mill Creek 2				Ghent 2				Brown 3		
	Ongoing Costs	Overhaul Costs (Standard)	Overhaul Costs (Life Extension)	Environmental Compliance Costs (SCR)	Ongoing Costs	Overhaul Costs (Standard)	Overhaul Costs (Life Extension)	Environmental Compliance Costs (SCR)	Ongoing Costs	Overhaul Costs (Standard)	Overhaul Costs (Life Extension)
2023	11	0	0	2	12	0	0	3	27	0	0
2024	21	0	0	16	23	0	0	30	30	0	0
2025	15	0	0	47	12	0	0	76	31	0	0
2026	18	11	0	45	22	0	0	18	35	0	0
2027	14	0	0	1	17	36	0	1	32	26	0
2028	18	0	0	1	13	0	0	1	32	0	0
2029	14	0	37	1	14	0	0	1	35	0	32
2030	21	0	23	1	25	0	0	1	36	0	38
2031	17	0	22	1	19	0	0	1	36	0	22
2032	21	0	0	1	19	0	0	1	38	0	0
2033	17	0	2	1	20	0	25	1	38	0	2
2034	22	16	18	1	20	0	42	1	40	0	0
2035	18	0	0	1	21	24	23	1	40	30	0
2036	22	0	0	1	21	0	42	1	41	0	0
2037	19	0	0	1	22	0	8	1	42	0	0
2038	25	0	0	2	22	0	0	2	43	0	14
2039	20	0	0	2	22	0	14	2	44	0	0
2040	24	0	0	2	23	0	0	2	45	0	0
2041	21	0	15	2	23	0	0	2	46	0	0
2042	25	19	0	2	24	0	0	2	48	0	11
2043	21	0	0	2	24	28	0	2	48	35	0
2044	27	0	0	2	25	0	0	2	50	0	0
2045	22	0	12	2	26	0	0	2	50	0	0
2046	30	0	0	2	26	0	0	2	52	0	0
2047	23	0	0	2	27	0	0	2	52	0	0
2048	29	0	0	2	27	0	0	2	55	0	0
2049	24	0	0	2	28	0	0	2	55	0	0
2050	25	23	0	2	30	0	0	2	57	0	0

7.4.1 CCR Revenue Assumptions

Coal combustion residuals (“CCR”) include fly ash, bottom ash, and gypsum. CCR is either used for onsite construction projects, sold to third parties for use in the production of products like cement and wallboard, or stored in onsite landfills. When sold to third parties, the beneficial use of CCR materials is included in the Environmental Surcharge Mechanism as a credit to offset environmental compliance costs. In 2021, CCR sales revenues totaled over \$15 million.

Analysis of Avenues for Reducing Undepreciated Fossil- Fuel Generation Assets at Retirement



November 30, 2021

EXHIBIT

**SIERRA CLUB HEARING
EXHIBIT 2**

Table of Contents

1	Introduction.....	3
2	Forecasted Net Book Values for Baseload Fossil Generating Units.....	4
3	Carbon Capture Technology & Geologic Storage Potential.....	9
4	Section 45Q Tax Incentives	10
5	Implications of CCS and Section 45Q Tax Incentives on Investment Decisions.....	12

1 Introduction

On June 30, 2021, the Kentucky Public Service Commission issued orders in Case Nos. 2020-00349 and 2020-00350 with the following requirement for Kentucky Utilities Company (“KU”) and Louisville Gas and Electric Company (“LG&E”) (collectively, the “Companies”):

KU and LG&E shall file by November 30, 2021, a report of KU’s and LG&E’s analysis of the future of LG&E and KU’s fossil-fuel generation, including but not limited to an analysis of avenues to reduce undepreciated assets to protect ratepayers; 45Q tax incentives; and any other government-approved incentives regarding carbon capture, storage and utilization.

The Companies’ analysis is provided in the following sections. In summary, if depreciation rates are adjusted gradually over time consistent with projected retirement dates, the level of undepreciated generation assets at retirement should reflect the cost to remove the assets less salvage value. As they do currently, the Companies will continue to consider planned retirement dates when evaluating future investments to ensure the investments are prudent.¹

Carbon capture and underground storage is not a viable alternative for continuing to operate the Companies’ generation portfolio in its current manner because of the limited amount of geologic storage located near the Companies’ generating stations. Absent a federal mandate to reduce carbon dioxide (“CO₂”) emissions from existing units or a CO₂ tax, carbon capture without storage will only be considered if there is an economic use for a unit’s CO₂ emissions.

Numerous commercial uses exist for CO₂ and section 45Q tax incentives support the economics of capturing and transporting CO₂ to a third party for commercial use. The economics of these activities are very similar to the economics of coal combustion residual (“CCR”) disposal and beneficial use. The Companies are open to commercial opportunities involving CO₂ and have negotiated and managed contracts involving tax incentives. However, given the high cost of carbon capture for coal units, economics likely will not support carbon capture for coal even with tax incentives or regulations requiring the reduction of CO₂ emissions.

¹ For additional information regarding planned unit retirements and potential replacement generation, see the Companies’ 2021 Integrated Resource Plan (Case No. 2021-00393).

2 Forecasted Net Book Values for Baseload Fossil Generating Units

This study includes each of the Companies' baseload fossil generating units. For each of these units, Table 1 lists the unit's planned retirement date, the end of the unit's book depreciation life, and the unit's net book value as of August 31, 2021. In total, the net book value for these units is \$6.4 billion as of August 31, 2021.

Table 1: End of Book Lives for Baseload Fossil Generating Units²

Unit	Planned Retirement Date	End of Book Life	Net Book Value as of August 31, 2021 (\$M) ³
Mill Creek 1 ("MC1")	2024	2032	145
Mill Creek 2 ("MC2")	2028	2034	296
Brown 3 ("BR3")	2028	2035	681
Ghent 1 ("GH1")	2034	2034	367
Ghent 2 ("GH2")	2034	2034	222
Ghent 3 ("GH3")	2037	2037	365
Ghent 4 ("GH4")	2037	2037	1,033
Mill Creek 3 ("MC3")	2039	2039	390
Mill Creek 4 ("MC4")	2039	2039	874
Trimble County 1 ("TC1")	2045	2045	368
Cane Run 7 ("CR7")	2055	2055	461
Trimble County 2 ("TC2")	2066	2066	1,220
Total			6,422

Table 2 contains a forecast of the capital investments necessary to operate each of the units in Table 1 through their planned retirement date. Consistent with the retirements of the Cane Run and Green River coal units, the need for capital investments is assumed to taper in the years immediately prior to a unit's retirement. To recover these investments, depreciation rates will need to be increased gradually over time consistent with the units' projected retirement dates. Table 3 shows the forecasted net book value of the generating units through their planned retirement date with the capital investments in Table 2 and with the assumption that depreciation rates are increased incrementally every five years with no change to projected retirement dates.

² See Exhibit LEB-2 in Case Nos. 2020-00349 and 2020-00350.

³ Net book values include Construction Work in Progress ("CWIP"). However, net book values do not include costs to remove the assets after retirement.

Table 2: Forecasted Capital Investments for Baseload Generating Units (\$M)

Year	MC1	MC2	BR3	GH1	GH2	GH3	GH4	MC3	MC4	TC1	CR7	TC2	Total
2022	0.1	0.3	3.1	7.6	0.8	5.4	68.4	3.8	49.8	3.2	10.6	43.6	196.7
2023	0.0	0.8	1.3	5.3	5.4	14.8	43.3	11.6	18.8	17.0	4.5	26.3	149.1
2024	0.0	0.5	4.9	8.2	11.1	8.2	23.4	3.1	34.0	4.2	35.2	19.3	152.0
2025		0.3	3.3	17.4	2.1	16.8	11.2	12.3	6.7	15.8	12.4	27.5	126.0
2026		0.1	1.6	7.4	10.1	23.2	8.4	9.4	21.8	3.4	13.5	54.3	153.3
2027		0.2	1.3	7.3	32.9	3.8	19.0	30.4	11.4	17.1	1.8	11.6	136.8
2028		0.0	0.0	10.6	2.6	7.0	41.6	3.7	17.3	5.4	29.0	25.1	142.2
2029				21.8	2.9	8.5	25.0	9.4	8.7	31.9	1.2	14.9	124.2
2030				2.0	11.7	8.4	11.3	2.5	28.6	18.9	11.1	33.1	127.6
2031				3.9	3.2	2.6	5.4	11.2	7.8	6.1	2.7	0.8	43.6
2032				0.7	0.4	11.8	10.4	7.7	18.1	13.1	12.8	17.5	92.5
2033				0.2	0.1	10.7	9.4	5.6	13.2	18.2	13.1	17.8	88.3
2034				0.0	0.0	20.0	3.8	5.4	12.7	13.6	13.3	38.9	107.8
2035						1.1	1.0	25.3	11.4	13.9	13.6	18.5	84.9
2036						0.4	0.3	2.0	4.7	14.2	13.9	18.9	54.3
2037						0.0	0.0	0.5	1.2	14.5	14.1	19.3	49.6
2038								0.2	0.4	14.8	14.4	19.7	49.5
2039								0.0	0.0	10.8	14.7	20.1	45.5
2040										10.3	15.0	20.5	45.8
2041										13.6	15.3	20.9	49.8
2042										3.8	15.6	45.6	65.0
2043										1.0	15.9	21.7	38.6
2044										0.3	16.3	22.1	38.7
2045										0.0	16.6	22.6	39.2
2046											16.9	23.0	40.0
2047											17.2	23.5	40.7
2048											17.6	24.0	41.6
2049											12.8	24.5	37.3
2050											12.3	53.4	65.7
2051											11.1	25.4	36.6
2052											4.5	25.9	30.5
2053											1.2	26.5	27.6
2054											0.4	27.0	27.4
2055											0.0	27.5	27.5
2056												28.1	28.1
2057												28.6	28.6
2058												62.6	62.6
2059												29.8	29.8
2060												21.7	21.7
2061												20.9	20.9
2062												18.8	18.8
2063												7.7	7.7
2064												2.0	2.0
2065												0.7	0.7
2066												0.0	0.0

Table 3: End of Year Net Book Value Forecast (\$M)⁴

Year	MC1	MC2	BR3	GH1	GH2	GH3	GH4	MC3	MC4	TC1	CR7	TC2	Total
2021	140	289	666	366	220	360	1,048	391	882	378	459	1,234	6,433
2022	126	265	623	344	201	339	1,046	369	892	361	453	1,243	6,262
2023	111	241	573	320	187	328	1,016	356	855	358	440	1,233	6,017
2024	98	218	526	298	179	310	965	333	835	341	461	1,215	5,777
2025		194	478	287	162	301	899	320	784	336	454	1,205	5,420
2026		170	427	261	152	297	825	304	745	319	450	1,223	5,173
2027		145	377	232	164	271	757	310	693	315	434	1,199	4,898
2028		134	353	204	147	249	716	286	648	300	450	1,188	4,676
2029				190	126	228	653	269	592	311	433	1,167	3,969
2030				152	116	207	574	244	557	308	427	1,164	3,749
2031				109	88	176	481	225	495	289	410	1,127	3,401
2032				55	51	149	387	199	439	276	402	1,106	3,063
2033				0	13	121	290	170	376	268	395	1,084	2,718
2034				(25)	(4)	101	188	141	313	254	387	1,083	2,438
2035						62	82	131	248	240	379	1,062	2,204
2036						8	(35)	91	166	223	370	1,039	1,863
2037						(24)	(95)	45	72	203	361	1,015	1,578
2038								(2)	(23)	182	351	992	1,500
2039								(23)	(67)	157	341	968	1,376
2040										131	331	945	1,407
2041										102	319	920	1,342
2042										57	306	918	1,281
2043										9	293	892	1,193
2044										(40)	279	866	1,104
2045										(63)	265	839	1,041
2046											248	811	1,059
2047											228	780	1,008
2048											207	750	957
2049											181	719	901
2050											154	716	871
2051											119	682	801
2052											70	644	714
2053											17	606	623
2054											(37)	568	531
2055											(62)	530	468
2056												486	486
2057												437	437
2058												420	420
2059												369	369
2060												308	308
2061												233	233
2062												142	142
2063												40	40
2064												(69)	(69)
2065												(179)	(179)
2066												(230)	(230)

Table 4 lists the net book value for each generating unit at the unit's planned retirement date. Mill Creek 1, Mill Creek 2, and Brown 3 are expected to retire before the end of their book depreciation lives. Consistent with the settlement agreement and the Commission's orders in Case Nos. 2020-00349 and 2020-00350, the remaining book value for these units will be recovered through the Retired Asset Recovery Rider. For the remaining units, if depreciation rates are adjusted over time to collect future capital required to operate the units through their retirement dates, the net book value for these units at retirement should reflect the cost to remove the assets.⁵

Table 4: Net Book Value at End of Book Lives (\$M)⁴

Unit	Net Book Value at End of Book Life
Mill Creek 1	98
Mill Creek 2	134
Brown 3	353
Ghent 1	-25
Ghent 2	-4
Ghent 3	-24
Ghent 4	-95
Mill Creek 3	-23
Mill Creek 4	-67
Trimble County 1	-63
Cane Run 7	-62
Trimble County 2	-230
Total	-9

The Companies will continue to consider a unit's planned retirement date when evaluating capital investments to ensure the investments are prudent. As depreciation rates change in the future due to the passage of time and other changes, future capital investments will be evaluated using those updated depreciation rates. For clarity, the Companies' current practice when evaluating capital investments for Mill Creek 1, Mill Creek 2, and Brown 3 is to use the depreciation rates included in the Companies' 2020 rate case applications, which reflect shorter service lives than those reflected in the depreciation rates that were ultimately approved in conjunction with the approval of the Retired Asset Recovery Rider.⁶

Section 3 provides an update on carbon capture technology and the potential for geologic CO₂ storage in Kentucky. Section 4 provides a summary of tax incentives available to utilities for storing CO₂ or utilizing CO₂ in commercial markets. Section 5 discusses carbon capture and storage ("CCS")

⁴ Net book values include CWIP. However, net book values do not include costs to remove the assets after retirement or salvage value.

⁵ Depreciation rates account for a unit's net book value as well as the cost to dismantle the unit.

⁶ See Case Nos. 2020-00349 and 2020-00350.

and CO₂ tax incentives as means of reducing costs for customers and potentially extending a baseload unit's economic life.

3 Carbon Capture Technology & Geologic Storage Potential

In 2006, LG&E and KU helped found the Carbon Management Resource Group (“CMRG”) at the University of Kentucky to study CCS technology. The research was split into two focus areas: capture and geologic storage. Carbon capture research, which focuses on the chemical process of isolating CO₂, is led by the University of Kentucky Center for Applied Energy Research (“CAER”) with a pilot-scale carbon capture system at E.W. Brown, one of two such systems in operation at power plants in the United States today. Geologic CO₂ storage research is led by the Kentucky Geologic Survey (“KGS”), which is also led by the University of Kentucky.

In 2013, KGS published a detailed report that identified the potential for up to 19 million tons of permanent geologic CO₂ storage near LG&E and KU generating stations.⁷ Because 19 million tons is less than one year of current LG&E and KU CO₂ emissions, geologic storage is not a viable storage alternative for continuing to operate the Companies’ generation portfolio in its current manner. However, geologic storage may be a viable storage alternative for a portfolio with natural gas generation and significant amounts of renewables where natural gas is used to provide power only when solar and wind generation are not available.

Researchers at the University of Kentucky CAER have used the carbon capture system at E.W. Brown to run tests for U.S. Department of Energy-funded research projects. Their work has generated 118 publications and 17 U.S. patents with another four patents pending. One of the current research projects establishes a method of producing hydrogen as a beneficial byproduct from the carbon capture that could in turn be used as fuel for combustion.

Because a natural gas unit emits no sulfur dioxide and has less than half the CO₂ emissions of a coal unit, carbon capture for a natural gas unit requires less capture infrastructure and has much lower parasitic loads. The Electric Power Research Institute (“EPRI”) has deemphasized research on carbon capture for a coal unit because it costs approximately 50% more than carbon capture for a natural gas unit on a dollar per MWh basis. According to EPRI, the cost of carbon capture for a natural gas unit is approximately \$53 per metric ton, and the cost to transport the carbon to a geologic formation or third-party site for commercial use is between \$3 and \$10 per metric ton depending on the transport distance.⁸ Therefore, a reasonable estimate for the cost of carbon capture and transportation is around \$60 per metric ton.

⁷ The 2013 KGS report is located at https://kgs.uky.edu/kgsweb/olops/pub/kgs/CNR1_12.pdf.

⁸ Electric Power Research Institute (EPRI). (2021). (tech.). *Carbon Capture, Transportation, and Storage Cost Study*. Retrieved from <https://www.epri.com/research/products/000000003002022302>.

4 Section 45Q Tax Incentives

Internal Revenue Code (“IRC”) section 45Q allows taxpayers to claim a federal income tax credit based on the amount of qualified carbon oxides (“CO/CO₂”) captured from a qualified facility over a 12-year period that would otherwise be emitted into the atmosphere. Construction on the qualified facility must begin before January 1, 2026, and the 12-year period begins on the date the facility is placed in service. To qualify, the taxpayer must “complete the cycle” of the credit requirements by physically or contractually ensuring the disposal, injection, or utilization of at least 500,000 metric tons of captured CO/CO₂ in a taxable year:

- Disposal: Disposed of in secure geologic storage (e.g., deep saline formations, oil and gas reservoirs, un-minable coal seams);
- Injection: Used as a tertiary injectant in an enhanced oil recovery or natural gas recovery (“EOR”) project, and disposed of in secure geologic storage; or
- Utilization: Utilized in a manner consistent with IRC section 45Q(f)(5), including photosynthesis or chemosynthesis, chemical conversion, or use for any other purpose for which a market exists.

Figure 1 provides a summary of current and potential uses for CO₂. The 45Q tax credit is available for each metric ton of carbon oxide that is captured and secured over the 12-year period. The credit rate increases over time and varies depending on how the taxpayer disposes of the carbon oxides.

Figure 1: Current and Potential CO₂ Uses

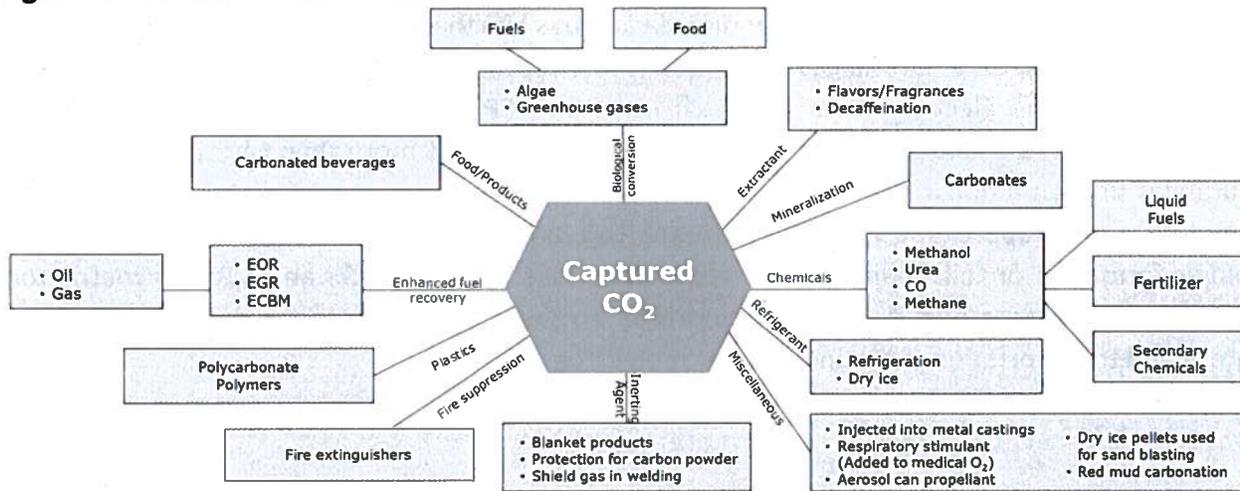


Table 5 contains the annual 45Q tax credits, which were published by the IRS through 2026 in Notice 2018-93. Credits are higher for CO/CO₂ disposed in secure geologic storage than for CO/CO₂ used as an injectant or in a commercial market. Beyond 2026, tax credits will be adjusted for inflation.

Table 5: 45Q Tax Credits (\$/metric ton of CO/CO₂)

Tax Year	CO/CO₂ Disposal in Secure Geologic Storage	CO/CO₂ Used as Injectant or Utilized for Commercial Market
2021	\$34.81	\$22.68
2022	\$37.85	\$25.15
2023	\$40.89	\$27.61
2024	\$43.92	\$30.07
2025	\$46.96	\$32.54
2026	\$50.00	\$35.00

Although, as with other tax credits historically, the tax credits associated with IRC section 45Q could change over time or be extended, certainty in the ability to utilize the tax incentive is necessary before significant investment is undertaken. The Companies will continue to monitor such changes to ensure energy is supplied to customers in the most economical manner. IRC section 45Q and related regulations are discussed in more detail in Appendix A.

5 Implications of CCS and Section 45Q Tax Incentives on Investment Decisions

As discussed previously, disposing of CO₂ in geologic storage is not a viable alternative for continuing to operate the Companies' generation portfolio in its current manner due to the limited amount of geologic storage located near the Companies' generating stations. Absent a federal mandate to reduce CO₂ emissions from existing units or a CO₂ tax, carbon capture without storage will only be considered if there is an economic use for a unit's CO₂ emissions. Numerous commercial uses exist today for CO₂ (see Figure 1), and section 45Q tax incentives reduce the cost of supplying CO₂ to a third party for commercial use. In general terms, to make CCS viable and reduce costs for customers, a third party would have to offer the Companies at least the difference between (a) the cost of carbon capture and transport (approximately \$60 per metric ton for a natural gas unit and more for a coal unit) and (b) the section 45Q tax incentive for carbon captured and used as an injectant or for another commercial use (e.g., \$35 per metric ton in 2026). In many respects, the economics of capturing and transporting CO₂ to a third party for commercial use are similar to the economics of CCR disposal and beneficial use.

The Companies have multiple CCR beneficial use contracts with third parties that use the CCR (e.g., gypsum) to produce other products (e.g., wallboard). In these contracts, a third party pays for the CCR as means of reducing their raw material costs and thereby eliminates the Companies' cost of storing the CCR in an onsite landfill.⁹ Similarly, an agreement involving the beneficial use of CO₂ would likely require a significant investment by a third-party (e.g., fire extinguisher manufacturing facility), and the price paid for CO₂ by the third party considering applicable tax incentives would have to reduce costs for customers. The Companies are open to commercial opportunities like these and have experience with commercial opportunities involving tax credits.¹⁰ However, given the high cost of carbon capture for coal units, economics likely will not support carbon capture for coal even with tax incentives or regulations requiring the reduction of CO₂ emissions.

As an example, Trimble County 2 is the Companies' newest coal unit and is designed for baseload operation with limited load following capabilities. According to the 2013 report by the Kentucky Geologic Survey, approximately 3,500,000 tons of CO₂ could be stored in the 2,192-acre underground geologic formation accessible from the Trimble County Station. Geologic CO₂ storage is not a viable alternative for continuing to operate Trimble County 2 because this volume is less than one year of its CO₂ emissions (~11,600 tons per day). To justify carbon capture for Trimble County 2, a third party would have to invest in facilities capable of utilizing the unit's CO₂ emissions, and the economics of installing carbon capture technology would have to be favorable to other environmental compliance alternatives.

The Companies will continue to monitor and evaluate changes in technology associated with carbon capture to allow for continued operation of the Companies' newer baseload units economically for the benefit of all customers.

⁹ Customers receive all net proceeds from CCR beneficial use contracts.

¹⁰ See discussion of refined coal facilities in Case No. 2015-00264.

*Angela M Goad
Assistant Attorney General
Office of the Attorney General Office of Rate
700 Capitol Avenue
Suite 20
Frankfort, KENTUCKY 40601-8204

*Honorable David J. Barberie
Managing Attorney
Lexington-Fayette Urban County Government
Department Of Law
200 East Main Street
Lexington, KENTUCKY 40507

*Joe F. Childers
Childers & Baxter PLLC
300 Lexington Building, 201 West Sho
Lexington, KENTUCKY 40507

*Ashley Wilmes
Kentucky Resources Council, Inc.
Post Office Box 1070
Frankfort, KENTUCKY 40602

*Dennis G Howard II
Howard Law PLLC
740 Emmett Creek Lane
Lexington, KENTUCKY 40515

*John G Horne, II
Office of the Attorney General Office of Rate
700 Capitol Avenue
Suite 20
Frankfort, KENTUCKY 40601-8204

*Honorable Allyson K Sturgeon
Managing Senior Counsel - Regulatory &
LG&E and KU Energy LLC
220 West Main Street
Louisville, KENTUCKY 40202

*Tom Fitzgerald
Kentucky Resources Council, Inc.
Post Office Box 1070
Frankfort, KENTUCKY 40602

*Joshua Smith
Sierra Club
2101
Webster St. , Suite 1300
Oakland, CALIFORNIA 94612

*William H May, III
Hurt, Deckard & May
The Equus Building
127 West Main Street
Lexington, KENTUCKY 40507

*Glibert Zelaya
Earthjustice 156 William Street, Suite 800
New York, NEW YORK 10038

*Kate Huddleston
Sierra Club Environmental Law Program
2101 Webster Street
Suite 1300
Oakland, CALIFORNIA 94612

*Byron Gary
Kentucky Resources Council, Inc.
Post Office Box 1070
Frankfort, KENTUCKY 40602

*James W Gardner
Sturgill, Turner, Barker & Moloney, PLLC
333 West Vine Street
Suite 1400
Lexington, KENTUCKY 40507

*Honorable Kurt J Boehm
Attorney at Law
Boehm, Kurtz & Lowry
36 East Seventh Street
Suite 1510
Cincinnati, OHIO 45202

*Carrie H Grundmann
Spilman Thomas & Battle, PLLC
110 Oakwood Drive, Suite 500
Winston-Salem, NORTH CAROLINA 27103

*Jody Kyler Cohn
Boehm, Kurtz & Lowry
36 East Seventh Street
Suite 1510
Cincinnati, OHIO 45202

*Honorable Kendrick R Riggs
Attorney at Law
Stoll Keenon Ogden, PLLC
2000 PNC Plaza
500 W Jefferson Street
Louisville, KENTUCKY 40202-2828

*Cassandra McCrae
Earthjustice
1617 JFK Boulevard, Suite 1675
Philadelphia, PENNSYLVANIA 19103

*Jody M Kyler Cohn
Boehm, Kurtz & Lowry
36 East Seventh Street
Suite 1510
Cincinnati, OHIO 45202

*Larry Cook
Assistant Attorney General
Office of the Attorney General Office of Rate
700 Capitol Avenue
Suite 20
Frankfort, KENTUCKY 40601-8204

*J. Michael West
Office of the Attorney General Office of Rate
700 Capitol Avenue
Suite 20
Frankfort, KENTUCKY 40601-8204

*Rebecca C. Price
Sturgill, Turner, Barker & Moloney
155 East Main Street
Lexington, KENTUCKY 40507

*M. Todd Osterloh
Sturgill, Turner, Barker & Moloney, PLLC
333 West Vine Street
Suite 1400
Lexington, KENTUCKY 40507

*Honorable Michael L Kurtz
Attorney at Law
Boehm, Kurtz & Lowry
36 East Seventh Street
Suite 1510
Cincinnati, OHIO 45202

*Steven W Lee
Spilman Thomas & Battle, PLLC
1100 Brent Creek Blvd., Suite 101
Mechanicsburg, PENNSYLVANIA 17050

*Honorable Matthew R Malone
Attorney at Law
Hurt, Deckard & May
The Equus Building
127 West Main Street
Lexington, KENTUCKY 40507

*Susan Speckert
Lexington-Fayette Urban County Government
Department Of Law
200 East Main Street
Lexington, KENTUCKY 40507

*Megan W. Mullins
Spilman Thomas & Battle, PLLC
300 Kanawha Blvd, East
Charleston, WEST VIRGINIA 25301

*Kentucky Utilities Company
220 W. Main Street
P. O. Box 32010
Louisville, KY 40232-2010

*Quang Nguyen
Assistant County Attorney
Louisville/Jefferson County Metro Government
First Trust Centre
200 South 5th Street, Suite 300N
Louisville, KENTUCKY 40202

*Louisville Gas and Electric Company
220 W. Main Street
P. O. Box 32010
Louisville, KY 40232-2010

*Rick LoveKamp
Kentucky Utilities Company
220 W. Main Street
P. O. Box 32010
Louisville, KY 40202

*Sara Judd
Senior Corporate Attorney
LG&E and KU Energy LLC
220 West Main Street
Louisville, KENTUCKY 40202

*Robert Conroy
Vice President, State Regulation and Rates
LG&E and KU Energy LLC
220 West Main Street
Louisville, KENTUCKY 40202

*Thomas Cmar
Earthjustice
6608 Wooster Pike
Cincinnati, OHIO 45227