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May 22, 2015

ELECTRONIC FILING

Jeff DeRouen
Executive Director
Kentucky Public Service Commission
211 Sower Boulevard
Frankfort, KY 40601

RE: ***Application of Louisville Gas and Electric Company and Kentucky Utilities Company for Declaratory Order Concerning Construction of the Trimble County Landfill and Related Cost Recovery***
Case No. 2015-00156

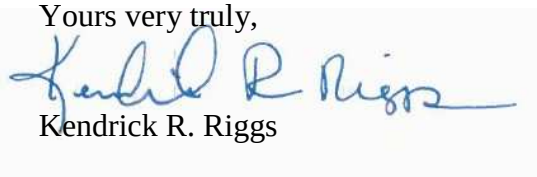
Dear Mr. DeRouen:

Please find enclosed Louisville Gas and Electric Company and Kentucky Utilities Company's Verified Joint Application for a Declaratory Order, Joint Petition for Confidential Protection and Joint Motion for Informal Conference in the above-referenced matter.

I certify that Louisville Gas and Electric Company and Kentucky Utilities Company's May 22, 2015 electronic filing of the Verified Joint Application, Joint Petition for Confidential Protection and Joint Motion for Informal Conference are a true and accurate copy of the same documents being filed in paper medium; that the electronic filing has been transmitted to the Commission on May 22, 2015; that there are currently no parties that the Commission has excused from participation by electronic means in this proceeding; and that an original in paper medium of the Verified Joint Application, Joint Petition for Confidential Protection and Joint Motion for Informal Conference are being mailed, by first class U.S. mail, postage prepaid, to the Commission on May 22, 2015.

Should you have any questions, please feel free to contact me at your convenience.

Yours very truly,



Kendrick R. Riggs

KRR:ec
Enclosure

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COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In re the Matter of:

VERIFIED JOINT APPLICATION OF LOUISVILLE GAS AND ELECTRIC COMPANY AND KENTUCKY UTILITIES COMPANY FOR DECLARATORY ORDER CONCERNING CONSTRUCTION OF THE TRIMBLE COUNTY LANDFILL AND RELATED COST RECOVERY	**)**	**CASE NO. 2015-00156**

VERIFIED JOINT APPLICATION OF LOUISVILLE GAS AND ELECTRIC COMPANY AND KENTUCKY UTILITIES COMPANY FOR A DECLARATORY ORDER

Louisville Gas and Electric Company ("LG&E") and Kentucky Utilities Company ("KU") (collectively, the "Companies"), pursuant to 807 KAR 5:001 Section 19, hereby apply to the Kentucky Public Service Commission ("Commission") for a declaratory order that the Commission's orders granting the Companies a Certificate of Public Convenience and Necessity ("CPCN") to construct a multi-phase landfill for coal-combustion residuals ("CCR") and related facilities, including CCR treatment and transport facilities, at the Trimble County Generating Station ("Trimble County Landfill") and to recover the cost of the first phase of the landfill through the Companies' environmental-cost-recovery ("ECR") mechanisms remain in full effect and continue to provide the Companies all the authority needed for the Companies to continue constructing the landfill and related facilities, including CCR treatment and transport facilities, and to have ECR recovery of the construction costs.[1] Since the Commission issued these final

[1] *In the Matter of: Application of Kentucky Utilities Company for Certificates of Public Convenience and Necessity and Approval of its 2009 Compliance Plan for Recovery by Environmental Surcharge*, Case No. 2009-00197, Order (December 23, 2009); *In the Matter of Louisville Gas and Electric Company for a Certificate of Public Convenience and Necessity and Approval of its 2009 Compliance Plan for Recovery by Environmental Surcharge*, Case No. 2009-00198, Order (December 23, 2009).

orders, the Companies have worked continuously to perform additional required engineering, to construct or engage in related activities on and around the landfill site that are all related to the landfill's construction, and to obtain all necessary permits, and have expended over $24.4 million to advance landfill development under the authority the Commission granted. Because the Companies expect to acquire all of the necessary permits soon, have completed landfill engineering and development (subject to additional permitting-required changes), expect to issue in the second quarter of 2015 a request for quotations for several key landfill-related facilities (including CCR treatment and transport facilities), and expect to begin additional significant procurement and construction activities in the fourth quarter of this year, the Companies are now requesting a declaratory order from the Commission to ensure the Companies' existing CPCN and ECR-cost-recovery authority for the landfill remain valid and fully sufficient before committing to expend additional significant resources and engage in additional significant construction activities. Because the Trimble County Landfill as currently designed is in the same location as originally proposed and will have essentially the same storage capacity, and because it continues to be economical and necessary for the Companies to continue to operate the Trimble County coal-fired units, the Companies respectfully request that the Commission issue the requested declaratory order. The Companies further respectfully request that the Commission issue the requested declaratory order by October 1, 2015, to permit the Companies to enter timely into required procurement and construction contracts later this year.

In support of their Application, the Companies state as follows:

1. The full name and mailing address of KU are: Kentucky Utilities Company, Post Office Box 32010, 220 West Main Street, Louisville, Kentucky 40202. KU may be reached by electronic mail at the electronic mail addresses of its counsel set forth below.

2. The full name and mailing address of LG&E are: Louisville Gas and Electric Company, Post Office Box 32010, 220 West Main Street, Louisville, Kentucky 40202. LG&E may be reached by electronic mail at the electronic mail addresses of its counsel set forth below.

3. KU is a utility engaged in the electric business. KU generates and purchases electricity, and distributes and sells electricity at retail in the following counties in Central, Northern, Southeastern and Western Kentucky:

Adair	Edmonson	Jessamine	Ohio
Anderson	Estill	Knox	Oldham
Ballard	Fayette	Larue	Owen
Barren	Fleming	Laurel	Pendleton
Bath	Franklin	Lee	Pulaski
Bell	Fulton	Lincoln	Robertson
Bourbon	Gallatin	Livingston	Rockcastle
Boyle	Garrard	Lyon	Rowan
Bracken	Grant	Madison	Russell
Bullitt	Grayson	Marion	Scott
Caldwell	Green	Mason	Shelby
Campbell	Hardin	McCracken	Spencer
Carlisle	Harlan	McCreary	Taylor
Carroll	Harrison	McLean	Trimble
Casey	Hart	Mercer	Union
Christian	Henderson	Montgomery	Washington
Clark	Henry	Muhlenberg	Webster
Clay	Hickman	Nelson	Whitley
Crittenden	Hopkins	Nicholas	Woodford
Daviess			

4. LG&E is a utility engaged in the electric and gas business. LG&E generates and purchases electricity, and distributes and sells electricity at retail in Jefferson County and portions of Bullitt, Hardin, Henry, Meade, Oldham, Shelby, Spencer, and Trimble Counties. LG&E also purchases, stores, and transports natural gas and distributes and sells natural gas at retail in Jefferson County and portions of Barren, Bullitt, Green, Hardin, Hart, Henry, Larue, Marion, Meade, Metcalfe, Nelson, Oldham, Shelby, Spencer, Trimble, and Washington Counties.

5. KU was incorporated in Kentucky on August 17, 1912, and in Virginia on November 26, 1991 (and effective as of December 1, 1991), and is in good standing in both Kentucky and Virginia. Copies of KU's good standing certificates from the Kentucky Secretary of State and the Virginia State Corporation Commission are attached as Exhibit 1.

6. LG&E was incorporated in Kentucky on July 2, 1913, and is currently in good standing in Kentucky. A copy of LG&E's good standing certificate from the Kentucky Secretary of State is attached as Exhibit 2.

7. Copies of all orders, pleadings and other communications related to this proceeding should be directed to: [2]

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[2] The May 18, 2015 letter from the Executive Director of the Commission acknowledged the receipt of the May 15, 2015 notice of election of use of electronic filing procedures filed by LG&E and KU.

The Companies' 2009 Applications for the Trimble County Landfill

8. On June 26, 2009, the Companies filed applications with the Commission requesting CPCNs for various construction projects and approval of the Companies' 2009 ECR Plan to permit recovery of the projects' costs through the Companies' ECR mechanisms. Among the CPCNs and projects proposed was the Trimble County Landfill, including the necessary CCR treatment and transport system, leachate collection system, the lined landfill itself, and eventual capping and closing of the landfill.[3] As proposed in accordance with the preliminary engineering information then available, the landfill was to be located on property owned by the Companies (at the head of what the Companies called Ravine B), and was to have a storage capacity of 34.5 million cubic yards ("MCY").[4] The Companies proposed to construct the landfill in phases; the Companies' share of the total estimated capital cost for entire landfill was estimated to be $404.3 million, of which the Companies estimated they would expend $70.5 million to build Phase I.[5] The Companies had scheduled Phase I of the landfill to be complete in 2012, with the Companies' share of the landfill's estimated operation and maintenance ("O&M") costs to be a total of $15.3 million for 2013-2018.[6]

[3] *See In the Matter of: Application of Kentucky Utilities Company for Certificates of Public Convenience and Necessity and Approval of its 2009 Compliance Plan for Recovery by Environmental Surcharge,* Case No. 2009-00197, Application (June 26, 2009); Case No. 2009-00197, Direct Testimony of John N. Voyles at 18, 20, and 32-35 (June 26, 2009); Case No. 2009-00197, Direct Testimony of Charles R. Schram at Exhibit CRS-4 Appendix 4 at 45 (June 26, 2009); *In the Matter of Louisville Gas and Electric Company for a Certificate of Public Convenience and Necessity and Approval of its 2009 Compliance Plan for Recovery by Environmental Surcharge*, Case No. 2009-00198, Application (June 26, 2009); Case No. 2009-00198, Direct Testimony of John N. Voyles at 17-18 and 30-32 (June 26, 2009); Case No. 2009-00198, Direct Testimony of Charles R. Schram at Exhibit CRS-2 Appendix 4 at 45 (June 26, 2009).

[4] *Id.*

[5] The total Phase I capital cost estimate was $94.04 million, with 25% of the cost allocated to Indiana Municipal Power Association ("IMPA") and Illinois Municipal Energy Association ("IMEA"), the other partial owners of the Trimble County coal units. KU's Project 32 included $33.86 million and LG&E's Project 24 included $36.68 million for the Trimble County Landfill.

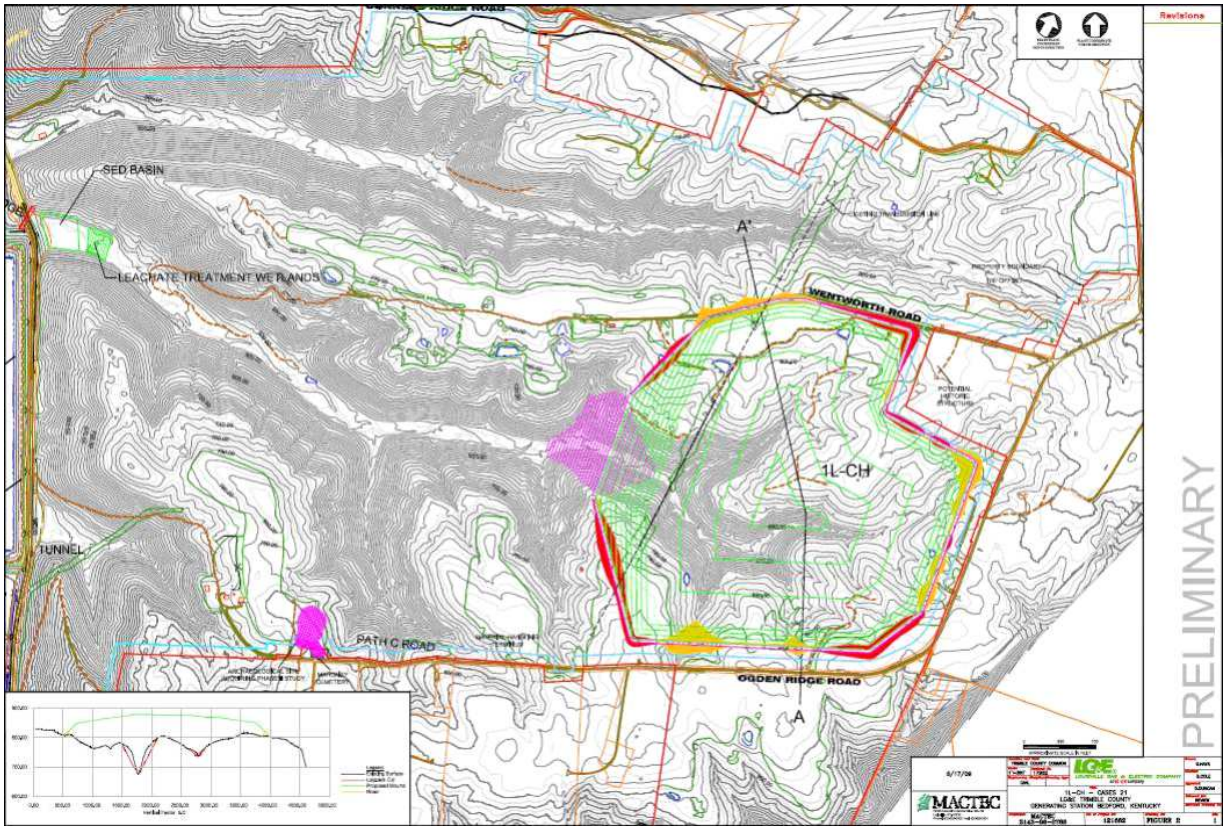
[6] Case No. 2009-00197, Application (June 26, 2009); Case No. 2009-00198, Application (June 26, 2009).

9. The Companies presented evidence in the 2009 cases demonstrating that the proposed Trimble County Landfill would be the least-cost means of meeting the need to dispose of the Trimble County coal units' CCR.[7] The Companies initially evaluated 26 different possible landfill configurations, and then performed a present-value cost-benefit analysis evaluating the three most promising landfill designs and potential off-site CCR storage.[8] The analysis showed that, based on the preliminary landfill designs, the Companies' proposed design (the "Case 21" option) was $26 million less costly than the next-best on-site landfill option, and was $385 million less costly than the off-site alternative.[9]

(This space is intentionally blank.)

[7] *Id.*
[8] *Id.*
[9] Schram LG&E Testimony at 9 (June 26, 2009).

10. As the Companies described in their 2009 applications, the Companies had conducted preliminary engineering for the Trimble County Landfill and received positive responses in early meetings with the Kentucky Division of Waste Management, the Kentucky Division of Water, and the Army Corps of Engineers based on preliminary landfill designs and preliminary field reviews.[10] The preliminary landfill design the Companies presented in their 2009 applications and that received positive initial feedback from the above-listed authorities is shown below:



11. On December 23, 2009, the Commission issued orders that, among other things, granted the Companies' requested CPCN for the Trimble County Landfill and approved recovery of the landfill's Phase I cost through the Companies' ECR mechanisms (Project 32 for KU and Project 24 for LG&E). The Commission stated that the landfill project was "required for the

[10] Voyles KU Testimony at 16 (June 26, 2009).

long-term operation of both the existing generating unit, Trimble County Unit No. 1, and Trimble 2 … in the manner necessary to comply with the provisions of the Clean Water Act, the Resource Conservation and Recovery Act, and numerous state air quality environmental regulations which pertain to landfill operations. … Taken as a whole, the evidence indicates that the project is reasonable and cost-effective and will not result in a wasteful duplication of facilities and, therefore, we find that the requested CPCN should be granted."[11]

The Companies Have Worked Continuously on the Trimble County Landfill since Receiving Authority from the Commission in 2009

12. After the Commission issued its final orders on December 23, 2009, the Companies continued their engineering and permitting efforts, which have continued without interruption since the Commission issued its orders. The Companies have sought or are preparing to seek eight different permits from five regulatory agencies: the U.S. Army Corps of Engineers, the Kentucky Division of Waste Management, the Kentucky Division of Water, the Kentucky Division for Air Quality, and the Kentucky Transportation Cabinet. A timeline of the Companies' continuous permitting efforts is attached as Exhibit 3. The Companies have received or expect to receive all the permits listed on Exhibit 3 by early 2016, with the exception of a revised Title V Air Permit from the Kentucky Division for Air Quality, which the Companies will not need in order to construct the landfill, but which the Companies will need to operate the landfill before it goes into service in 2018. The Companies plan to apply for a revised Title V Air Permit for the Trimble County Generating Station in the first quarter of 2017, and expect to receive the permit by July 2017.

[11] Case No. 2009-00198, Order at 6 (Dec. 23, 2009). *See also* Case No. 2009-00197, Order at 8 (Dec. 23, 2009).

13. In addition to their continuous and ongoing engineering and permitting efforts, the Companies have engaged in numerous construction-related activities on and around the landfill site that are all related to the landfill's construction, including purchasing 250 additional acres of land, fencing the perimeter of the landfill site, installing a fly ash barge loading system, relocating the station's helicopter pad, and installing a telecommunication tower. These construction activities account for approximately $15 million of the approximately $24.4 million the Companies have expended to date under the authority the Commission granted in Case Nos. 2009-00197 and 2009-00198. The Commission has reviewed the vast majority of the approximately $24.4 the Companies have expended to date in connection with numerous six-month and two-year investigations pursuant to KRS 278.183(3).[12]

[12] *In the Matter of: An Examination by the Public Service Commission of the Environmental Surcharge Mechanism of Kentucky Utilities Company for the Six-Month Billing Period Ending April 30, 2010,* Case No. 2010-00241, Order (Dec. 9, 2010); *In the Matter of: An Examination by the Public Service Commission of the Environmental Surcharge Mechanism of Louisville Gas and Electric Company for the Six-Month Billing Period Ending April 30, 2010,* Case No. 2010-00242, Order (Dec. 10, 2010); *In the Matter of: An Examination by the Public Service Commission of the Environmental Surcharge Mechanism of Kentucky Utilities Company for the Six-Month Billing Period Ending October 31, 2010,* Case No. 2010-00474, Order (Mar. 18, 2011); *In the Matter of: An Examination by the Public Service Commission of the Environmental Surcharge Mechanism of Louisville Gas and Electric Company for the Six-Month Billing Period Ending October 31, 2010,* Case No. 2010-00475, Order (Mar. 18, 2011); *In the Matter of: An Examination by the Public Service Commission of the Environmental Surcharge Mechanism of Kentucky Utilities Company for the Two-Year Billing Period Ending April 30, 2011,* Case No. 2011-00231, Order (Jan. 31, 2012); *In the Matter of: An Examination by the Public Service Commission of the Environmental Surcharge Mechanism of Louisville Gas and Electric Company for the Two-Year Billing Period Ending April 30, 2011,* Case No. 2011-00232, Order (Jan. 31, 2012); *In the Matter of: An Examination by the Public Service Commission of the Environmental Surcharge Mechanism of Kentucky Utilities Company for the Six-Month Billing Periods Ending October 31, 2011 and April 30, 2012,* Case No. 2012-00207, Order (Sep. 26, 2012); *In the Matter of: An Examination by the Public Service Commission of the Environmental Surcharge Mechanism of Louisville Gas and Electric Company for the Six-Month Billing Periods Ending October 31, 2011 and April 30, 2012,* Case No. 2012-00208, Order (Sep. 26, 2012); *In the Matter of: An Examination by the Public Service Commission of the Environmental Surcharge Mechanism of Kentucky Utilities Company for the Six-Month Billing Period Ending October 31, 2012,* Case No. 2012-00546, Order (Apr. 19, 2013); *In the Matter of: An Examination by the Public Service Commission of the Environmental Surcharge Mechanism of Louisville Gas and Electric Company for the Six-Month Billing Period Ending October 31, 2012,* Case No. 2012-00547, Order (Apr. 19, 2013); *In the Matter of: An Examination by the Public Service Commission of the Environmental Surcharge Mechanism of Kentucky Utilities Company for the Two-Year Billing Period Ending April 30, 2013,* Case No. 2013-00242, Order (Nov. 14, 2013); *In the Matter of: An Examination by the Public Service Commission of the Environmental Surcharge Mechanism of Louisville Gas and Electric Company for the Two-Year Billing Period Ending April 30, 2013,* Case No. 2013-00243, Order (Nov. 14, 2013); *In the Matter of: An Examination by the Public Service Commission of the Environmental Surcharge Mechanism of Kentucky Utilities Company for the Six-Month Billing Period Ending October 31, 2013,* Case No. 2013-00436, Order (July 11, 2014); *In the Matter of: An Examination by the Public Service Commission of the Environmental Surcharge Mechanism of Louisville Gas and Electric Company for the*

14. In sum, the Companies have worked continuously and with all possible speed to advance the construction of the Trimble County Landfill since receiving the Commission's final orders in Case Nos. 2009-00197 and 2009-00198.

15. In addition to the Commission's six-month and two-year reviews under KRS 278.183(3), the Companies have also worked to apprise the Commission Staff of the status of the landfill project through periodic meetings scheduled through the Commission's meeting request process. There were three meetings in total, held on November 4, 2010, June 14, 2013, and February 5, 2015. The Attorney General was invited to all three meetings, and attended the 2010 and 2015 meetings. A copy of the slides the Companies presented at each meeting is attached as Exhibit 4.

The Companies Have Revised the Trimble County Landfill Design to Address Permitting Challenges and Are Continuing to Move with All Possible Speed to Obtain Permits and Construct the Landfill under Existing Authority from the Commission

16. Permitting challenges have required the Companies to revise the Trimble County Landfill's design and cost. These permitting challenges have also created unanticipated delays in being able to begin constructing the landfill, delays that have also added cost due to cost escalation.

17. The most significant and costly permitting challenge the Companies have encountered concerning the Trimble County Landfill concerns the Kentucky Division of Waste Management's determination that a karst feature located in the planned landfill layout is a cave that must be protected under Kentucky's Cave Protection Act (KRS 433.871 *et seq.*). The Companies worked in good faith to preserve its original landfill design by seeking to

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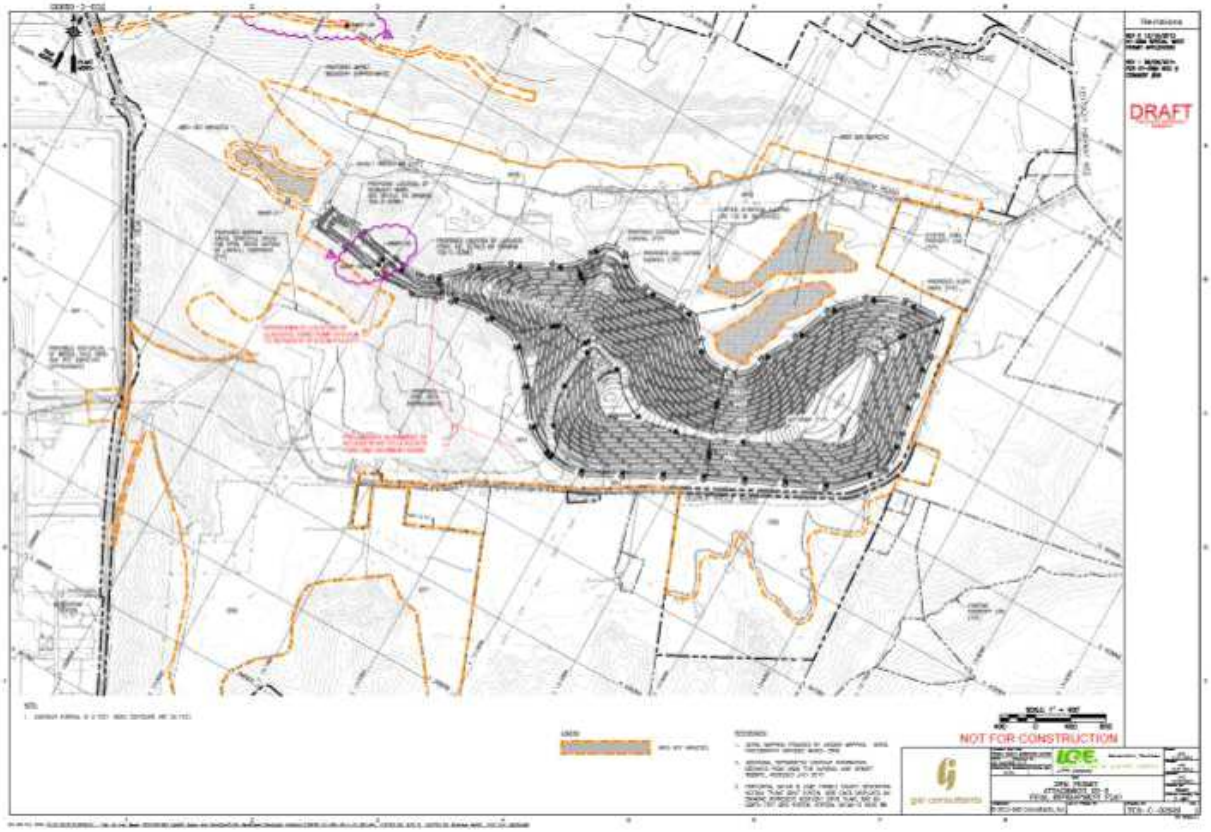
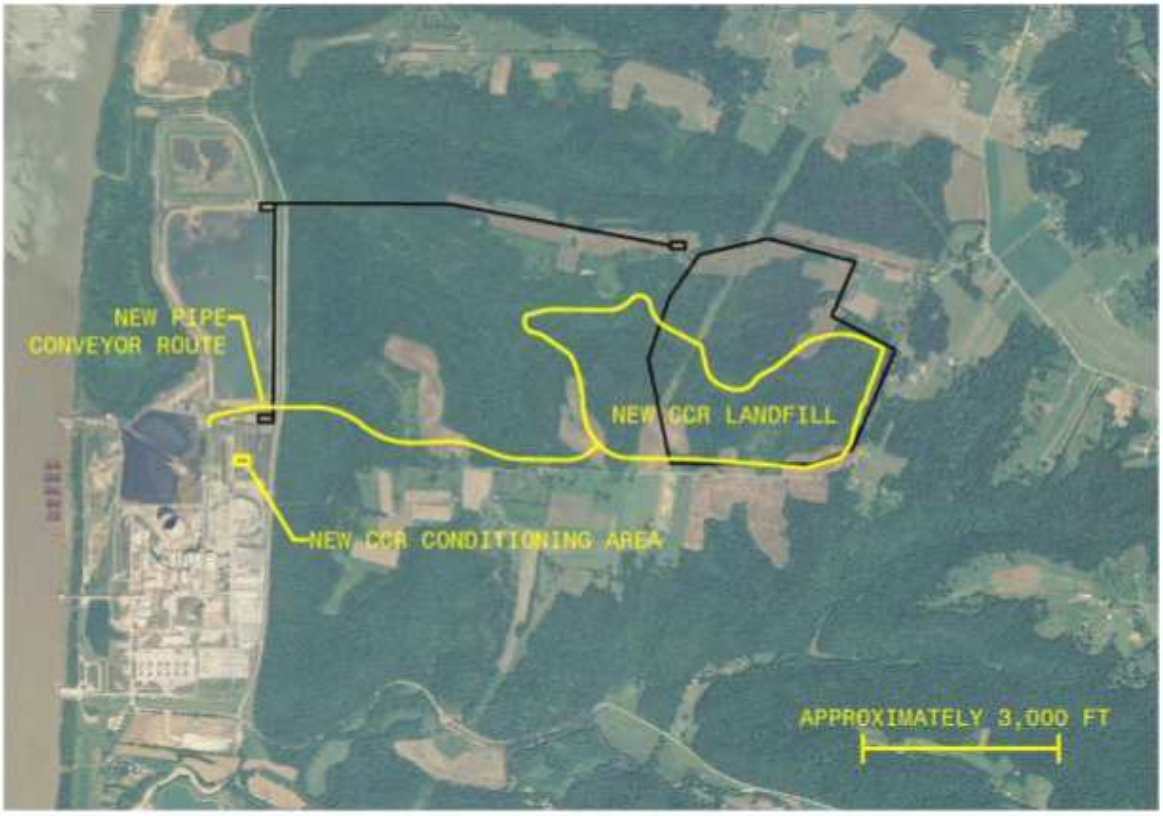
Six-Month Billing Period Ending October 31, 2013, Case No. 2013-00437, Order (July 11, 2014); *In the Matter of: An Examination by the Public Service Commission of the Environmental Surcharge Mechanism of Kentucky Utilities Company for the Six-Month Billing Periods Ending April 30, 2014 and October 31, 2014,* Case No. 2015-00020; *In the Matter of: An Examination by the Public Service Commission of the Environmental Surcharge Mechanism of Louisville Gas and Electric for the Six-Month Billing Periods Ending April 30, 2014 and October 31, 2014,* Case No. 2015-00021.

demonstrate to the Division of Waste Management that the karst was not a cave. Ultimately, the Companies were unsuccessful, and the Division of Waste Management denied the Companies' landfill-permit application on May 2, 2013. The Companies subsequently revised their proposed layout for the Trimble County Landfill as shown below, though the landfill's currently planned location and storage capacity remain essentially identical:



18. By way of comparison, the image below shows the outline of the originally proposed landfill design and planned CCR-conveyor route in black and the approximate outline of the revised proposed landfill design and planned CCR-conveyor route in yellow. It demonstrates that the revised proposed landfill is in the same location as the originally proposed design, and that their proposed footprints significantly overlap:



19. The Companies' revised Trimble County Landfill remains a phased design that will provide large amounts of CCR storage, with a storage capacity of 33.4 MCY (original design was 34.5 MCY).

20. The estimated nominal capital cost of the revised design as compared to the original design, as well as an interim revised cost estimate presented to the Commission Staff

and the Attorney General at the November 4, 2010 meeting discussed above, are shown in the table below:

Trimble County Landfill Capital Estimate Comparison (nominal (as-spent) $M net)					
Category	Phase I	Phase II	Phase III	Final Cap Phase IV	Total
2009 ECR Landfill Proposal	70.5	108.0	103.5	122.3	404.4
2010 ECR Update	126.5	108.0	103.5	122.3	460.4
February 2015 estimate	321.9	60.4	70.7	48.5	501.5

The total capital cost estimate for all phases of the project in the revised design has increased $41.1 million or approximately 10% since the 2010 informal conference. Phase I costs have increased $195.4 million while future phases have decreased by $154 million. The drivers for the Phase I cost increase have been $27 million in escalation due to the permitting delays, $41 million from design changes incorporating the permitting impacts, $102 million in CCR treatment and transport system costs from incorporating the lessons learned on similar equipment that went into operation at the Ghent Station landfill project in 2014, and $25 million in additional engineering and permitting efforts and fees. The reductions in the latter phases of the total project are driven by a $100 million refinement of the estimate and timing of the capping and closure scopes and a $54 million refinement of moving from three phases in the 2009 concept to four phases in this design.

21. Although the estimated nominal capital cost of the Trimble County Landfill has increased, estimated O&M costs are not projected to be materially different from those estimated in the Companies' 2009 applications.

22. The Trimble County Landfill remains the most economical means of disposing of the CCR the Trimble County coal-fired units will produce.[13] The attached cost-benefit analysis (Exhibit 5) shows that continuing to construct the Trimble County Landfill is at least $781 million PVRR (in 2015 dollars) more favorable than retiring the Trimble County coal units when the current CCR storage reaches capacity and replacing the retired units' 932 MW baseload generating capacity with natural gas combined cycle generating capacity.[14]

23. In addition, as the Companies noted in their original applications for the Trimble County Landfill, taking a phased approach to construction helps ensure that subsequent landfill phases are constructed as and when necessary.[15] That is why the Companies requested, and the Commission approved, a CPCN for the entire landfill but ECR cost recovery for only the first phase: The Companies will need to return to the Commission to seek additional ECR-cost-recovery authority for subsequent phases, ensuring the Commission will have multiple opportunities to review the costs and benefits of each phase of expanding the landfill.

24. Maintaining a phased approach to the landfill and returning to the Commission for ECR-cost-recovery authority for later phases also reflects and confirms the Companies' long-standing commitment to ongoing analysis to ensure that future investments in utility facilities are the lowest-reasonable-cost means of serving customers. The Companies seek to invest and recover only those resources that are necessary to serve customers; this application and its supporting analysis, as well as the phased approach the Companies are continuing to take

[13] In an August 2014 letter to the U.S. Army Corps of Engineers concerning the Companies' Clean Water Act Section 404 permit application, the U.S. EPA suggested that Sterling Ventures, LLC's limestone mine might be an economical off-site alternative to building the Trimble County Landfill. (A copy of the letter is available at http://kwalliance.org/wp-content/uploads/2014/08/EPA-Trimble-letter-8.14.pdf.) The Sterling Ventures proposal did not take into account the final CCR Rule requirements pertaining to new CCR landfills, which Sterling Ventures' limestone mine would be if used to store CCR beginning after October 2015. *See* 40 CFR 257.53. These requirements render Sterling Ventures' proposal impracticable.

[14] As the analysis further explains, this assumes the EPA's Clean Power Plan is implemented as proposed.

[15] Case No. 2009-00197, Direct Testimony of John Voyles at 21-22 (June 26, 2009); Case No. 2009-00198, Direct Testimony of John Voyles at 20 (June 26, 2009).

concerning the Trimble County Landfill, demonstrate that the Companies make such investments only when and to the extent they are prudent and necessary.

The Companies Will Soon Commit Significant Additional Financial Resources to Building Phase I of the Trimble County Landfill and Request Assurance that the CPCN and ECR-Cost-Recovery Authority the Commission Granted in 2009 Remain Valid and Sufficient

25. Although expansion of the Companies' existing CCR-storage facilities and beneficial reuse have allowed the Companies to continue operating the Trimble County coal units without CCR-related constraints to date, the remaining storage capacity is nearing exhaustion. In addition, the U.S. Environmental Protection Agency ("EPA") issued in April 2015 its Disposal of Coal Combustion Residuals from Electric Utilities final rule ("CCR Rule").[16] Under the CCR Rule, the Companies must assess and determine if their existing CCR storage facilities (bottom ash pond and gypsum storage pond) may continue to operate under the new rule or must be closed. The rule requires the assessments be completed no later than April 2018.[17] The gypsum storage pond is a synthetic-membrane-lined facility; the bottom ash pond is not lined with a synthetic membrane, making it the Companies' current expectation that the bottom ash pond will not meet the CCR Rule's requirements for further wet CCR storage. Therefore, the Companies must soon begin constructing Phase I of the Trimble County Landfill, and particularly the CCR treatment facility that is part of Phase I, to ensure they can continue to operate the Trimble County coal-fired units—two of the Companies' lowest-cost units—without CCR-related constraints. To that end, the Companies plan to issue to the market in the second quarter of 2015 a request for quotations to procure and construct the necessary CCR treatment and transport facilities, road, and bridge, with a four-month bid period and targeted contract

[16] 40 CFR Parts 257 and 261 (2015), 80 Fed. Reg. 21,302 (Apr. 17, 2015). Available at: http://www.gpo.gov/fdsys/pkg/FR-2015-04-17/pdf/2015-00257.pdf.
[17] *See* 40 CFR 257.90(b).

award in the October-November 2015 time-frame, which will allow detailed engineering, procurement, and construction to start in the fourth quarter of this year.

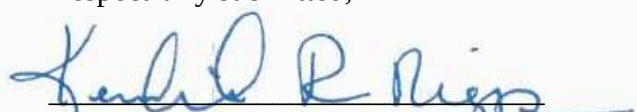
26. These and other landfill-related construction contracts will require significant additional capital commitments by the Companies. To ensure the Companies are operating within the authority they have continuously exercised and believe they have, the Companies respectfully ask the Commission to issue a declaratory order affirming the ongoing validity and sufficiency of the Trimble County Landfill CPCN (for the entire landfill) and ECR-cost-recovery authority (for Phase I of the landfill) the Commission granted the Companies in Case Nos. 2009-00197 and 2009-00198.

27. Because time is of the essence, the Companies further respectfully request that the Commission issue a final order in this proceeding by October 1, 2015.

WHEREFORE, Louisville Gas and Electric Company and Kentucky Utilities Company respectfully request that the Commission issue a declaratory order affirming the ongoing validity and sufficiency of the Trimble County Landfill CPCN (for the entire landfill) and ECR-cost-recovery authority (for Phase I of the landfill) the Commission granted the Companies in Case Nos. 2009-00197 and 2009-00198. The Companies further respectfully request that the Commission issue the requested order by October 1, 2015.

Dated: May 22, 2015

Respectfully submitted,



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Counsel for Louisville Gas and Electric Company and Kentucky Utilities Company

CERTIFICATE OF SERVICE

In accordance with 807 KAR 5:001 Section 8(7), this is to certify that Kentucky Utilities Company and Louisville Gas and Electric Company's May 22, 2015 electronic filing of their Verified Joint Application is a true and accurate copy of the documents being filed in paper medium; that the electronic filing has been transmitted to the Commission on May 22, 2015; that there are currently no parties that the Commission has excused from participation by electronic means in this proceeding; that an original of the filing is being mailed by first class U.S. mail, postage prepaid, to the Commission on May 22, 2015; and that on May 22, 2015, electronic mail notification of the electronic filing will be provided to the following:

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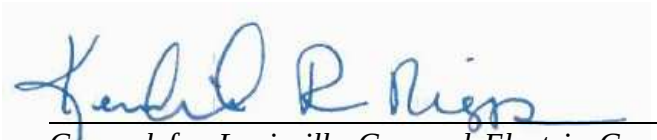


Counsel for Louisville Gas and Electric Company and Kentucky Utilities Company

VERIFICATION

COMMONWEALTH OF KENTUCKY)
) SS:
COUNTY OF JEFFERSON)

The undersigned, **John N. Voyles, Jr.**, being duly sworn, deposes and says that he is the Vice President, Transmission and Generation Services for Louisville Gas and Electric Company and Kentucky Utilities Company and an employee of LG&E and KU Services Company, and that he has personal knowledge of the matters set forth in the foregoing application, and the information contained therein is true and correct to the best of his information, knowledge and belief.

John N. Voyles, Jr.

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 21st day of May 2015.

(SEAL)
Notary Public

My Commission Expires:

SUSAN M. WATKINS
Notary Public, State at Large, KY
My Commission Expires Mar. 19, 2017
Notary ID # 485723

VERIFICATION

COMMONWEALTH OF KENTUCKY)
) SS:
COUNTY OF JEFFERSON)

The undersigned, **David S. Sinclair**, being duly sworn, deposes and says that he is Vice President, Energy Supply and Analysis for Kentucky Utilities Company and Louisville Gas and Electric Company and an employee of LG&E and KU Services Company, and that he has personal knowledge of the matters set forth in the foregoing application, and the information contained therein is true and correct to the best of his information, knowledge and belief.

David S. Sinclair

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 21st day of May 2015.

(SEAL)
Notary Public

My Commission Expires:

SUSAN M. WATKINS
Notary Public, State at Large, KY
My Commission Expires Mar. 19, 2017
Notary ID # 485723

Commonwealth of Kentucky
Alison Lundergan Grimes, Secretary of State

Alison Lundergan Grimes
Secretary of State
P. O. Box 718
Frankfort, KY 40602-0718
(502) 564-3490
http://www.sos.ky.gov

Certificate of Existence

Authentication number: 164041
Visit https://app.sos.ky.gov/ftshow/certvalidate.aspx to authenticate this certificate.

I, Alison Lundergan Grimes, Secretary of State of the Commonwealth of Kentucky, do hereby certify that according to the records in the Office of the Secretary of State,

KENTUCKY UTILITIES COMPANY

is a corporation duly incorporated and existing under KRS Chapter 14A and KRS Chapter 271B, whose date of incorporation is August 17, 1912 and whose period of duration is perpetual.

I further certify that all fees and penalties owed to the Secretary of State have been paid; that Articles of Dissolution have not been filed; and that the most recent annual report required by KRS 14A.6-010 has been delivered to the Secretary of State.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my Official Seal at Frankfort, Kentucky, this 21st day of May, 2015, in the 223rd year of the Commonwealth.

Alison Lundergan Grimes
Secretary of State
Commonwealth of Kentucky
164041/0028494

Commonwealth of Virginia

State Corporation Commission

CERTIFICATE OF GOOD STANDING

I Certify the Following from the Records of the Commission:

That KENTUCKY UTILITIES COMPANY is duly incorporated under the law of the Commonwealth of Virginia;

That the date of its incorporation is November 26, 1991;

That the period of its duration is perpetual; and

That the corporation is in existence and in good standing in the Commonwealth of Virginia as of the date set forth below.

Nothing more is hereby certified.

Signed and Sealed at Richmond on this Date:
May 21, 2015

Joel H. Peck, Clerk of the Commission

CISECOM
Document Control Number: 1505215566

Commonwealth of Kentucky
Alison Lundergan Grimes, Secretary of State

Alison Lundergan Grimes
Secretary of State
P. O. Box 718
Frankfort, KY 40602-0718
(502) 564-3490
http://www.sos.ky.gov

Certificate of Existence

Authentication number: 164042
Visit https://app.sos.ky.gov/ftshow/certvalidate.aspx to authenticate this certificate.

I, Alison Lundergan Grimes, Secretary of State of the Commonwealth of Kentucky, do hereby certify that according to the records in the Office of the Secretary of State,

LOUISVILLE GAS AND ELECTRIC COMPANY

is a corporation duly incorporated and existing under KRS Chapter 14A and KRS Chapter 271B, whose date of incorporation is July 2, 1913 and whose period of duration is perpetual.

I further certify that all fees and penalties owed to the Secretary of State have been paid; that Articles of Dissolution have not been filed; and that the most recent annual report required by KRS 14A.6-010 has been delivered to the Secretary of State.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my Official Seal at Frankfort, Kentucky, this 21st day of May, 2015, in the 223rd year of the Commonwealth.

Alison Lundergan Grimes
Secretary of State
Commonwealth of Kentucky
164042/0032196

III. Current Status - Permitting*

Required Regulatory Permit	Submitted	Date Submitted Or Targeted Date	Date Received Or Expected By
Kentucky Division of Waste Management Landfill Permit	Yes	January 3, 2014	December 2015
US Army Corps of Engineers 404 Permit**	Yes	April 25, 2014	October 2015
US Army Corps of Engineers Nationwide Permit (Monitoring Wells)	Yes	September 9, 2013	September 2014
Kentucky Division of Water 401 Water Quality Certificate	Yes	April 25, 2014	October 2015
Kentucky Division of Water Dam Safety Permit	No	August 2015	November 2015
Kentucky Division of Water Flood Plain	No	August 2015	February 2016
Kentucky Transportation Cabinet Bridge Permit	Yes	January 30, 2014	February 2015
Kentucky Division for Air Quality Title V Revised Air Permit	No	January 2017	July 2017

* **Appendix A includes history of permitting.**

** **Appendix C includes USCOE section 404 alternative analysis permitting history.**

LG&E KU
PPL companies

PPL companies

Update to Environmental Compliance Plans

November 4, 2010






Overview

- Changes in EPA Regulations
- Existing ECR Plans and Projects
- Review by Generation Station
  - *Trimble County*
  - *Ghent*
  - *Mill Creek*
  - *Cane Run*
  - *E. W. Brown*

New air regulations

- National Ambient Air Quality Standards **(NAAQS)** – lowers the SO_2, NO_2, ozone, and Particulate Matter (**PM**) standards which will make Louisville a "nonattainment" area subject to federal sanctions.

- Clean Air Transport Rule **(CATR)** – aimed at reducing air quality problems (SO_2, NO_x, ozone and PM) in the eastern U.S.

- Maximum Achievable Control Technology **(MACT)** for Hazardous Air Pollutants **(HAP)** – new federal focus on plant by plant controls (as opposed to a system basis) will dramatically increase the cost of reducing mercury and HAP other emissions.

- Carbon Dioxide **(CO_2)** Best Available Control Technology **(BACT)** – EPA will require implementation of BACT despite the consensus that no commercial scale control technology is currently available.

New coal combustion products and water regulations

- Coal Combustion Residuals (**CCR**) – (Ash ponds and landfills) – Despite past EPA determinations that CCPs do not pose any significant human health or environmental risks, EPA is considering designation of CCPs as a ″hazardous waste″ subject to extensive requirements or modifying current ″non-hazardous″ rules with more stringent requirements. Both approaches will increase costs.

- Water quality – EPA is revising cooling water withdrawal and water discharge guidelines and standards.

Short compliance timelines likely once final rules are issued

- National Ambient Air Quality Standards (**NAAQS**) for NO_2 and SO_2 – Issued: February - June 2010; Compliance: 2016, 2017 respectively
- Clean Air Transport Rule (**CATR**) – Projected Final Rule: June 2011; Compliance: January 2012 & January 2014
- Maximum Achievable Control Technology (**MACT**) for Hazardous Air Pollutants (**HAP**) – Projected Final Rule: November 2011; Compliance: January 2015
- Carbon Dioxide (**CO_2**) Best Available Control Technology (**BACT**) – Issued: May 2010; Compliance: January 2011
- Coal Combustion Residuals (**CCR**) – Alternatives Proposed: May 2010; Projected Final Rule: uncertain; Compliance: within 5 years of final rule
- Water quality – Water withdrawal Projected Issue date: December 2010; Water Discharge Projected Issue date: 2012; Compliance: Uncertain

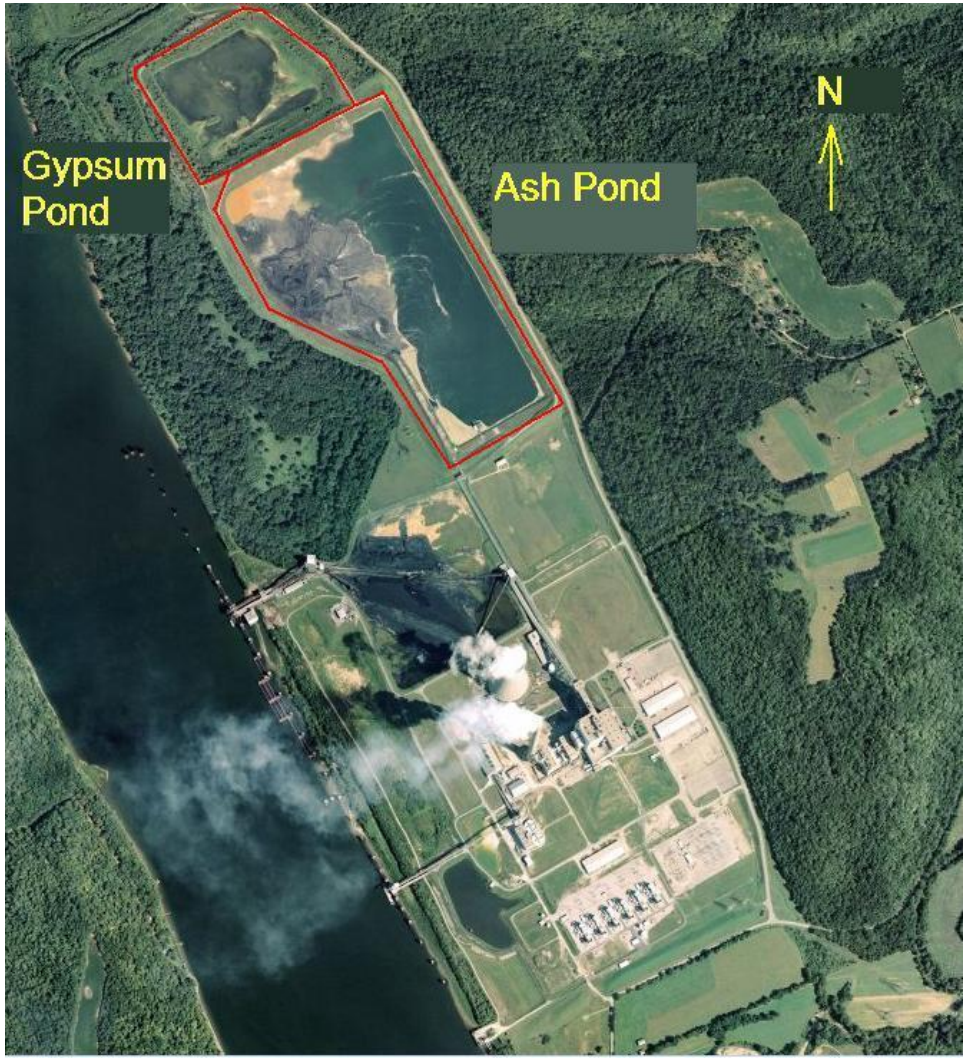
Proposed EPA CCR regulations would require dry storage and closing of existing ash ponds

- Retrofit or close 21 ponds, including 10 ash ponds and 11 process/runoff ponds across the fleet (8 stations).
- Build landfills for future storage (Brown, Cane Run, Ghent, Mill Creek, Trimble County).
- Construct new process water ponds for each operating site.
- Closing ponds and moving to dry storage will cost an estimated $700 million over the next ten years under the proposed CCR rules for non-hazardous waste. Additional closure costs will be incurred upon plant retirements.

Trimble County Station

- TC2 Air Quality Control System - LG&E Project 18 (19%)/ KU Project 23 (81%)
  - *Trimble County Unit 2 expected in-service end of November 2010. Over 100,000 MWhs produced to date during commissioning.*
  - *Cost of project approximately $232M (on target with original estimate).*
- Sorbent Injection to control SO_3 - Project 19
  - *ECR approval in 2006 for installation of dry sorbent injection systems*
    - Trimble County 1 in-service October 2008; project cost $3.4M.
  - *Potential amendment - enhancements for SO_3 mitigation.* ***[Hazardous Air Pollutants]***
- Ash Treatment Basin (Bottom Ash Pond/Gypsum Storage Pond) - LG&E Project 23 (52%) / KU Project 31 (48%)
  - *Scheduled in-service December 2010. Completion in 2011.*
  - *Gypsum Storage Pond modified to include composite liner that would allow for compliance with either EPA paths for new regulations.* ***[Coal Combustion Residuals]***
  - *Bottom Ash Pond construction nearing completion.*
  - *Estimated costs remains consistent with filing ($25M)*

Trimble County Site (BAP/GSP)

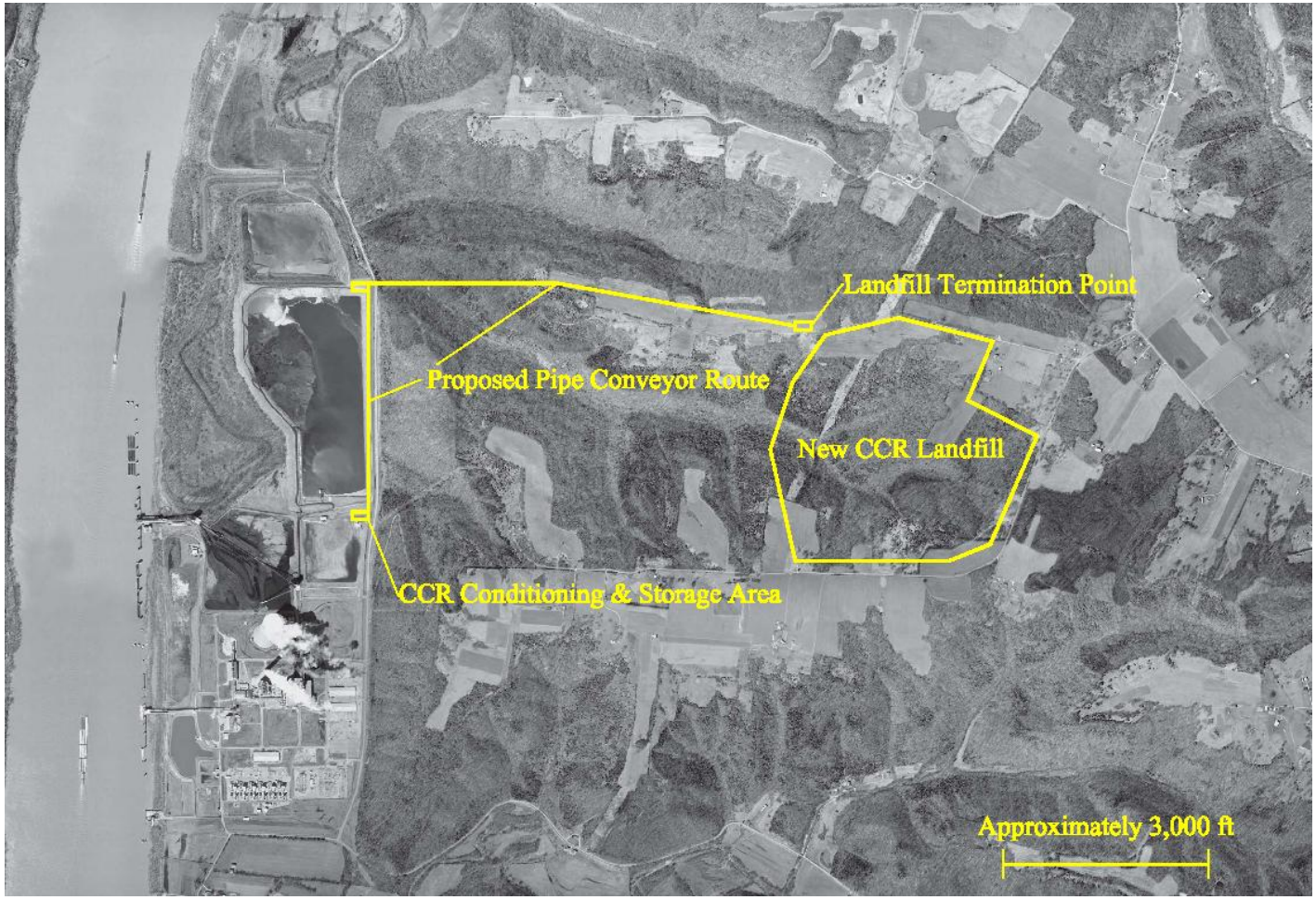


PPL companies

Trimble County Station

- CCP Storage Landfill (Phase I) - LG&E Project 24 (52%) / KU Project 32 (48%)
  - *ECR approval in 2009 for Phase I ($70.5M) of 3 Phases (Total $404.3M) to achieve approx 10 yrs storage (total of all phases – 40 yrs storage).*
  - *Current expectations*
    - Phase I cost estimate increase ($56M) primarily due to transport system.
    - Project design expected to be compliant with pending regulation.
    - Remains least cost option for storage
- Beneficial Reuse - LG&E Project 25 / KU Project 33
  - *Holcim contracts moving forward*
    - Project is fully permitted.
    - Capital cost same as originally estimated ($8M).
    - Capital expenditures for equipment deferred until contract fully executed.
    - Construction expected to occur through 2011.

Trimble County Site (Landfill)

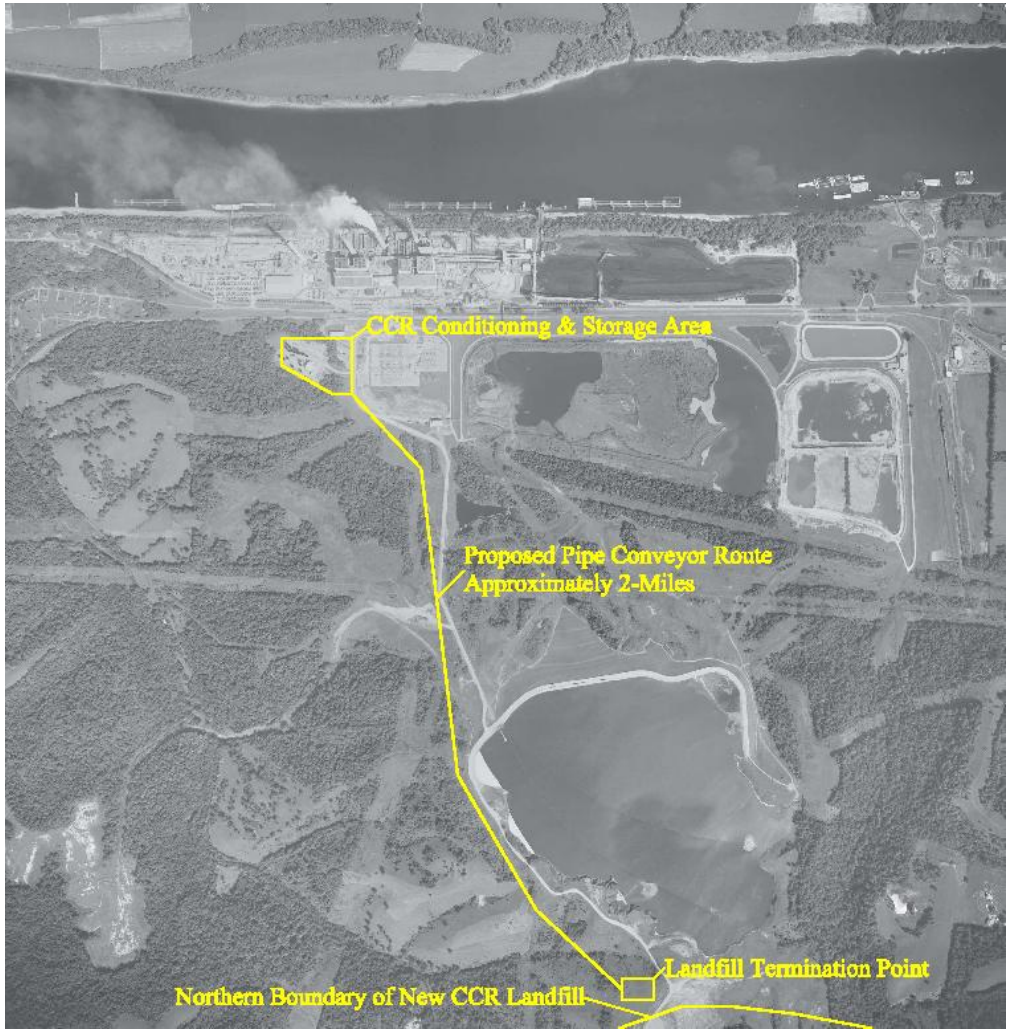


PPL companies

Ghent Station

- FGDs at Ghent – Project 21
  - *All Ghent units currently operating with FGDs.*
  - *With 99% completion, forecasted cost ~$30M lower than $682M.*
- Sorbent Injection at Units 1, 3, 4 – Project 24
  - *ECR approval in 2006 for installation of dry sorbent injection systems*
  - *Systems installed and operating.*
  - *Potential amendment - enhancements for SO3 mitigation.* ***[Hazardous Air Pollutants]***
- CCP Storage Landfill (Phase I) – Project 30
  - *ECR approval in 2009 for Phase I ($204M) of 3 Phases (Total $360M) to achieve approx 7 yrs storage (total of all phases – 25 yrs storage).*
  - *Current expectation:*
    - Phase I cost estimate increase ($98M) primarily due to transport system.
    - Project design expected to be compliant with pending regulation.
    - Remains least cost option for storage.

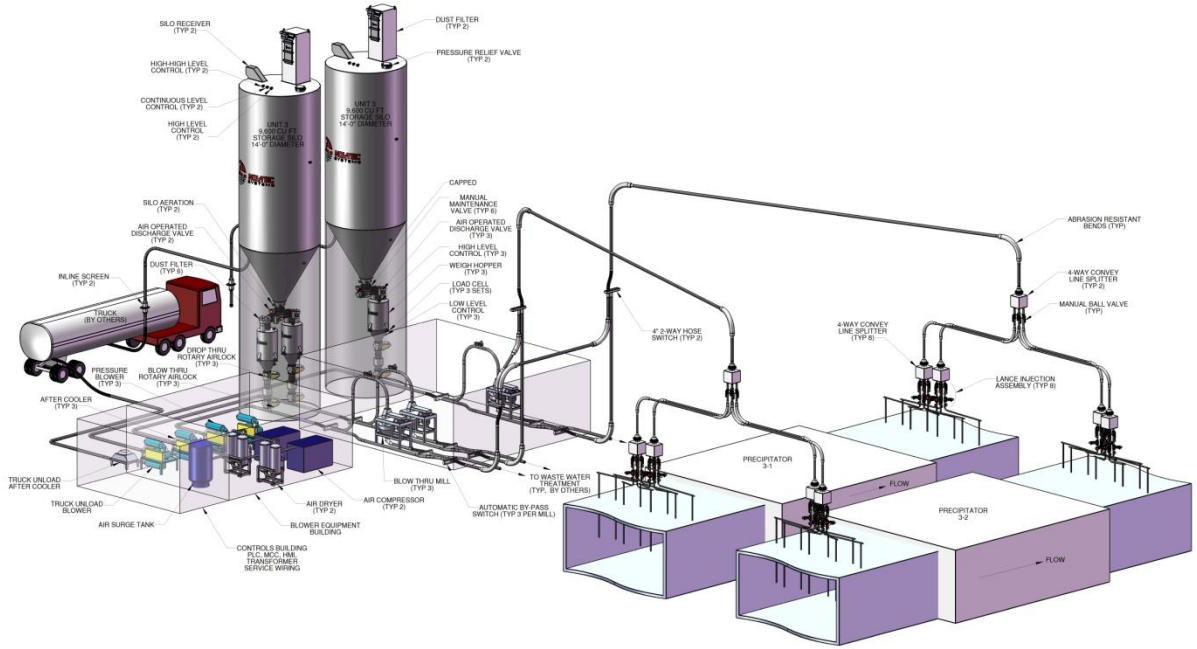
Ghent Site (Landfill)



PPL companies

Mill Creek Station

- Sorbent Injection – Project 19
  - *ECR approval in 2006 for installation of dry sorbent injection systems on Mill Creek Units 3 and 4.*
  - *Reconsidering scope and timing.* ***[Hazardous Air Pollutants]***



Sorbent Injection System

Cane Run Station

- Proposed EPA Regulations requires analysis of the long-term viability of Cane Run coal generation
- Cane Run Landfill (existing) – Project 12
  - *Landfill currently expected to reach capacity in 2013.*
- Scrubber Refurbishment (Cane Run Unit 5) – Project 15
  - *2005 Plan included FGD refurbishments at Cane Run and Trimble Co.*
  - *No costs incurred to date for Cane Run Unit 5.*
  - *Reconsidering scope of and need for project.* ***[National Ambient Air Quality Standards]***
- Cane Run CCP Storage (Phase I) – Project 22
  - *ECR approval in 2009 for Phase I ($18.5M) of 4 Phases (Total $53.7M) to achieve approx 5 yrs storage (total of all phases – 20 yrs storage).*
  - *Reviewing plans/layout for Phase I that may include:*
    - Change in the location of the Phase I footprint within layout.
    - Off-site storage and beneficial reuse opportunities to minimize need for on-site storage.

Cane Run Site

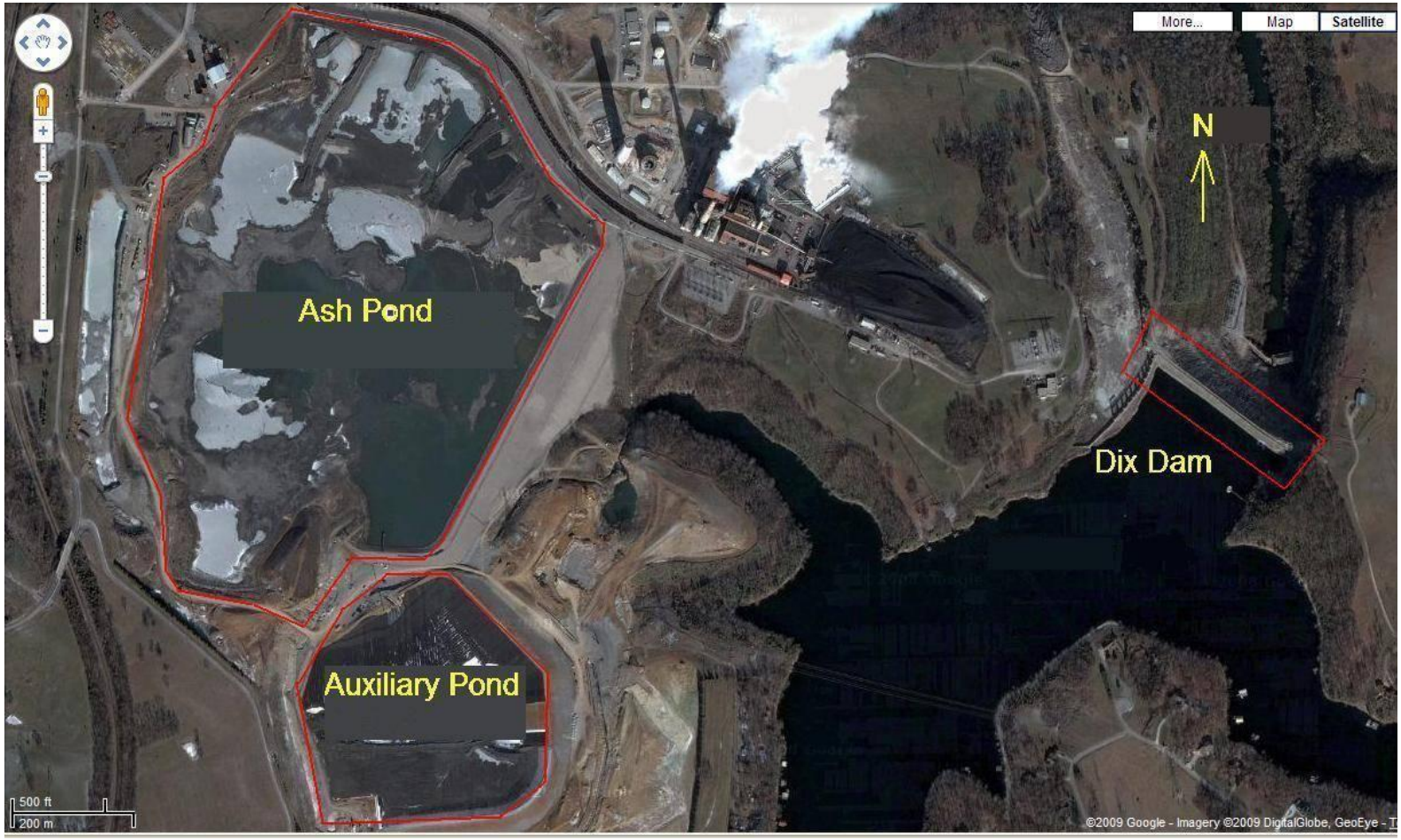
E. W. Brown Station

- FGD at Brown – Project 21
  - *FGD currently in operation with Unit 3 connected.*
  - *Unit 1 ductwork connection outage currently in progress.*
  - *Unit 2 to be connected during 2010 fall outage.*
  - *Total cost expected to be $446M compared to $500M previous indicated.*
- Brown Unit 3 SCR – Project 28
  - *ECR approval in 2009 for in-service in 2012 at a cost of $184M*
  - *SCR technology awarded under fixed price contract.*
  - *SCR Engineer/Procure/Construct contract awarded under fixed price.*
  - *Current estimate is $65M lower than original forecast due to more favorable market condition for cost escalation (lower than expected) and labor availability (higher than expected).*
  - *Construction to commence early 2011. Equipment deliveries have begun.*

E. W. Brown Station

- Ash Treatment Basin
  - *Project 20 – Phase I – ECR approval in 2005*
  - *Project 29 – Phase II – ECR approval in 2009*
  - *As proposed, all CCR rules will lead to dry storage.*
  - *Optimal timing to convert from planned wet storage to dry storage is now before early phase of ash pond is placed into service.*
    - Landfill design to meet proposed EPA rules.
    - Maximize future vertical expansion opportunities and reduce final landfill height by using Main Pond footprint.
  - *Future ECR filing will include amendment for the construction of a landfill in place of the Main Pond for the storage of byproduct.* ***[Coal Combustion Residuals]***

E. W. Brown Site



Questions?

PPL companies

Trimble County Landfill and 2009 ECR Plan Update

June 14, 2013






Agenda

I. 2009 ECR Compliance Plan

II. Trimble County Landfill Update

III. Other 2009 ECR Plan Project Updates

PPL companies






I. 2009 ECR Plan

June 14, 2013

I. 2009 ECR Compliance Plan

Project	Air Pollutant or Waste/By-Product To Be Controlled	Control Facility	Generating Station	Environmental Regulation	Environmental Permit	Actual or Scheduled Completion
LG&E 22	Fly & Bottom Ash, Fixated Calcium Sulfite	CCP Storage Landfill (Phase I)	Cane Run Station	401 KAR Chapter 45	Division of Waste Management - Landfill Permit	Cancelled
LG&E 23 / KU 31	Fly & Bottom Ash, Gypsum	CCP Storage Ash Treatment Basin/Gypsum Storage	Trimble County Station	401 KAR Chapter 5 KRS Chapter 151	Division of Water - KPDES Permit and Dam Construction Permit	2010
LG&E 24 / KU 32	Fly & Bottom Ash, Gypsum	CCP Storage Landfill (Phase I)	Trimble County Station	401 KAR Chapter 5 401 KAR Chapter 45	Division of Waste Management - Landfill Permit Division of Water - KPDES Permit	2012
LG&E 25 / KU 33	Fly & Bottom Ash, Gypsum, Fixated Calcium Sulfite	Beneficial Reuse	Trimble County Station	401 KAR Chapter 45	Permit-by-rule	2010
			All Stations			on-going
KU 28	NOx	Selective Catalytic Reduction	Brown Unit 3	Clean Air Act (1990) Brown Unit 3 EPA Consent Decree	Kentucky Division of Air Quality Title V Air Permit Modification	2012
KU 29	Fly & Bottom Ash, Gypsum	CCP Storage Ash Treatment Basin (Phase II)	Brown Station	401 KAR Chapter 5 KRS Chapter 151	Division of Water - KPDES Permit and Dam Construction Permit	2012
KU 30	Fly & Bottom Ash, Gypsum	CCP Storage Landfill (Phase I)	Ghent Station	401 KAR Chapter 45	Division of Waste Management - Landfill Permit	2013

PPL companies






II. Trimble County Landfill Update

June 14, 2013

II. Trimble County Landfill Update

A. 2009 CPCN and ECR Plan Applications (Case Nos. 2009-197 and -198)

i. June 2009 – LG&E-KU apply for CPCN for multi-Phase landfill at Trimble County Generating Station and ECR recovery of Phase I

a. Estimated capital cost: $404.3 million (nominal $)
($70.5 million for Phase I)

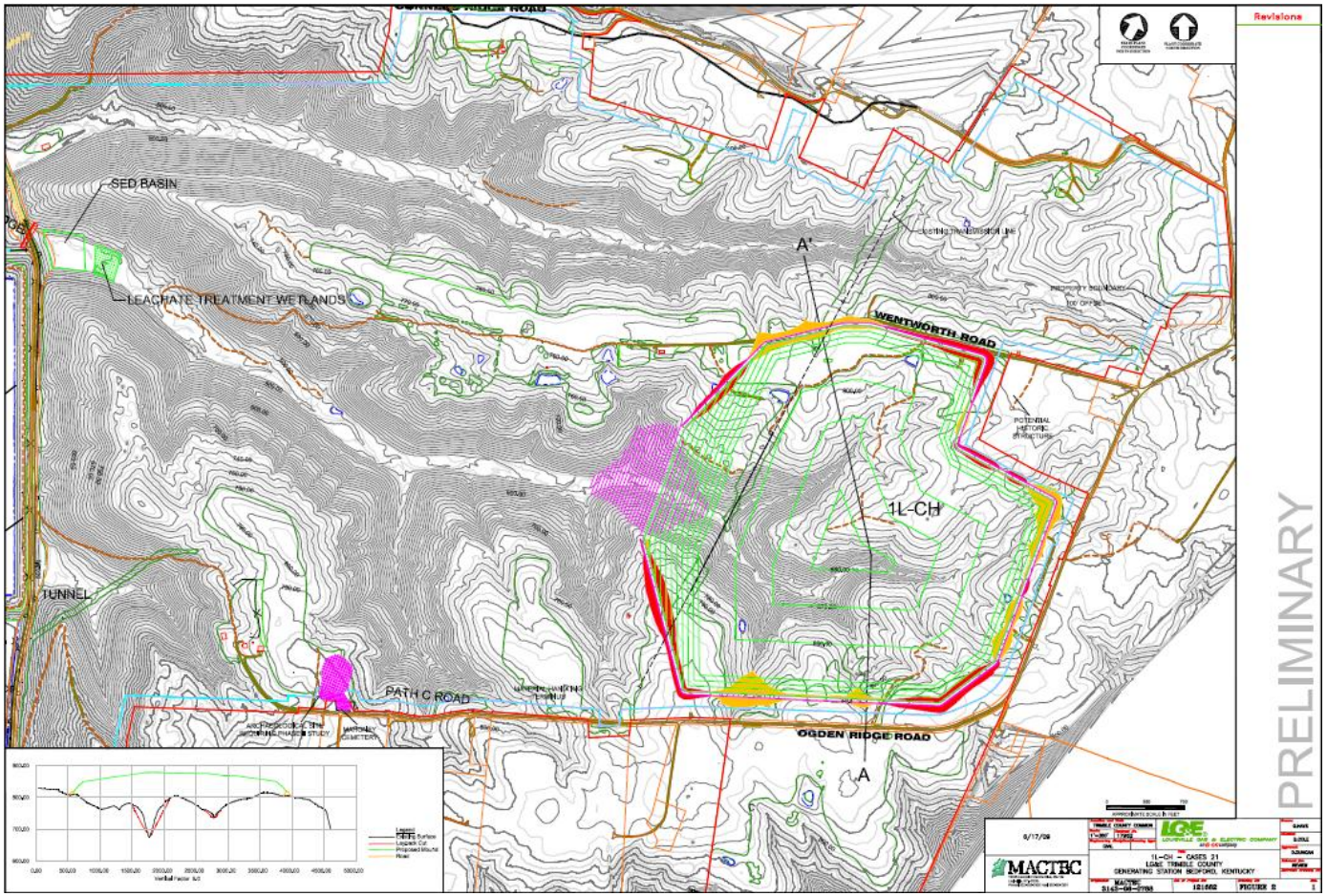
b. Estimated operating expense: $15.3 million total for 2013-2018
(Phase I only)

c. Estimated in-service date (Phase I) : January 2013

ii. LG&E-KU's application and testimony noted landfill design was in "initial conceptual phase;" additional permitting needed to finalize design and begin construction

iii. Commission's Dec. 23, 2009 orders approved CPCN and ECR recovery

II. Trimble County Landfill Update



Initial Conceptual Design of Trimble County Landfill -- June 2009

Source: Exhibit JNV-12 to Testimony of John N. Voyles, Jr., Case No. 2009-00197 (June 30, 2009) and Exhibit JNV-9 to Testimony of John N. Voyles, Jr., Case No. 2009-00198 (June 30, 2009)

II. Trimble County Landfill Update

B. Nov. 4, 2010 -- LG&E-KU held an informal meeting with Commission Staff to discuss the impact of EPA's pending CCR regulation on the Companies Environmental Compliance Plans.

Provided following information related to the Trimble County landfill project:

- *CCP Storage Landfill (Phase I) - LG&E Project 24 (52%) / KU Project 32 (48%)*
  - *ECR approval in 2009 for Phase I ($70.5M) of 3 Phases (Total $404.3M) to achieve approx 10 yrs storage (total of all phases – 40 yrs storage).*
  - *Current expectations*
    - *Phase I cost estimate increase ($56M) primarily due to transport system.*
    - *Project design expected to be compliant with pending regulation.*
    - *Remains least cost option for storage*

II. Trimble County Landfill Update

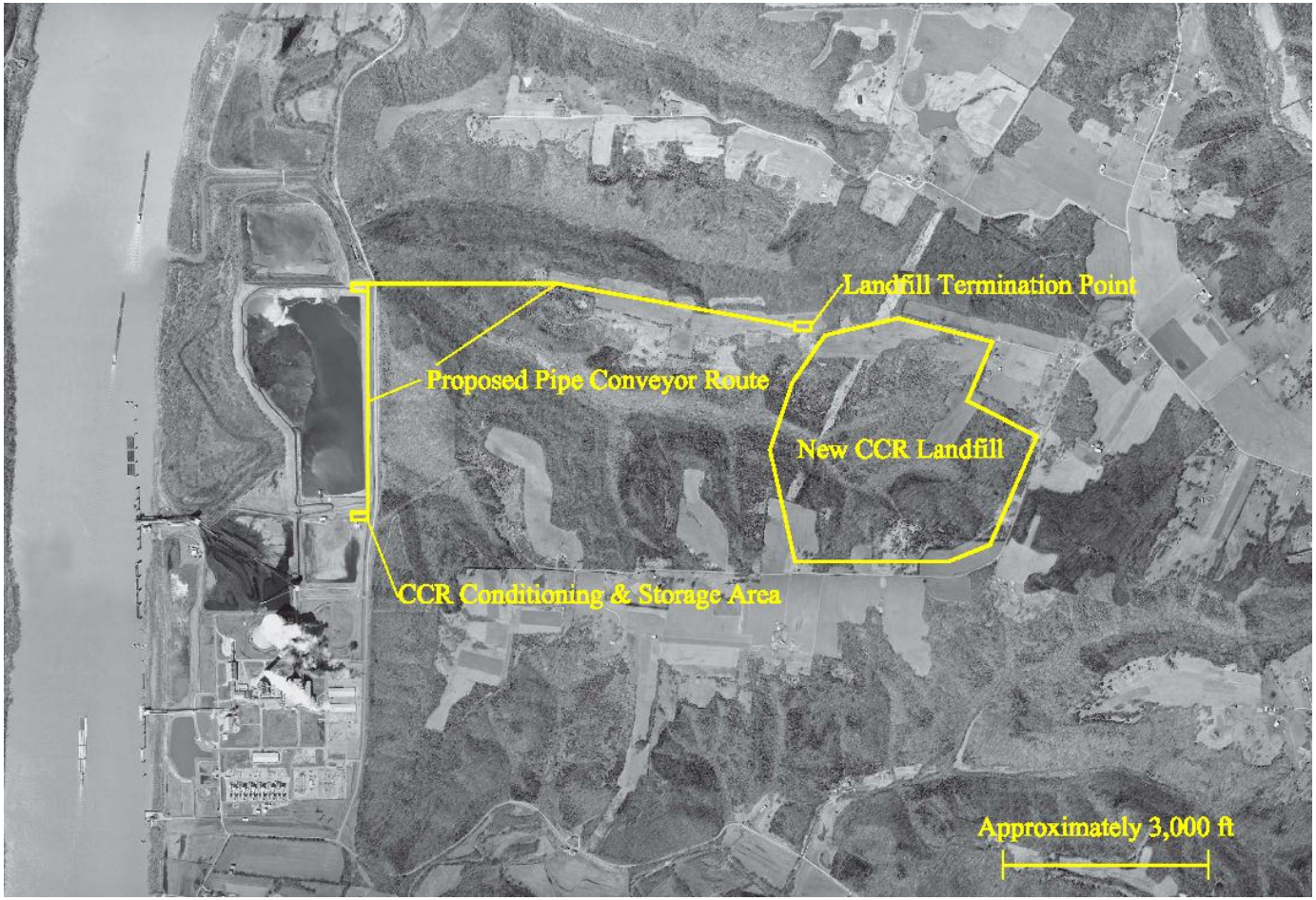


Diagram of Proposed Trimble County Landfill – November 2010

Source: LG&E-KU Update to Environmental Compliance Plans (Nov. 4, 2010)

II. Trimble County Landfill Update

C. *May 2011 – LG&E/KU files KY Division of Waste Management ("DWM") Permit application.*

D. *December 2011 – LG&E/KU files original 401 and 404 permit applications with the Division of Water and the U.S. Army Corps of Engineers, respectively.*

E. *Fall 2011/Spring 2012 – LG&E/KU's solid waste landfill permitting process with DWM subjected to Notices of Deficiency ("NOD").**

   i. *NOD #1 issued November 2011 requiring determination of karst feature ("Lime Cave") potentially being deemed a "cave" under Kentucky's Cave Protection Act ("CPA").*

   ii. *NOD #2 issued March 2012 requiring mapping and determination of the presence of cave dependent life in Lime Cave.*

**A Notice of Deficiency (NOD) is issued by a permitting agency during the permit application process as a means to correct errors found, to clarify information, or to request additional information in the formal permit application.*

II. Trimble County Landfill Update

F. Fall 2011 through Spring 2013 – LG&E-KU works with DWM to study Lime Cave and determine if it is a "cave" under Kentucky's Cave Protection Act (CPA) (KRS 433.871 et seq.)

II. Trimble County Landfill Update

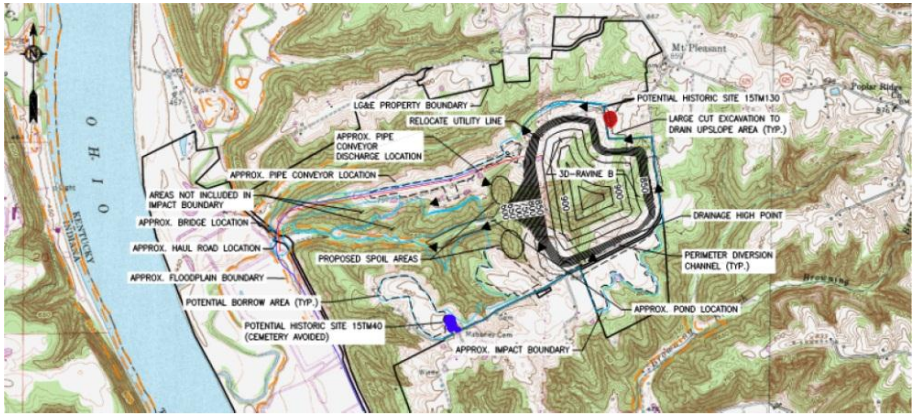
G. May 2, 2013 – DWM issues letter to LG&E-KU denying landfill permit referencing non-compliance with CPA requirements.

H. LG&E-KU now working on "next best alternative" landfill layout chosen from the Alternative Analysis filed with the U.S. Corps of Engineers. This layout reconfigures the landfill footprint to avoid Lime Cave and to obtain same storage as originally filed with the CPCN while minimizing cost and complying with environmental regulations.

II. Trimble County Landfill Update

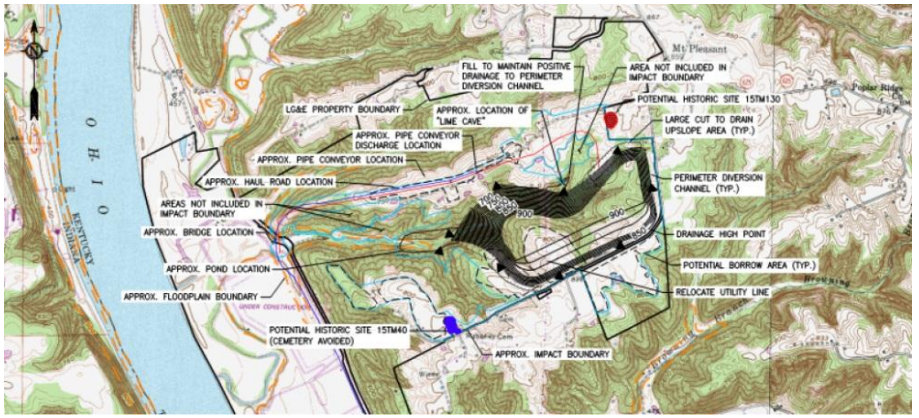
Original Layout

- *Storage capacity (yrs): 37.9*
- *Storage capacity (MCY): 34.47*



Alternative Analysis Layout*

- *Storage capacity (yrs): 38.3*
- *Storage capacity (MCY): 34.82*
- *Incremental Landfill Costs taken from Alternative Analysis:**
  - *Capital - $2 M (2012 $)*
  - *Lifetime O&M - $32 M (2012 $)*



* *Final design and costs subject to change with engineering of all components (collection, transport, and landfill)*

II. Trimble County Landfill Update

I. *Project Points of Interest:*
   i. *Need for CCR landfill has not changed.*
   ii. *Trimble County produces approximately 910,000 cubic yards per year of fly ash, synthetic gypsum, bottom ash, and pyrites.*
   iii. *Based on remaining capacity projections of existing CCR storage facilities at Trimble County, landfill projected in service is currently 2019.**
   iv. *On-site landfill development remains the least-cost means of meeting long-term CCR disposal need for Trimble County.*
   v. *LG&E-KU analysis continues to show building landfill to meet station's CCR storage needs remains economic.*

* *Timing of in service assuming current level of beneficial reuse; storage capability of the heightened bottom ash pond and new gypsum storage pond; and expected production of CCR for storage.*

II. Trimble County Landfill Update

vi. Design basis for the project remains the same.

a. CCR Treatment Facility remains the same.

b. Pipe conveyor and road scope (while final location and length may change) remains the same method of transport of CCR to the landfill.

c. The overall capacity of the landfill remains the same (approximately 38 years).

d. The general location of the landfill on the station property remains the same (i.e., the head of Ravine B).

PPL companies






III. Other 2009 ECR Plan Projects Update

June 14, 2013

III. Other 2009 ECR Plan Projects - Update

A. Cane Run Landfill (LG&E Project 22)

i. With retirement of Cane Run coal units, the new landfill will not be needed.

ii. Project cancelled September 2012 after CPCN granted for Cane Run Unit 7 and receipt of final permit required.

III. Other 2009 ECR Plan Projects - Update

B. Trimble County Ash-Treatment Basin and Gypsum Storage Pond (LG&E Project 23, KU Project 31)

i. Project completed and placed into service in December 2011

ii. Costs are below original estimate:

a. Estimated ECR capital of $12.8M (LG&E) and $11.8M (KU)

b. In-service ECR cost of $9.6M (LG&E) and $9.1M (KU)

iii. Storage capacity extended the in service need of the new landfill from original filing.

Trimble County Bottom Ash Pond and Gypsum Storage Pond

Trimble County Gypsum Storage Pond

III. Other 2009 ECR Plan Projects - Update

C. *Beneficial Reuse Projects (LG&E Project 25, KU Project 33)*
   i. *Trimble County*
      a. *Fly Ash Barge Loading – Project placed into service in December 2012. The fly ash is being used as a raw kiln feed in manufacturing cement.*
      b. *Synthetic Materials – gypsum used in manufacturing wallboard.*
   ii. *Mill Creek*
      a. *Charah – gypsum used to manufacture pelletized synthetic gypsum for sale and distribution in the agricultural market. At full capacity, more than 50% of Mill Creek's gypsum will be beneficially used.**
   iii. *Additional opportunities are being evaluated to determine cost-effectiveness.*

**Press release issued April 22, 2013*


Trimble County
Fly Ash Barge Loadout
12/01/2012

Trimble County

Fly Ash Barge Loadout (Storage Silo)

PPL companies

Mill Creek
Charah Pelletizing Project

PPL companies

III. Other 2009 ECR Plan Projects - Update

D. E.W. Brown Unit 3 SCR - Selective Catalytic Reduction (KU Project 28)

i. SCR placed into service in December 2012 as planned.

*ii. Final ECR cost approximately $93.6 million.**

* *Original cost included in 2009 ECR Plan filing in Case No. 2009-00197 was $183.8 million. Presented revised cost estimate of $118.8 million at the November 4, 2010 meeting.*

E.W. Brown Unit 3 SCR

III. Other 2009 ECR Plan Projects - Update

E. E.W. Brown Main and Auxiliary ash treatment basin expansions (KU Project 29)

i. Main Ash Pond being converted to a landfill as amended Project 29 in the 2011 ECR Plan.

ii. Auxiliary Pond Phase II expansion included an increase in elevation from 880 feet to 900 feet.

a. Auxiliary Pond Phase I placed into service in July 2008.

b. Auxiliary Pond Phase II placed into service in September 2012.

iii. ECR capital cost to date on Aux. Pond Phase II is $17.5 million.

E.W. Brown

Auxiliary Ash Pond

III. Other 2009 ECR Plan Projects - Update

F. Ghent landfill (KU Project 30)

i. Phase I of the landfill is proceeding to plan with significant progress made on the landfill proper, as well as the CCR Treatment facility.

*ii. ECR capital spend to date is $242.5 million with a forecasted spend of $303.2 million.**

**Costs presented in the November 4, 2010 meeting with the Commission Staff.*

Ghent CCR Leachate Collection Ponds

Ghent CCR Ponds and Landfill

PPL companies

PPL companies

Trimble County Landfill
ECR Update

February 5, 2015






Agenda

I. Key Points
II. Companies Continue to Exercise CPCN/ECR Project Authority
III. Current Status of TC Landfill Project
IV. CCR Regulations Summary
V. Update of Least Cost Analyses
VI. Confirmation of Companies' CPCN/ECR Authority

Appendix A - History of Trimble County (TC) Landfill
Appendix B – Historical Ash Beneficial Reuse Chart
Appendix C – Alternative Analyses
Appendix D – Photo of Ghent CCRT Facility & Pipe Conveyor

I. Key Points

A. *The long-term CCR storage needs at Trimble County (TC) Station have not changed from the 2009 CPCN/ECR filing.*

B. *Consistent with the 2009 CPCN/ECR filing, constructing the Coal Combustion Residuals Treatment (CCRT) facility and an on-site landfill remains the least-cost option.*

C. *Driven by regulation and the need to treat TC's CCR prior to landfilling, construction of the CCRT facility (~ 2/3 Phase I costs) is required independent of constructing an on-site landfill. LG&E/KU need to bid this work in March, with construction starting in late 2015.*

D. *The landfill size (~37-38 years of CCR production) and location (head of Ravine B) remains the same as the 2009 CPCN/ECR filing.*

E. *While permitting efforts have been substantial and delayed the construction of the landfill from the initial plan, all studies and analyses support the on-site landfill and LG&E/KU are fully progressing the project forward.*

F. *EPA's CCR Rule, finalized in December 2014, does not change the need or design of the project.*

II. Companies Continue to Exercise CPCN/ECR Project Authority

A. *June 2009 - LG&E/KU apply for CPCN for CCRT and multi-Phase landfill at TC Station and ECR recovery of Phase I (Case Nos. 2009-197 and -198).*

B. *December 23, 2009 – Commission's order approved CPCN and ECR recovery and authorizes LG&E/KU to construct a landfill at the TC station.*

C. *November 4, 2010 – LG&E/KU held an informal meeting with Commission Staff to discuss the impact of EPA's pending CCR regulation on the Companies Environmental Compliance Plans.*

D. *June 14, 2013 – LG&E/KU update the Commission staff on the plans to submit a new permit application in response to the cave determination.*

II. Companies Continue to Exercise CPCN/ECR Project Authority

E. Since 2012, LG&E/KU have performed engineering and environmental studies for permitting, conceptual engineering design for the landfill, CCRT and bridge. LG&E/KU have also purchased 250 acres of land around the perimeter of the landfill site for soil borrow and buffer. LG&E/KU are exploring the purchase of another 200-250 acres from adjoining property owners similar in methodology and process used in successfully purchasing land around the recently constructed Ghent Landfill.

F. LG&E/KU have constructed and placed into operation a new fly ash barge loading system to allow greater beneficial reuse opportunities and to mitigate risks from permitting delays. (Ref. Appendix B for Historical Ash Beneficial Reuse)

II. Companies Continue to Exercise CPCN/ECR Project Authority

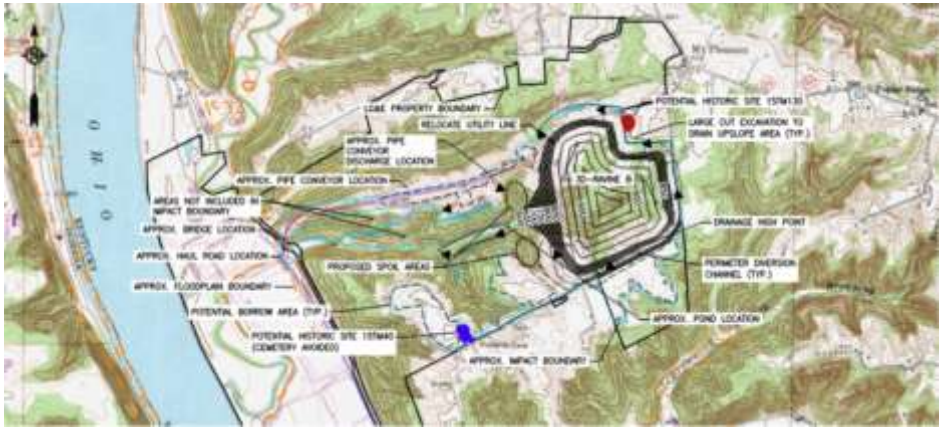
G. Lessons learned during the design, construction and commissioning of Ghent's CCRT facility (placed into operation in 2014) have been incorporated into the Request For Quotation (RFQ) of the EPC contract technical specifications. Companies plan to issue the RFQ for the CCRT facility, road and bridge to the market in March 2015 with award by October 2015.

H. Companies have continuously pursued the necessary permits required to construct the landfill. As part of the landfill permitting process, minor changes have occurred to the landfill footprint shape with no significant changes to the overall size or location.

II. Companies Continue to Exercise CPCN/ECR Project Authority

Original Layout (2009 ECR Filing)

- *Storage capacity (years): 38*
- *Storage capacity (MCY): 34.5*

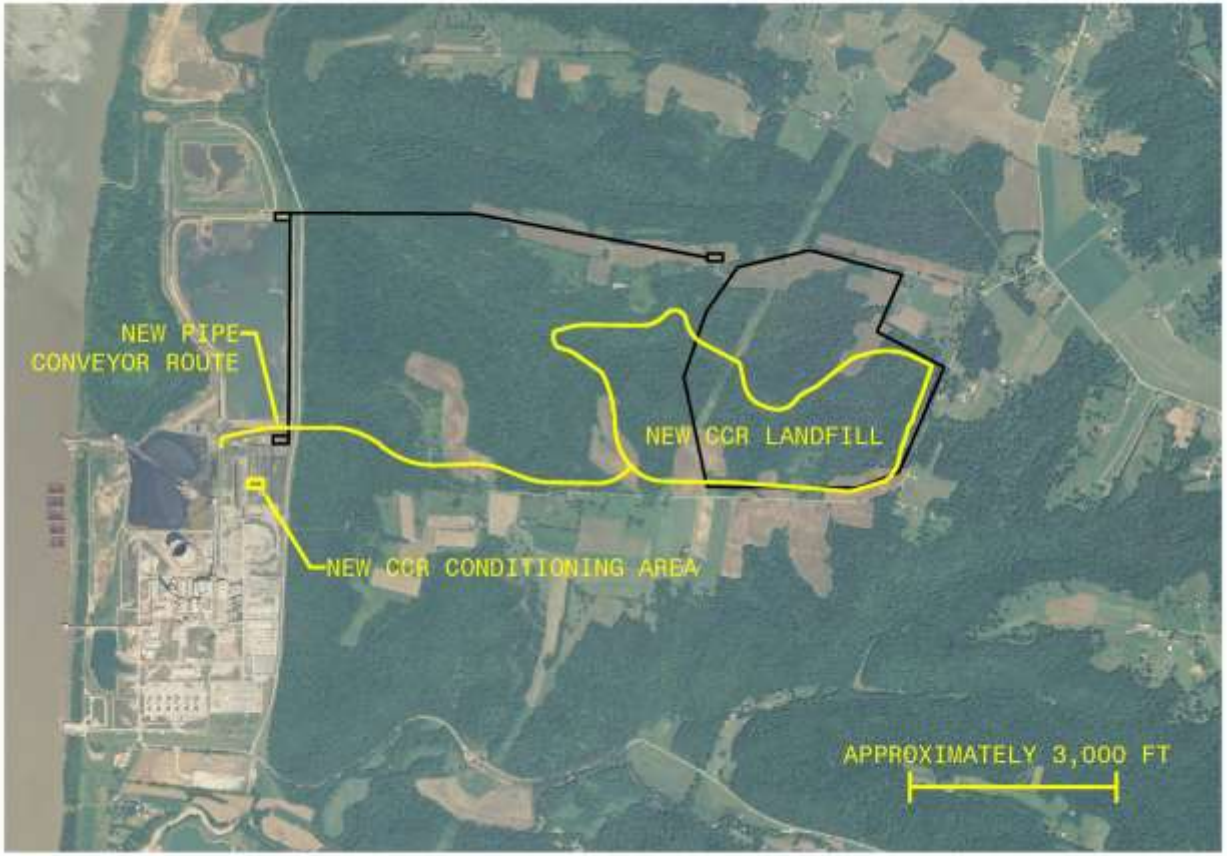


Current Layout (2014)

- *Storage capacity (years): 37*
- *Storage capacity (MCY): 33.4*

II. Companies Continue to Exercise CPCN/ECR Project Authority

CCRT/Landfill Layout Comparison (Current vs. 2009)



NOTE: Black Outline: Original Design (2009) ; Yellow Outline: Current 2014 Layout

PPL companies

II. Companies Continue to Exercise CPCN/ECR Project Authority

ECR Spend and Gross Overall Spend Through 2014

TC Landfill Project	***Spend through 12-31-14 (net $1M)***
TC CCR Landfill PH1 KU	*$10.9*
TC CCR Landfill PH1 LG&E	*$11.8*
Land KU	*$0.8*
Land LG&E	*$0.9*
TOTAL	*$24.4*

Categories of Spend	***Spend through 12-31-14 (gross $1M)***
Fly Ash System	*$10.7*
Engineering	*$6.2*
Permitting	*$3.7*
Fence	*$2.2*
Property Acquisition	*$2.2*
Overheads	*$2.1*
345 kV Tower	*$2.0*
Miscellaneous	*$1.9*
Road/Bridge	*$0.6*
Ash Line Extension	*$0.4*
Telecommunication Tower	*$0.3*
Helicopter Pad Relocation	*$0.2*
	$32.5

II. Companies Continue to Exercise CPCN/ECR Project Authority

Conceptual Layout of Trimble County CCRT Facility – December 2014

PPL companies

III. Current Status - Permitting*

Required Regulatory Permit	Submitted	Date Submitted Or Targeted Date	Date Received Or Expected By
Kentucky Division of Waste Management Landfill Permit	Yes	January 3, 2014	December 2015
US Army Corps of Engineers 404 Permit**	Yes	April 25, 2014	June 2015
US Army Corps of Engineers Nationwide Permit (Monitoring Wells)	Yes	September 9, 2013	September 2014
Kentucky Division of Water 401 Water Quality Certificate	Yes	April 25, 2014	June 2015
Kentucky Division of Water Dam Safety Permit	No	March 2015	June 2015
Kentucky Division of Water Flood Plain	No	March 2015	September 2015
Kentucky Transportation Cabinet Bridge Permit	Yes	January 30, 2014	February 2015
Kentucky Division for Air Quality Title V Revised Air Permit	No	January 2017	July 2017

* *Appendix A includes history of permitting.*

** *Appendix C includes USCOE section 404 alternative analysis permitting history.*

III. Current Status - Capital Estimate (net $)

A. *Total capital cost estimate has increased $41.1M (~10%) since the 2010 update to the Commission staff. Phase I has increased $195.4M, while future Phases have decreased $154M. Drivers for the Phase I increase are $27M in escalation from permitting delays, $41M from progression of landfill design incorporating permitting impacts, $102M in CCRT from lessons-learned at Ghent, and $25M from additional engineering and permitting efforts and fees. Later Phase reductions (-$154M) are driven by refinement of the estimate and timing of capping/closure scopes (-$100M), as well as refinement of landfill estimate going from three to four Phases (-$54M).*

Trimble County Landfill Capital Estimate Comparison

Category ($ million Net)	Phase I	Phase II	Phase III	Final Cap Phase IV	Total All
2009 ECR Landfill[1]	$70.5	$108.0	$103.5	$122.3	$404.4
2010 ECR Update Landfill+$56M for Transport	$126.5	$108.0	$103.5	$122.3	$460.4
2015 Estimate (Landfill + Transport)[2]	$321.9	$60.4	$70.7	$48.5	$501.5

1. *2009 Plan included three Phases and Capping in years 2057 and 2058*
2. *2015 Plan incudes four Phases with Capping occurring throughout life of landfill with the placement of CCR.*

III. Current Status – Engineering/Construction

A. *Engineering has been continuous, including the development of the CCRT facility EPC contract document and technical specifications which are nearing completion. Lessons-learned from Ghent and Brown CCRT scopes have been incorporated into the RFQ specifications.*

B. *LG&E/KU plan to issue the RFQ for the CCRT facility, road and bridge to the market in March 2015 with a 4-month bid period and targeted award in October 2015 which will allow detailed engineering, procurement and construction to start in the fourth quarter of 2015.*

C. *Engineering and development of the landfill RFQ specifications is nearing completion, subject to final landfill permit requirements.*

D. *Completed construction activities to date include the purchase of 250 acres of land, fencing of the perimeter of the landfill site, relocation of overhead transmission lines, installation of the fly ash barge loading system, relocation of the station helicopter pad and installation of a telecommunication tower.*

IV. CCR Regulation Summary

A. The CCR Rule was finalized by the USEPA on December 19, 2014.

B. The CCR rule is favorable in that it retains a Subtitle D (non-hazardous) classification on CCR.

C. The CCR Rule allows beneficial reuse opportunities to continue.

D. Key landfill design assumptions within the 2009 plan are consistent with the final CCR Rule requirements.

E. The CCR Rule reaffirms LG&E/KU's long-term plan of converting TC's CCR long-term storage from wet surface impoundment to dry landfill storage.

F. LG&E/KU's landfill engineering designs (landfill liner system, leachate system, CCRT facility) at Ghent, Brown and Trimble County comply with the final CCR Rule.

V. Update of Least Cost Analysis

A. *TC's coal-fired Units are two of the most efficient (TC2 is the most efficient) generating units in the LG&E/KU fleet. They are the newest coal-fired units in the LG&E/KU generating fleet and Base Load Units.*

B. *TC Station is Kentucky's "flagship" coal-fired generating station relative to being the lowest air polluting units per MW produced.*

C. *Existing TC storage facilities (Bottom Ash Pond and Gypsum Storage Pond) are forecasted to reach capacity by end of 2018 at expected CCR production levels with no beneficial reuse (2021 with current levels of beneficial reuse). The original need dates in the 2009 CPCN/ECR filing were extended by the installation of the fly ash barge unloading system which allowed for increased beneficial reuse (Ref. Appendix B), as well as the construction and placement into operation of the gypsum storage pond and bottom ash pond height extension that were part of the 2009 ECR filing.*

V. Update of Least Cost Analysis

D. The Companies have reaffirmed the original least-cost analysis that supported the 2009 CPCN/ECR filing.

E. The additional analysis concludes the construction of an on-site landfill remains the least-cost long term CCR storage option for TC station.

Analysis Results, All Scenarios (30-year study period)

Scenarios	CCRs Stored (MCY)	Present Value Revenue Requirement ($2014, 2015-2044, $M)			Levelized Cost ($/Ton Stored)		
		Onsite	Offsite	Diff (Onsite less Offsite)	Onsite	Offsite	Diff (Onsite less Offsite)
High Generation; No Beneficial Reuse	32.7	637	854	(217)	42	57	(14)
High Generation; Beneficial Reuse	28.2	614	811	(197)	50	66	(16)
Base Generation; No Beneficial Reuse	26.0	614	795	(181)	51	66	(15)
Base Generation; Beneficial Reuse	21.5	589	752	(164)	64	82	(18)
Low Generation; No Beneficial Reuse	21.3	595	754	(159)	61	77	(16)
Low Generation; Beneficial Reuse	16.8	556	711	(156)	79	101	(22)

VI. Summary

A. *Need for Long-term CCR Storage*
   i. *TC's need for long-term CCR storage has not changed from the 2009 CPCN/ECR filing.*
   ii. *Current beneficial reuse projects and forecasted CCR generation, when combined with the bottom ash pond extension* and placement of the gypsum storage pond* into operation, shows a projected need for new CCR storage in 2021 (2018 without beneficial reuse).*

B. *Cost*
   i. *On-site landfill development remains the least-cost option of meeting long-term CCR storage needs for TC.*
   ii. *Analyses continue to show an on-site landfill remains economical.*
   iii. *Off-site landfill would add capital scope to the CCR Treatment portion of the project and does not eliminate the CCR Treatment scope.*
   iv. *Off-site landfill adds significant operating cost for the projected life of the TC station.*

* *Approved projects in the 2009 ECR plan.*

VI. Summary

C. Project Design

i. The project scope and design basis is essentially the same as in the 2009 ECR plan, as well as the 2010 and 2013 updates.

ii. The CCRT scope, while having incorporated lessons-learned from Ghent's CCRT scope, remains essentially the same as conceptual designs.

iii. The overall capacity of the landfill remains the same (~ 37-38 years with no beneficial reuse).

iv. The location of the landfill on TC's property remains the same (i.e., the head of Ravine B), with just a modified landfill footprint shape.

D. Construction of the CCRT facility, pipe conveyor and an on-site landfill remains the least-cost method of insuring long-term storage of TC's CCR.

E. LG&E/KU will continue to proceed with the construction of the proposed landfill at the TC Station and recover the costs through the ECR mechanism.

Appendix A

History – Permitting

1. *December 2010 – LG&E/KU files original 401 and 404 permit applications with the KY Division of Water (DOW) and the U.S. Army Corps of Engineers (USCOE).*[1]
2. *May 2011 – LG&E/KU files KY Division of Waste Management (DWM) Permit application.*
3. *Fall 2011/Spring 2012 – LG&E/KU's solid waste landfill permitting process with DWM subjected to Notices of Deficiency (NOD).*[2]
   a) *NOD #1 issued November 2011 requiring determination of karst feature ("Lime Cave") potentially being deemed a "cave" under Kentucky's Cave Protection Act ("CPA").*
   b) *NOD #2 issued March 2012 requiring mapping and determination of the presence of cave dependent life in Lime Cave.*

[1] *USEPA sent two letters to the USCOE suggesting the permit be denied.*

[2] *A NOD is issued by a permitting agency during the permit application process as a means to correct errors found, to clarify information, or to request additional information in the formal permit application.*

History – Permitting (continued)

4. *Fall 2011 through Spring 2013 – LG&E/KU works with DWM to study Lime Cave and determine if it is a "cave" under Kentucky's Cave Protection Act (CPA) (KRS 433.871 et seq.)*

5. *May 2, 2013 – DWM issues letter to LG&E/KU denying landfill permit referencing non-compliance with CPA requirements.*

History – Permitting (continued)

6. *May through December 2013 – LG&E/KU re-evaluates the "next best alternative" to select a landfill layout that reconfigures the landfill footprint to avoid Lime Cave/sink holes while obtaining the same storage as originally filed.*
7. *September 9, 2013 – LG&E/KU refile the Nationwide Permit with the USACOE for placement of monitoring wells for a landfill in Ravine B.*
8. *January 3, 2014 – LG&E/KU refiles KY Division of Waste Management ("DWM") Permit application.*
   a) *DWM holds public meeting at TC High School on February 20, 2014*
   b) *NOD#1 received April 8, 2014 and LG&E/KU provided responses on July 30, 2014.*
   c) *NOD#2 received January 16, 2015 and is currently under review.*
9. *January 30, 2014 – LG&E/KU refiles to KY Transportation Cabinet for permit to cross SR 1838.*

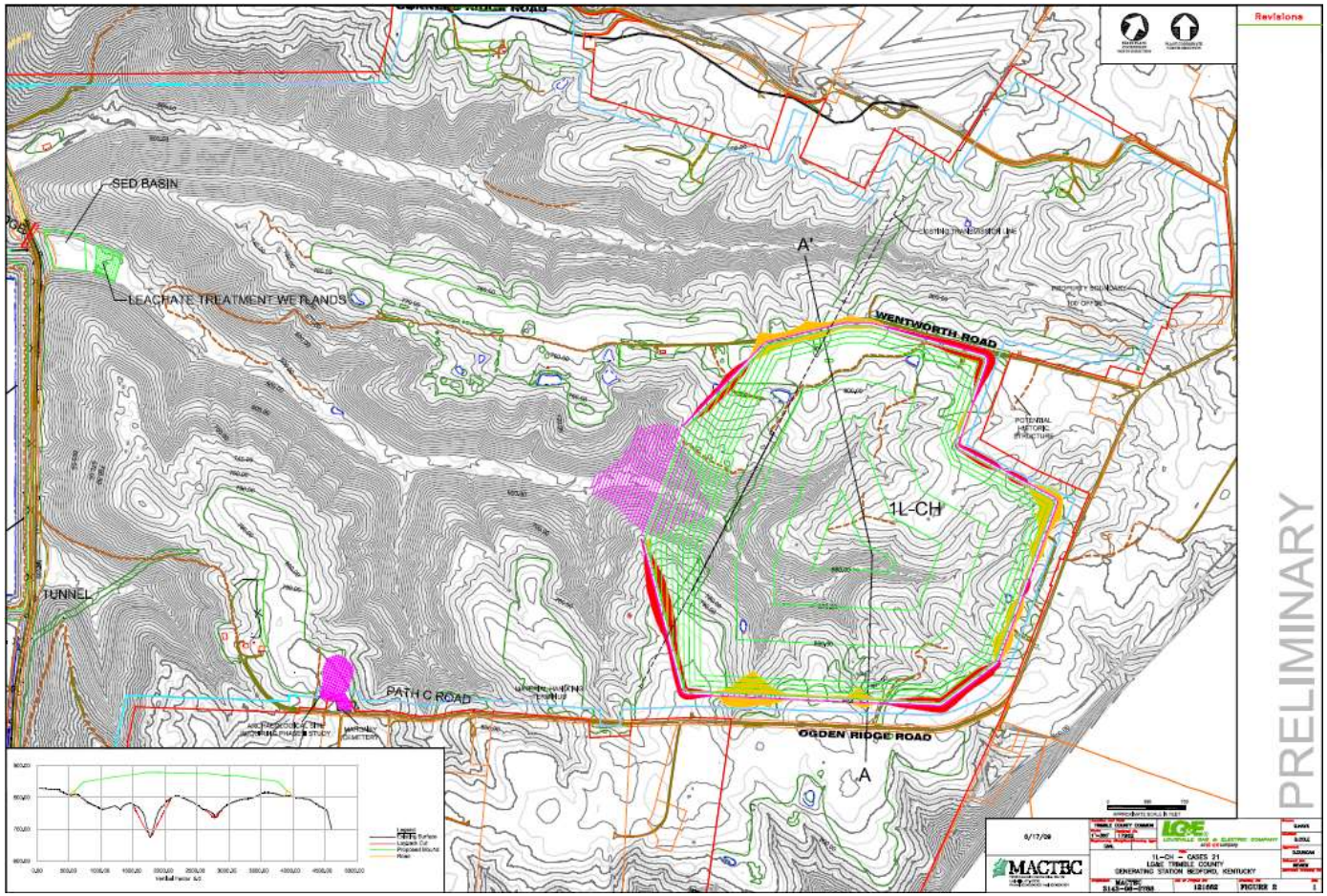
History – Permitting (continued)

10. *April 25, 2014 – LG&E/KU refiles 401 and 404 permit applications, including the Alternative Analysis[1], with the DOW and the USCOE, respectively.*
    a) *Preliminary correspondence in July 2014 from USEPA to USCOE comments on LG&E/KU's 2014 CWA Section 404 Permit Application. USEPA's final correspondence to USCOE on August 7, 2014 suggests the Alternative Analysis is flawed, stream sampling data[2] is missing, and recommended additional off-site locations be evaluated.*
    b) *December 2014 - LG&E/KU submitted an extensive supplement to the Alternative Analysis to the USCOE that supports the refiled Permit application. This analysis also demonstrates that construction of the on-site TC landfill continues to be the least environmentally damaging practicable alternative.*

[1] USCOE section 404 permit Alternative Analysis compared various factors (i.e., cost, life, environmental impact, etc.) that varied between alternatives.

[2] August 29, 2014 -- KDOW never published its reports to LG&E/KU; however via a FOIA request, KDOW released a corrected score that established Ravine B as being less than "exceptional".

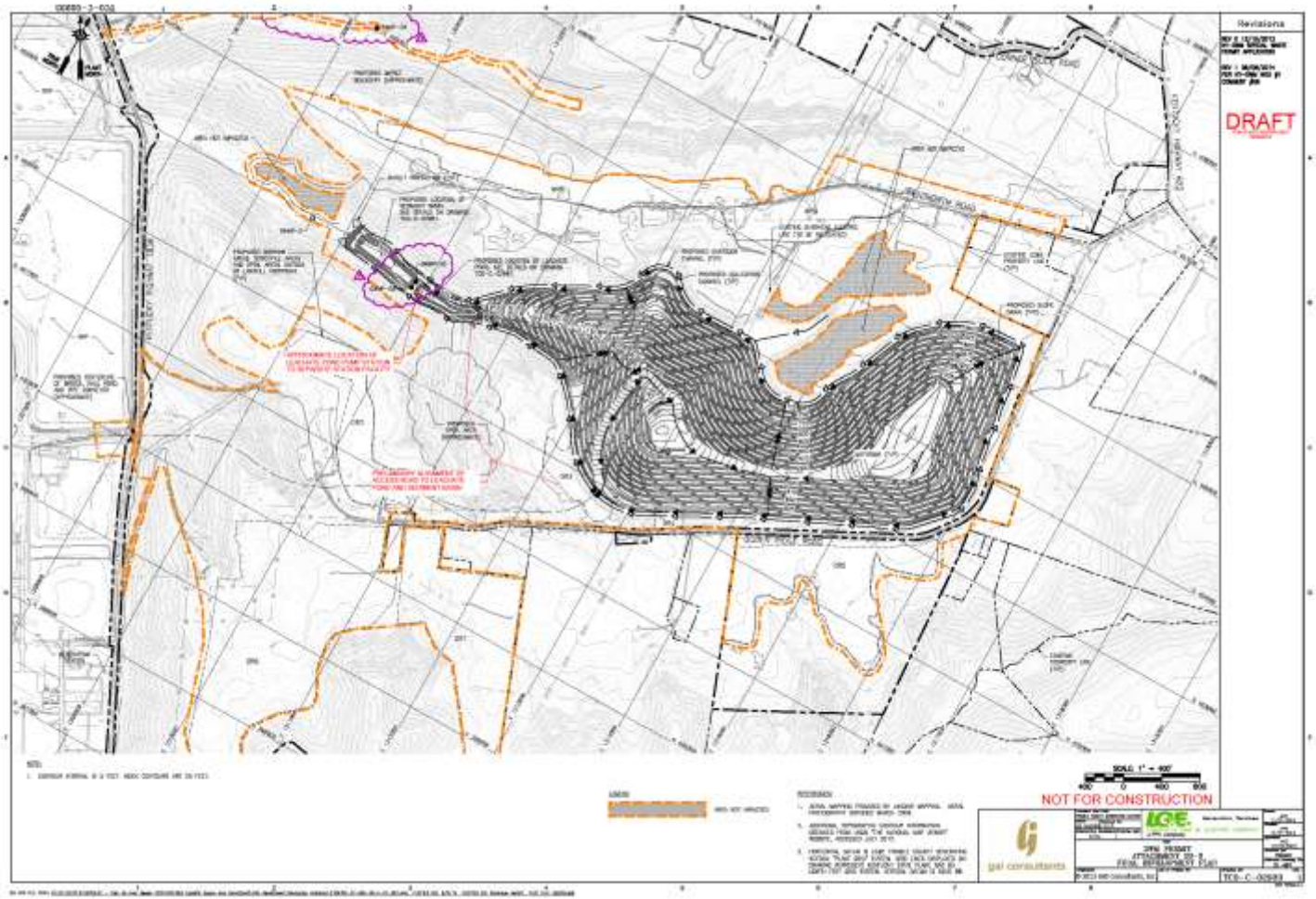
History – Landfill Layout (2009)



Initial Conceptual Design of Trimble County Landfill -- June 2009

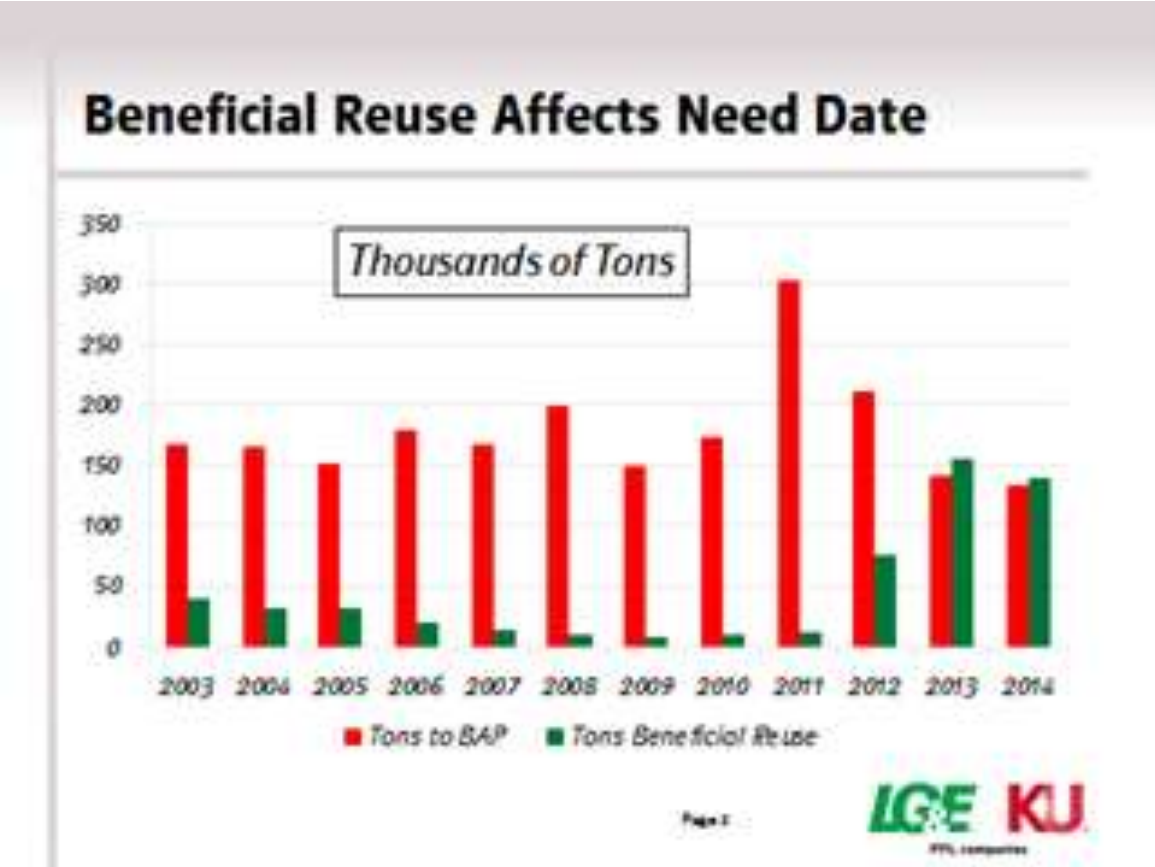
Source: Exhibit JNV-12 to Testimony of John N. Voyles, Jr., Case No. 2009-00197 (June 30, 2009) and Exhibit JNV-9 to Testimony of John N. Voyles, Jr., Case No. 2009-00198 (June 30, 2009)

History - Landfill Layout (2014)



Appendix B

Trimble County Ash Beneficial Reuse History



NOTE: Chart above does NOT include gypsum.

Appendix C

USCOE Section 404 Permit Alternatives Analysis

- *As part of the USCOE section 404 permitting process, an Alternative Analysis was performed to evaluate feasibility and cost to long-term store TC's CCR material in a variety (53 alternatives) of locations, both on and off-site.*
- *Regardless of whether TC's capacity storage needs are met on-site or off-site, the CCRT scope is required to treat the fly ash, bottom ash, pyrites, and gypsum products for transportation and placement at any location to which they are transported. The CCRT estimates are approximately $220M (gross). This is about 1/3 of the total project estimate and 2/3 of the Phase I total estimate.*

Alternatives Analysis (continued)

- *Off-Site Transportation*
  - *Barge transportation of CCR would require additional capital spend of $60-70 million for the barge loading and unloading/transport systems to get the CCR material to an off-site landfill. Operating costs are nearly an additional $200 million to the PVRR versus on-site landfill.*
- *Truck Transportation*
  - *Truck transport of CCR material to an off-site landfill could add over $1 billion in operating cost over the life of the landfill compared to conveying the CCR material to an on-site landfill.*
  - *Estimated truck traffic is a truck every 6 minutes (includes full and empty return) on county roads, 24 hours a day, 365 days a year versus pipe conveyor to an on-site landfill. This mode of CCR transport significantly increases safety and environmental risk to neighboring communities.*

Alternatives Analysis (continued)

- *Long-term Certainty*
  - *An on-site landfill significantly reduces risk of not being able to operate the coal-fired Units at TC caused by potential third party contractual issues.*

Appendix D

Ghent CCR Treatment Facility (June 2014)

Trimble County
Coal Combustion Residual Storage
Project Update

PPL companies

Generation Planning & Analysis
May 2015

Table of Contents

1 Executive Summary

In 2009, the Kentucky Public Service Commission approved the joint application of Louisville Gas and Electric Company ("LG&E") and Kentucky Utilities Company ("KU") (collectively, the "Companies") for a Certificate of Public Convenience and Necessity for the construction of a new landfill at the Trimble County Station. In their application, the Companies demonstrated that building an onsite landfill was lower cost than managing coal combustion residuals ("CCR") in an offsite landfill.[1] The purpose of this analysis is to compare the cost of continuing with the landfill project to the cost of retiring the Trimble County coal units and replacing the capacity and energy.

The Trimble County coal units are the two newest coal units in the Companies' fleet. Trimble County 1 began commercial operation in 1990; Trimble County 2 began commercial operation in 2011. Trimble County 2 is also the most efficient coal unit in the fleet, with a full load heat rate of approximately 9,170 btu/kWh. In the "retirement" alternative, based on a least-cost expansion planning analysis, these units are retired in 2020 and replaced with NGCC capacity. The "landfill" alternative includes the cost of the landfill as well as the cost to comply with the EPA's effluent limitation guidelines ("ELG").

The landfill and retirement alternatives were evaluated under three gas price scenarios with limits on CO_2 emissions consistent with the EPA's 2014 Clean Power Plan proposal. The landfill alternative is lower cost than the retirement alternative under all three gas price scenarios. The results of the analysis are summarized in Table 1. Continuing with the landfill project results in lower (more favorable) present value revenue requirements ranging between $781 million and $1.5 billion compared to retiring the Trimble County coal units and replacing the capacity with NGCC capacity. (Please note that these values and all other landfill-cost values provided in this analysis reflect the Companies' combined 75% ownership share of the Trimble County coal-fired units.)

Table 1 – Analysis Results (PVRR, 2015-2044, $2015, $M)

Gas Price Scenario	Landfill Alternative	Retirement Alternative	Difference (Landfill less Retirement)
Low Gas	22,845	23,625	(781)
Mid Gas	24,503	25,641	(1,137)
High Gas	25,959	27,476	(1,516)

[1] The generation of electricity at coal-fired generation units creates byproducts from the combustion of coal in the form of bottom ash, fly ash, and gypsum. These "coal combustion residuals" are managed in landfills or surface impoundment facilities unless they are reused ("beneficial reuse").

2 Background

The Trimble County Station has two coal-fired generating units with a combined generating capacity of 1,260 megawatts.[2] The Trimble County coal units are the newest coal units in the Companies' fleet. Trimble County 1 began commercial operation in 1990; Trimble County 2 began commercial operation in 2011. Trimble County 2 is also the most efficient coal unit in the fleet, with a full load heat rate of approximately 9,170 btu/kWh. Both units are considered base load units, with forecasted average capacity factors of 70 to 77 percent from 2015 through 2019.

Over the past three years, the Trimble County coal units produced an average of 743,000 tons of CCR annually.[3] Approximately 234,000 tons of the station's CCR were beneficially reused each year by the concrete, cement, and wallboard industries. Any CCR not delivered to beneficial reuse markets are currently sluiced with water to either the bottom ash pond ("BAP") or gypsum storage pond ("GSP"). The station's BAP is permitted to store CCR from both coal units; the GSP is permitted to store only gypsum.

In April 2015, the EPA issued its final rule concerning disposal of CCR from electric utilities ("CCR Rule"). The rule requires the Companies to assess and determine if their CCR storage facilities (BAP and GSP) may continue to operate under the new rule or must be closed. The rule requires the assessments be completed no later than April 2018. If closure is required, the rule specifies the date the Companies must stop placing CCR in the respective storage facilities.

Based on the Companies' current analysis of state and federal regulations, the Companies believe prudent operating practice requires continuing to construct the approved Trimble County landfill so it can begin receiving CCR in its first phase in 2018. The Companies believe a landfill permit will be issued by the Division of Waste Management with enough time to complete the construction of the landfill as needed. While the Companies have been successful in finding beneficial reuse opportunities to date, these are not guaranteed to continue. Absent beneficial reuse of 100% of the station's CCR, a long-term CCR management facility is required to operate Trimble County 1 and 2. The consequences of not being able to operate Trimble County 1 and 2 include significant costs for replacement capacity (assuming the capacity and associated transmission capacity is available), significant increases in production costs, and – more than likely – unserved energy.[4]

In 2009, the Kentucky Public Service Commission approved the joint application of Louisville Gas and Electric Company and Kentucky Utilities (the "Companies") for a Certificate of Public Convenience and Necessity for the construction of a new landfill at the Trimble County Station. In their application, the Companies demonstrated that building an onsite landfill was lower cost than managing CCR in an offsite landfill. The purpose of this analysis is to compare the cost of continuing with the landfill project to the cost of retiring the Trimble County coal units and replacing the capacity and energy.

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[2] Trimble County 1 ownership: LG&E (75%), Illinois Municipal Electric Agency ("IMEA") (12.12%), and Indiana Municipal Power Agency ("IMPA") (12.88%). Trimble County 2 ownership: KU (61%), LG&E (14%), IMEA (12.12%), and IMPA (12.88%).

[3] This total reflects 100 percent of the station's CCR production and is comprised of approximately 8% bottom ash, 30% fly ash, and 62% gypsum.

[4] The Companies' share of Trimble County 1 and 2 is approximately 950 MW. If no replacement capacity is available, the Companies' reserve margin will drop to less than five percent which is below the Companies' minimum reserve margin of 16 percent.

3 Summary of Alternatives

This analysis compares the cost of continuing with the approved landfill project and continuing to operate Trimble County 1 and 2 with the cost of retiring the Trimble County units and replacing the capacity. In the "landfill" alternative, the first phase of the landfill is commissioned in 2018. The approved landfill project consists of a CCR treatment facility, a pipe conveyor, a truck loading station, and a landfill. The CCR treatment facility conditions and prepares the CCR to be transported by the pipe conveyor to the truck loading station where the CCR are loaded into trucks. Trucks then haul and place the CCR in the landfill. Also, the CCR treatment facility is designed to load materials for beneficial reuse opportunities in the future. The landfill will be constructed in multiple phases, with each phase constructed on an as-needed basis. The total capacity in the landfill permit application is 33.4 MCY.

If Trimble County 1 and Trimble County 2 continue to operate, the units must comply with all environmental regulations for coal-fired power plants. Therefore, in addition to the new landfill, the landfill alternative also includes the estimated costs to comply with the EPA's ELG. The EPA is expected to finalize their ELG in the fall of 2015; the landfill alternative assumes the station will comply with the ELG rule by 2020 at a conceptual design cost of approximately $220 million. The EPA is also expected to issue the final rules of its Clean Power Plan ("CPP"), containing regulations for CO_2 emissions from existing generating units in summer 2015, with state plans expected to be filed no sooner than one year later. To comply with this rule, the Companies will likely need to modify the dispatch of their generating units to meet CO_2 emissions targets but they are not expected to result in the retirement of the Trimble County coal units.

In the "retirement" alternative, the Trimble County coal units are assumed to be retired in 2020. Based on the time required to obtain a certificate of public convenience and necessity ("CPCN") and construct new capacity, 2020 is the earliest the Companies could replace the capacity of the Trimble County coal units. The analysis considered several gas price scenarios along with the cap on carbon emissions based on the CPP. In the landfill alternative, based on a least-cost expansion planning analysis, a 1X1 natural gas combined cycle ("NGCC") unit (~370 MW) is added in 2021 in all gas price scenarios.[5] In the retirement alternative, this unit is added one year earlier (in 2020) along with two additional 1X1 NGCC units. The retirement alternative does not include a landfill and ignores any CCR management costs after 2018. In this regard, the analysis of the retirement alternative is conservative.

4 Analysis of Alternatives

4.1 Summary of Inputs

4.1.1 Capital Costs

Table 2 summarizes the capital costs for the landfill and retirement alternatives through 2021. Over this period, capital costs for the retirement alternative are approximately $297 million higher than the landfill alternative. The capital costs for Trimble County 1 and 2 include the cost of routine and planned maintenance, which are assumed to escalate at 2% beyond 2021. The cost of NGCC capacity for both alternatives is based on the Companies' 2014 Integrated Resource Plan ("IRP"). All landfill-related capital cost estimates were developed by GAI Consultants ("GAI").

[5] The least-cost expansion planning analysis included generation technology options from the Companies' 2014 Integrated Resource Plan ("IRP").

Table 2 – Capital Costs ($Nominal, $M)

Landfill Alternative	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**Total**
Trimble County 1 and 2	12	8	12	12	20	13	9	86
Landfill	13	127	86	46	0	0	38	311
Effluent Guidelines	1	25	50	50	50	45	0	221
1X1 NGCC (2021 COD)	0	0	0	81	295	52	6	434
Total	25	160	148	189	365	110	52	1,051
Retirement Alternative	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**Total**
Trimble County 1-2	12	8	12	12	20	7	0	71
3 1X1 NGCCs (2020 COD)	0	0	239	870	153	17	0	1,278
Total	12	8	250	882	173	23	0	1,348
Difference (Retirement less Landfill)	**(13)**	**(152)**	**102**	**692**	**(192)**	**(87)**	**(52)**	**297**

Table 3 lists capital costs for the landfill project in 2014 dollars. In February 2015, the Companies presented updated capital costs for the landfill project to the Kentucky Public Service Commission. The design basis for the proposed landfill has not changed in any way. However, after the initial landfill phase is commissioned in 2018, continued beneficial reuse can be expected to defer the need for subsequent landfill phases. This deferral is reflected in the timing of landfill phases in the analysis of the landfill alternative. When a landfill phase is deferred, the nominal (as-spent) cost of the phase is assumed to increase due to normal cost escalation, but the present value of capital revenue requirements decreases. Therefore, deferring the need for landfill phases is favorable for customers.

Table 3 – Landfill Capital Costs ($2014, $M)

Landfill Project	**Capital Cost**
Landfill Phase 1	282
Landfill Phase 2	42
Landfill Phase 3	37
Landfill Phase 4	134
Total	374

4.1.2 Fixed Operating and Maintenance Costs

Table 4 compares fixed operating and maintenance ("O&M") costs for the landfill and retirement alternatives. Fixed O&M costs in the landfill alternative are approximately $7 million higher per year (on average) than fixed O&M costs in the retirement alternative.[6] Fixed O&M costs for Trimble County 1 and 2 are based on the Companies' 2015 Business Plan. Fixed O&M costs for the NGCC units is based on the Companies' 2014 IRP. Fixed O&M costs for the landfill were developed by GAI. In addition to these costs, fixed O&M for the landfill alternative includes periodic maintenance of the landfill cover material. Over the life of the project, these costs are less than $2 million in 2014 dollars.

[6] Table 4 lists cost differences through 2030. Similar differences persist through the end of the analysis period (2044).

Table 4 – Fixed O&M (Trimble County 1-2 versus NGCC Units, $Nominal, $M)

Landfill Alternative	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**Avg**
Trimble County 1-2	31	36	36	39	34	34	40	39	43	37	37
1X1 NGCC (2021 COD)	8	15	15	15	16	16	16	16	17	17	15
Landfill	2	2	2	2	2	2	2	3	3	3	2
Total	42	53	53	56	52	53	59	58	62	57	54
Retirement Alternative	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**Avg**
3 1X1 NGCC (2020 COD)	43	44	45	46	47	48	49	49	50	51	47
Difference (Retirement less Landfill)	2	(9)	(8)	(11)	(5)	(5)	(10)	(9)	(12)	(5)	(7)

4.1.3 Variable Operating and Maintenance Costs

Table 5 summarizes the variable O&M costs for the landfill alternative. The truck hauling cost estimates are based on KU's contract for similar services at the Ghent Generating Station.

Table 5 – Variable Operating and Maintenance Cost ($2014, $/Ton)

Landfill Alternative	
Pipe Conveyor ("PC") Operating Costs	0.04
Truck Hauling to Landfill (0.5 Miles)	0.99
Truck Hauling to Landfill (0.75 Miles)	1.13
Truck Hauling to Landfill (1.25 Miles)	1.38
CCR Placement & Compaction at Landfill	0.56
Total	1.59 – 1.98

Both alternatives assume fill soil will be needed to close the BAP. The estimated cost of harvesting the soil and trucking the soil to the station is $17/ton in 2014 dollars.

4.1.4 Gas and Coal Prices

Table 6 lists the natural gas and coal prices (before adding a delivery basis) considered in this analysis. Natural gas prices through 2036 are forecasted by the Energy Information Administration ("EIA") as shown in their 2014 AEO.[7] Beyond 2036, the natural gas prices are extrapolated based on the 2026-2036 CAGR. The coal prices in Table 6 are the forecasted Illinois Basin high-sulfur ("ILB-HS") mine-mouth coal prices for the Companies' open coal position. This forecast was used to develop the delivered coal prices used in the analysis. Through 2019, these coal prices are based on (i) market bid prices and (ii) a forecast developed by Wood Mackenzie (an energy and mining research and consulting firm) in the spring of 2014.[8] In 2020-2040, these prices were escalated at the annual growth rates in the average coal price

[7] The "Mid", "High", and "Low" case natural gas price forecasts are based on EIA's AEO 2014 "Reference," "Low Oil and Gas Resource," and "High Oil and Gas Resource" cases, respectively. For the EIA's AEO 2014 data tables, see http://www.eia.gov/oiaf/aeo/tablebrowser/#release=AEO2014&subject=8-AEO2014&table=13-AEO2014&region=0-0&cases=highresource-d112913b,lowresource-d112913a,ref2014-d102413a.

[8] The coal prices in 2015 and 2016 are based fully on the bid price curve. Prices in 2017 are 75% bid prices, 25% Wood Mackenzie. Prices in 2018 and 2019 are blended 50% bid/50% Wood Mackenzie and 25% bid/75% Wood Mackenzie, respectively.

forecast from EIA's AEO 2014 Reference case. Beyond 2040, coal prices were extrapolated based on the price forecast's 2030-2040 CAGR.

Table 6 – Natural Gas and Coal Prices ($/mmBtu)

Year	Henry Hub Natural Gas Prices (Source: EIA)			Coal Prices (ILB-HS, Mine Mouth, Open Position)
	Low	Mid	High	
2015	3.57	4.26	5.08	1.94
2016	3.95	4.25	5.07	1.99
2017	4.02	4.41	5.26	2.13
2018	4.30	4.61	5.49	2.14
2019	4.52	4.81	5.73	2.21
2020	4.90	5.09	5.99	2.27
2021	5.08	5.37	6.40	2.34
2022	5.34	5.64	6.88	2.41
2023	5.59	5.90	7.37	2.48
2024	5.59	6.20	7.87	2.57
2025	5.64	6.45	8.53	2.65
2026	5.29	6.72	9.10	2.73
2027	5.07	7.00	9.64	2.82
2028	5.29	7.26	10.15	2.91
2029	5.54	7.63	10.58	3.01
2030	5.71	8.12	11.12	3.11
2031	5.95	8.47	11.47	3.20
2032	6.15	8.91	11.83	3.30
2033	6.46	9.41	12.38	3.40
2034	6.68	9.83	12.96	3.51
2035	6.92	10.31	13.79	3.62
2036	7.08	10.93	14.54	3.71
2037	7.30	11.48	15.21	3.82
2038	7.58	12.05	15.93	3.92
2039	7.86	12.65	16.67	4.04
2040	8.15	13.28	17.45	4.19
2041	8.45	13.94	18.26	4.32
2042	8.77	14.64	19.12	4.46
2043	9.09	15.37	20.01	4.59
2044	9.43	16.14	20.95	4.73

4.1.5 CO_2 Limits

Based on the EPA's proposed CPP, from 2020-2029, Kentucky's CO_2 emissions from existing electric generating units would need to average 1,844 lbs/MWh. Beginning in 2030, Kentucky's annual CO_2 emissions from existing units would need to average 1,763 lbs/MWh. The Companies modeled these proposed statewide limits as a "carbon cap" scenario for their generating fleet. Under this scenario, all of the Companies' generation units are economically dispatched to ensure that CO_2 emissions do not exceed the proposed cap.

4.1.6 Load Forecast

Because the Trimble County units are base load units, their operation does not vary significantly with changes in the load forecast. Therefore, the analysis considered only the load forecast from the 2015 Business Plan (see Table 7). This forecast reflects the departure of ten municipal customers by 2019.

Table 7 – Load Forecast (2015 Business Plan)

Year	Energy Requirements (GWh)	Peak Demand after Direct Load Control (MW)
2015	35,417	6,942
2016	35,664	6,996
2017	35,919	7,058
2018	36,249	7,121
2019	35,541	6,897
2020	35,278	6,933
2021	35,424	6,977
2022	35,568	7,021
2023	35,696	7,058
2024	35,894	7,092
2025	36,059	7,132
2026	36,252	7,176
2027	36,442	7,219
2028	36,630	7,258
2029	36,808	7,298
2030	36,973	7,330
2031	37,108	7,367
2032	37,244	7,408
2033	37,412	7,445
2034	37,546	7,477
2035	37,692	7,510
2036	37,855	7,548
2037	38,002	7,595
2038	38,139	7,640
2039	38,289	7,688
2040	38,429	7,736
2041	38,541	7,776
2042	38,660	7,828
2043	38,801	7,889
2044	38,896	7,947

4.1.7 Expansion Planning Inputs

Table 8 summarizes the cost and unit characteristics for the technologies used to develop expansion plans for the two alternatives. The information in Table 8 is taken from the Companies' 2014 IRP. The 2014 IRP also included 2X1 NGCCs and three simple-cycle combustion turbines (installed together at a single site) as technology options. However, due to the large capacity of these configurations, the addition of these

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options result in reserve margins that remain above the Companies' target reserve margin for an extended period of years and so were not included in this analysis.

Table 8 – Cost and Unit Characteristics for Generation Technology Options ($2013)

Unit Type	1x1 NGCC	Simple-Cycle CT	Wind Turbines	Solar PV
Reference Name[9]	1x1G	SCCT	Wind	SLPV
Net Capability (MW)				
Summer	368	201	50	50
Winter	429	220	50	50
Overnight Installed Cost ($/kW)[10]				
Total Non-Fuel Variable O&M ($/MWh)[11]				
Total Fixed O&M ($/kW-yr)[12]				
Full Load Heat Rate (mmBtu/MWh)				
Unavailability (%)[13]				

4.1.8 Other Inputs

Table 9 lists the other input assumptions for this analysis.

[9] Reference names are used to more easily compare expansion plans.
[10] Installed cost is based on annual average capacity.
[11] Variable O&M for NGCC and SCCT options includes long-term service agreement costs.
[12] Fixed O&M for NGCC and SCCT options includes costs associated with reserving firm gas-line capacity.
[13] Unavailability for NGCC and SCCT options is the long-term steady-state outage rate expected after initial operation. For wind and solar options, unavailability reflects the expected capacity factor (Unavailability = 1 – Capacity Factor).
[14] Wind turbine capacity factor modeled at 27% with 11% of the capacity counting toward reserve margin.
[15] Solar photovoltaic capacity factor modeled at 17.4% with 90% of the capacity counting toward reserve margin.

Table 9 – Other Assumptions and Inputs

Input	Value
Analysis Period	2015-2044
Return on Equity	10.25%
Cost of Debt	3.53%
Capital Structure	
Debt	47.4%
Equity	52.6%
Tax Rate	38.9%
Revenue Requirement Discount Rate	6.41%
Landfill O&M Cost Escalation Rate	3%
Landfill Capital Cost Escalation Rate	4%
Other Capital Cost Escalation Rate	2%

4.2 Methodology

In this analysis, the landfill and retirement alternatives were evaluated using Strategist and PROSYM in the context of the Companies' generation portfolio over the three gas price scenarios discussed in Section 4.1.4.[16] All scenarios assumed a carbon cap consistent with the EPA's 2014 CPP proposal. For each gas price scenario, Strategist was used to develop a least-cost resource expansion plan for meeting the Companies' forecasted energy requirements from 2015 through 2044. Then, detailed production costs were computed for each scenario and associated expansion plan using PROSYM. Production costs include fuel costs, start costs, variable O&M costs, and emissions costs for existing and new units. To focus the analysis on finding the best resource for serving the Companies' customers and eliminate the risk of speculating on future power prices, the analysis assumed the Companies had no access to energy from the market and made no off-system sales. The present value of revenue requirements ("PVRR") was computed for each scenario over a 30-year analysis period (2015-2044). The following categories of costs are included in the 30-year PVRR calculation:

1. Production Costs. Fuel and variable O&M costs modeled in PROSYM for all generating units.
2. Capital. Capital for new generating units and environmental controls.
3. Fixed O&M. Fixed O&M costs for Trimble County 1-2 and new generating units.
4. Firm Gas Transport. Firm gas transportation services for gas-fired units.
5. Landfill. All landfill-related capital and O&M costs.

4.3 Expansion Planning Results

Table 10 contains the expansion plans for the landfill and retirement alternatives in each of the gas price scenarios considered in this analysis. In the landfill alternative, a 1X1 natural gas combined cycle ("NGCC") unit (~370 MW) is added in 2021 in all gas price scenarios. In the retirement alternative, as a result of retiring the Trimble County coal units in 2020, this unit is added one year earlier (in 2020) along with two additional 1X1 NGCC units.

[16] Strategist and PROSYM are software products from Ventyx, an ABB Company.

Table 10 – Expansion Planning Results[17]

	Mid Gas		Low Gas		High Gas	
Year	**Landfill**	**Retire**	**Landfill**	**Retire**	**Landfill**	**Retire**
2020		1x1G(3)		1x1G(3)		1x1G(3)
2021	1x1G(1)		1x1G(1)		1x1G(1)	
2022						
2023						
2024						
2025		1x1G(1)		1x1G(1)		Wind(5)
2026						1x1G(1)
2027						
2028					Wind(13)	
2029	1x1G(1)		1x1G(1)		Wind(5)	Wind(1)
2030					Wind(6)	Wind(1)
2031						Wind(7)
2032					SLPV(1)	Wind(1)
2033		SLPV(1)		1x1G(1)	Wind(1), SLPV(1)	Wind(9)
2034		SLPV(1)			SLPV(1)	Wind(1)
2035		Wind(1)			SLPV(1)	
2036		SLPV(1)				SLPV(1)
2037	Wind(1)	Wind(2), SLPV(1)	SLPV(1)		1x1G(1)	SLPV(1)
2038	Wind(10)	Wind(9)	SLPV(1)			SLPV(1)
2039	Wind(11)	Wind(2), SLPV(1)	SLPV(1)			SLPV(1)
2040	Wind(2), SLPV(1)	Wind(2), SLPV(1)	SLPV(1)			SLPV(1)
2041	SLPV(1)	Wind(9)	SLPV(1)	SLPV(1)		SLPV(1)
2042	Wind(1), SLPV(2)	1x1G(1)	Wind(9)	Wind(9)		1x1G(1)
2043	SLPV(1)		Wind(15)	Wind(15)	SLPV(1)	

4.4 Revenue Requirements

Annual revenue requirements were computed for the landfill and retirement alternatives over a 30-year analysis period for each of the gas price scenarios. In the landfill alternative, after the initial landfill phase is in place, the need for subsequent landfill phases depends on the level of coal generation at the Trimble County station and the amount of beneficially reused CCR. In this analysis, current levels of beneficial reuse (approximately 265,000 tons per year) are assumed to continue. For each gas price scenario, Table 11 lists the in-service year for each landfill phase, the sum of nominal (as-spent) capital costs for the project, and the present value of capital revenue requirements. For comparison, the same information is listed for the scenario presented to the Kentucky Public Service Commission in February 2015. As mentioned previously, when a landfill phase is deferred, the nominal (as-spent) cost of the phase is

[17] The values in parentheses indicate the number of units added. For example, in all gas price scenarios, three 1X1 NGCC units are added in 2020 in the retirement alternative.

assumed to increase due to normal cost escalation, but the present value of capital revenue requirements decreases.

Table 11 – Timing of Landfill Phases

Scenarios	Gas Price			Feb 2015 Estimate
	Low	Mid	High	
Phase 1	2018	2018	2018	2018
Phase 2	2032	2032	2032	2024
Phase 3	2049	2048	2048	2032
Phase 4	2075	2074	2073	2044
Total Project Nominal Capital Cost ($M)[18]	762	747	741	501.5
Present Value of Capital Revenue Requirements (2015-2044, $2015, $M)	340	342	342	452

The results of the analysis are summarized in Table 12. The landfill alternative is lower cost than the retirement alternative in all gas price scenarios. The difference in present value of revenue requirements ("PVRR") between the two alternatives ranges from $781 million to $1.5 billion.

Table 12 – Analysis Results (PVRR, 2015-2044, $2015, $M)

Gas	Alt	Prod Cost	Capital	Fixed O&M	Firm Gas Transport	Landfill	Grand Total	Retire or Landfill	Diff. (Landfill less Retire)
Low	**Landfill**	20,142	1,546	594	122	442	22,845	Landfill	(781)
	Retire	20,473	2,394	351	344	63	23,625		
Mid	**Landfill**	21,430	1,884	625	122	443	24,503	Landfill	(1,137)
	Retire	22,019	2,862	379	319	62	25,641		
High	**Landfill**	21,792	2,885	746	94	442	25,959	Landfill	(1,516)
	Retire	22,991	3,631	480	314	60	27,476		

5 Conclusion

Continuing with the landfill project results in lower (more favorable) present value revenue requirements ranging between $781 million and $1.5 billion compared to retiring the Trimble County coal units and replacing the capacity with NGCC capacity.

[18] The total nominal capital cost excludes $24.4 million that has been spent on the project through 12/31/2014.