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Recent Clients:

Public Counsel Unit, Attorney General, Washington
Arkansas Attorney General
The Public Utility Project of New York
Ohio Office of Consumer Counsel
District of Columbia Office of People's Counsel
The Utility Reform Network (TURN) (California)
Delaware Division of Public Advocate
Maryland Office of People's Counsel

Areas of Expertise:

- Default Service, Consumer Protection, Service Quality, and Universal Service policies and programs associated with the alternative rate plans and mergers;
- Consumer Protection and Service Quality policies and programs associated with the regulation of competitive energy and telecommunications providers;
- The regulatory policies associated with the regulation of Credit, Collection, Consumer Protection, Low Income, and Service Quality programs and policies for public utilities;
- Rate design and pricing policies applicable to residential customers; and
- Advanced Metering Infrastructure and Grid Modernization costs and benefits, time-based pricing proposals, and performance standards.

Prior Employment

DIRECTOR

1986-96

Consumer Assistance Division
Maine Public Utilities Commission *Augusta, Maine*

One of five division directors appointed by a three-member regulatory commission and part of commission management

team. Direct supervision of 10 employees, oversight of public utility consumer complaint function, appearance as an expert witness on customer services, consumer protection, service quality and low income policy issues before the PUC. Chair, NARUC Staff Subcommittee on Consumer Affairs.

SUPERINTENDENT

1979-83

Bureau of Consumer Credit Protection
Department of Professional and Financial Regulation *Augusta, Maine*

Director of an independent regulatory agency charged with the implementation of Maine Consumer Credit Code and Truth in Lending Act. Investigations and audits of financial institutions and retail creditors, enforcement activities, testimony before Maine Legislature and U.S. Congress.

Education

JURIS DOCTOR

1973-76

University of Maine School of Law *Portland, Maine*

Admitted to the Bar of the State of Maine, September 1976. Currently registered as "inactive."

B.A. (WITH DISTINCTION) IN POLITICAL SCIENCE 1964-68
University of Michigan *Ann Arbor, Michigan*

Publications and Testimony

"How to Construct a Service Quality Index in Performance-Based Ratemaking", The Electricity Journal, April, 1996

"The Consumer Protection Agenda in the Electric Restructuring Debate", William A. Spratley & Associates, May, 1996

Direct Testimony on behalf of the Telecommunications Workers Union, Telecom Public Notice 96-8, Price Cap Regulation and Related Issues, Canadian Radio-Television and Telecommunications Commission, September, 1996. [Analysis of and recommendations concerning the need to regulate service quality in move to price cap regulation]

Direct Testimony on behalf of Public Counsel Section, Office of Attorney General, Docket No. UE-960195, Application by Puget Sound Power and Light Co. And Washington Natural Gas Co. For Approval of Merger), Washington Utilities and Transportation Commission, September, 1996 [Need for and design of a Service Quality Index for both electric and gas business units as part of a multi-year rate plan]

Consumer Protection Proposals for Retail Electric Competition: Model Legislation and Regulations", Regulatory Assistance Project, Gardiner, ME, October, 1996

Direct and Rebuttal Testimony on behalf of the Citizens Utility Board (IL), Docket 96-0178, Illinois Commerce Commission, CUB v. Illinois Bell Telephone Co., January 22, 1997; July, 1997. [Analysis of recent service quality performance and recommendations for changes in current service quality performance plan]

Direct and Surrebuttal Testimony on behalf of the Pennsylvania Office of Consumer Advocate, Restructuring Proceedings

before the Pennsylvania PUC: PECO Energy; Pennsylvania Power and Light Co.; GPU Energy; Duquesne Light Co.; West Penn Power Co., UGI-Electric, Pennsylvania Power Co., Pike County Light and Power Co. (1997 and 1998). [Specific consumer protection, consumer education and supplier-utility-customer interactions necessary for move to electric restructuring]

"The Transition to Local Telecommunications Competition: A New Challenge for Consumer Protection", Public Counsel Section, Washington Attorney General, October, 1997. [Reprinted in part in NRRI Quarterly Bulletin, Vol. 19, N0.1, Spring, 1998]

Direct and Surrebuttal Testimony on behalf of the New Jersey Division of Ratepayer Advocate, Restructuring Proceedings before the New Jersey Board of Public Utilities: Public Service Electric and Gas, Jersey Central (GPU), Rockland Electric Co., Atlantic Electric Co., March-April, 1998. [Phase-in and customer enrollment, Code of Conduct, consumer protections associated with the provision of Provider of Last Resort service]

Oppenheim, Gerald (NCLC) and Alexander, Barbara, Model Electricity Consumer Protection Disclosures, A Report to the National Council on Competition and the Electric Industry, April 1998.

Direct and Reply Testimony on behalf of the Maryland Office of People's Counsel, Investigation into Certain Unauthorized Practices (Slamming and Cramming), Case. No. 8776, before the Maryland Public Service Commission, 1998 and 1999.

Direct Testimony on behalf of the Maryland Office of People's Counsel, Universal Service Issues, Case No. 8745, before the Maryland Public Service Commission, November 20, 1998.

"Cramming is the Last Straw: A Proposal to Prevent and Discourage the Use of the Local Telephone Bill to Commit Fraud," NRRI Quarterly Bulletin, Fall. 1998.

Alexander, Barbara, Retail Electric Competition: A Blueprint for Consumer Protection, U.S. Department of Energy, Office of Energy and Renewable Energy, Washington, D.C., October 1998.

Alexander, Barbara, "Consumer Protection Issues in Electric Restructuring for Colorado: A Report to the Colorado Electricity Advisory Panel," on behalf of the Colorado Office of Consumer Counsel, February 1999.

Testimony on Proposed Interim Rules (Consumer Protection, Customer Enrollment, Code of Conduct, Supplier Licensing) on behalf of the New Jersey Division of Ratepayer Advocate before the New Jersey BPU, May 1999.

Direct Testimony on behalf of AARP, West Virginia PUC Investigation into Retail Electric Competition (consumer protection, universal service, Code of Conduct), June 15, 1999.

Direct and Surrebuttal Testimony on behalf of the Pennsylvania OCA, Natural Gas Restructuring proceedings (8 natural gas utilities): consumer protection; consumer education; code of conduct, before the Pennsylvania PUC, October 1999-April 2000.

Comments on Draft Rules addressing Slamming and Cramming (Docket No. RMU-99-7) on behalf of the Iowa Office of Consumer Advocate, before the Iowa Utilities Board, October 1999.

Alexander, Barbara, "Door to Door Sales of Competitive Energy Services," LEAP Letter, January-February 2000 [Wm. A. Spratley & Associates, Columbus, OH]

Direct Testimony on behalf of the Maine Office of Public Advocate, Central Maine Power Company Alternative Regulation Plan [Docket 99-666] on service quality issues, before the Maine PUC, May 2000.

Direct Testimony on behalf of AARP, Universal Service Programs and Funding of low-income programs for electric and natural gas service, before the New Jersey Board of Public Utilities, Docket No. EX000200091, July, 2000.

Comments (on behalf of NASUCA and AARP) on Uniform Business Practices Reports, May and September 2000.

Direct Testimony on behalf of the Pennsylvania OCA, Verizon-Pennsylvania Structural Separation Plan on service quality, customer service and consumer protection issues [Docket No. M-00001353] before the Pennsylvania PUC, October 2000.

Direct and Rebuttal Testimony on behalf of the Maine Office of Public Advocate, Verizon-Maine Alternative Form of Regulation on service quality issues [Docket No. 99-851] before the Maine PUC, January and February 2001.

Direct and Rebuttal Testimony on behalf of the Citizens Utility Board, Nicor Gas Customer Select Pilot Program, on consumer protection and regulation of competitive natural gas suppliers [Docket Nos. 00-0620 and 00-0621] before the Illinois Commerce Commission, December 2000 and February 2001.

Direct and Surrebuttal Testimony on behalf of the Pennsylvania Office of Consumer Advocate on consumer protection and service quality issues associated with the pending merger between GPU Energy and FirstEnergy, before the Pennsylvania PUC, Docket Nos. A-110300F0095 and A-110400F.0040 (February and March, 2001)

Direct and Surrebuttal Testimony on behalf of the New Jersey Division of Ratepayer Advocate on consumer protection, service quality, and universal service issues associated with the pending merger between GPU Energy and FirstEnergy, before the New Jersey Board of Public Utilities, Docket No. EM00110870 (April 2001).

Alexander, Barbara, "Default Service: What Should be Done When the Experiment Goes Awry?" (April 2001)

Responsive Testimony on behalf of the New Jersey Division of Ratepayer Advocate on service quality issues associated with a Plan for Alternative Regulation by Verizon-New Jersey, before the New Jersey Board of Public Utilities, Docket No. To01020095 (May 2001).

Direct and Surrebuttal Testimony on behalf of the New Jersey Division of Ratepayer Advocate on service quality, consumer protection, and universal service issues associated with the pending merger between Conectiv and Pepco, before the New Jersey Board of Public Utilities, BPU Docket No. EM101050308 (September and November 2001).

Direct Testimony on behalf of the Public Interest Advocacy Centre (and others) on service quality regulation in the context of price cap rate plans, before the Canadian Radio-Television and Telecommunications Commission, Docket No. CRTC 2001-37 (August 2001).

Alexander, Barbara, "Default Service: What Should be Done when the Experiment Goes Awry?" An Update to the April 2001 paper (October 2001).

Expert Witness Report, Sparks v. AT&T and Lucent Technologies, October 2001 [National class action lawsuit concerning the leasing of residential telephones]

Expert Witness Report, Brown v. Reliant Energy, November 2001 [Claim of negligence in death of elderly resident after disconnection of electric service]

Comments on behalf of the Pennsylvania Office of Consumer Advocate on consumer protection, disclosure, and education program Guidelines applicable to local exchange telephone competition, before the Pennsylvania PUC, January 2002.

Alexander, Barbara, "Default Service for Retail Electric Competition: Can Residential and Low-Income Customers be Protected When the Experiment Goes Awry?" (April 2002) Available at www.ncat.org/liheap/pubs/barbadefault3.doc

Comments on behalf of AARP before the California PUC on CARE (low income program) concerning Rapid Deployment, Rulemaking 01-08-027 (2001 and 2002).

Comments on behalf of Citizens Utility Board before the Illinois Commerce Commission on Proposed Rule to Allow the Use of Credit Scoring to Determine When a Deposit May be Required, ICC Docket No. 01-0644, June 24, 2002.

Comments on behalf of Consumer Groups before the Texas PUC on Rulemaking Proceeding to Amend Requirements for Provider of Last Resort Service, Docket No. 25360, June 28, 2002.

Direct Testimony on behalf of the New Jersey Division of Ratepayer Advocate before the Board of Public Utilities on Joint Petition of New Jersey-American Water Co. and Thames Water Aqua Holding for Approval of a Change in Control of New Jersey-American Water Co., Docket No. WM01120833, July 18, 2002.

Alexander, Barbara, Consumer Education Programs to Accompany the Move to Retail Electric Competition, prepared for the National Association of State Utility Consumer Advocates (NASUCA), July 2002. Available at www.nasuca.org

Direct Testimony on behalf of New Jersey Division of Ratepayer Advocate before the Board of Public Utilities on Petition of NUI Utilities d/b/a Elizabethtown Gas Co. for Approval of Increased Base Tariff Rates and Charges for Gas Service, Docket No. GR02040245, September 6, 2002.

Alexander, Barbara, An Analysis of Residential Energy Markets in Georgia, Massachusetts, Ohio, New York, and Texas, prepared for the National Energy Affordability and Accessibility Project, National Center for Appropriate Technology, September 2002. Available at www.ncat.org/neaap

Direct and Surrebuttal Testimony on behalf of the Pennsylvania Office of Consumer Advocate before the Pennsylvania PUC on Philadelphia Gas Works' Gas Restructuring Filing, Docket No. M-00021612, September 2002 and November 2002.

Direct Testimony on behalf of Consumer Groups before the Texas PUC on Notice and Request of Mutual Energy CPL and Mutual Energy WTU for Approval of Changes in Ownership and Affiliation, Docket No. 25957, October 15, 2002.

Comments on behalf of the Pennsylvania Office of Consumer Advocate before the Pennsylvania PUC, Advanced Notice of Proposed Rulemaking for Revision of Chapter 54 Pertaining to Electric Generation Supplier Licensing, Docket No. L-00020158, March 5, 2003.

Direct and Surrebuttal Testimony on behalf of the New Jersey Division of Ratepayer Advocate before the New Jersey BPU on Jersey Central Power & Light's base rate case proceeding (service quality and reliability of service), Docket No. ER02080506, ERT02080507, and ER02070417, December 2002 and February 2003.

Alexander, Barbara, "Managing Default Service To Provide Consumer Benefits In Restructured States: Avoiding Short-Term Price Volatility" (National Center for Appropriate Technology, June 2003). Available at: http://neaap.ncat.org/experts/defservintro.htm

Comments and Reply Comments on behalf of New Jersey AARP before the New Jersey Board of Public Utilities on Basic Generation Service, Docket No. EO03050394 (August and September 2003).

Direct and Surrebuttal Testimony on behalf of the New Jersey Division of the Ratepayer Advocate before the New Jersey BPU on rate case proceedings for New Jersey-American Water Co., Elizabethtown Water Co., and Mt. Holly Water Co. (service quality and low-income programs and policies), Dockets Nos. WR03070509-WR03070511 (December 2003).

Comments on behalf of the Texas Legal Services Center and other Consumer Groups before the Public Utility Commission of Texas, Proposed Revisions to Chapter 25, Substantive Rules Applicable to Electric Service Providers, Project No. 27084 (December 2003).

Alexander, Barbara, "Natural Gas Price Volatility: Regulatory Policies to Assure Affordable and Stable Gas Supply Prices for Residential Customers," (2004), available at http://www.ncat.org/liheap/news/Feb04/gaspricevol.htm

Alexander, Barbara, "Montana's Universal Systems Benefit Programs and Funding for Low Income Programs:

Recommendations for Reform: A Report to AARP" (January 2004).

Comments and Reply Comments on behalf of the Colorado Office of Consumer Counsel before the Public Utilities Commission of Colorado, In the Matter of the Proposed Repeal and Reenactment of all Rules Regulating Gas Utilities (Docket No. 03R-520G) and Electric Utilities (Docket No. 03R-519E) (February and September 2004).

Direct, Rebuttal, and Supplemental Testimony on behalf of the Pennsylvania Office of Consumer Advocate before the Pennsylvania PUC, Petition of Duquesne Light Co. for Approval of Plan for Post-Transition Period POLR Services, Docket No. P-00032071 (February-April 2004).

Comments on behalf of AARP before the California PUC, Order Instituting Rulemaking on the Commission's Own Motion to Establish Consumer Rights and Consumer Protection Rules Applicable to All Telecommunications Utilities, R. 00-02-004 (March 2004).

Comments and Reply Comments on behalf of AARP before the Maine PUC, Inquiry into Standard Offer Supply Procurement for Residential and Small Commercial Customers, Docket No. 2004-147 (April 2004).

Comments on behalf of Wisconsin Citizens' Utility Board before the Wisconsin Public Service Commission's Gas Service Standards, Docket No. 1-AC-210 (July 2004).

Comments on behalf of the Colorado Office of Consumer Counsel before the Public Utilities Commission of Colorado, In the Matter of the Proposed Repeal and Reenactment of all Rules Regulating Telephone Utilities and Providers (Docket No. 03R-524T) (September 2004).

Direct Testimony on behalf of the Pennsylvania Office of Consumer Advocate before the Pennsylvania PUC, Investigation if Metropolitan Edison Co., Pennsylvania Electric Co. and Pennsylvania Power Co. Reliability Performance, Docket no. I-00040102, [customer service and reliability performance] (June 2004).

Direct and Surrebuttal Testimony on behalf of the Vermont Department of Public Service before the Vermont Board of Public Utilities, Investigation into Successor Alternative Regulatory Plan for Verizon Vermont, Docket 6959 [Service Quality] (November 2004 and March 2005).

Alexander, Barbara, "Vermont Energy Programs for Low-Income Electric And Gas Customers: Filling The Gap" (November 2004), Prepared for AARP Vermont.

Direct and Surrebuttal Testimony on behalf of Wisconsin Citizens' Utility Board before the Wisconsin Public Service Commission, Application of Wisconsin Power and Light Co. for Authority to Increase Retail Electric, Natural Gas and Ripon Water Rates, Docket No. 6680-UR-114 [customer service, credit and collection programs and expenses, low income programs, fixed bill program] (April 2005).

Comments on behalf of the Maine Office of Public Advocate before the Maine Public Utilities Commission, Inquiry into Revisions to Chapter 81, Residential Utility Service Standards for Credit and Collection Programs, and Chapter 86, Disconnection and Deposit Regulations for Nonresidential Utility Service, Docket No. 2005-005 (April and May 2005).

Direct and Rebuttal Testimony on behalf of AARP Montana before the Montana Public Service Commission, Northwestern Energy Electric Cost Tracker, Docket No. D2004.6.90 [Default Service cost recovery policies and integration with low income programs] (December 2004 and July 2005).

Direct Testimony on behalf of the Pennsylvania Office of Consumer Advocate before the Pennsylvania Public Utilities Commission, Joint Application of PECO Energy Co. and Public Service Electric and Gas Co. for Approval of the Merger of Public Service Enterprise Group, Inc. with and into Exelon Corporation, Docket No. A-110550F0160 [customer service, reliability of service, low income programs] (June 2005).

Direct Testimony on behalf of Illinois Citizens' Utility Board, City of Chicago, and Community Action for Fair Utility Practice, before the Illinois Commerce Commission, Petition to Initiate Rulemaking with Notice and Comment for Approval of Certain Amendments to Illinois Administrative Code Part 280 Concerning Deposit Requests and Deposit Refunds by Utilities, Docket No. 05-0237 (June 2005).

Direct Testimony on behalf of The Utility Reform Network (TURN) before the California Public Utilities Commission, Order Instituting Rulemaking on the Commission's Own Motion to Establish Consumer Rights and Consumer Protection Rules Applicable to All Telecommunications Utilities, Docket R-00-02-004 (August 2005).

Alexander, Barbara, Red Flags for Consumer Protection Policies Governing Essential Electric and Gas Utility Services: How to Avoid Adverse Impacts on Low-Income Consumers, prepared under contract with Oak Ridge National Laboratory Energy Division (October 2005).

Comments on behalf of Texas Office of Public Utility Counsel, Texas Legal Services Center, Texas Ratepayers' Organization to Save Energy and AARP Texas, before the Texas PUC, Evaluation of Default Service for Residential Customers and Review of Rules Relating to the Price to Beat and Provider of Last Resort, Project No. 31416 (March 2006) [Default service policies]

Rebuttal and Surrebuttal Testimony on behalf of the Pennsylvania Office of Consumer Advocate before the Pennsylvania PUC, In the Matter of the Petition of the Pennsylvania Power Co. for Approval of an Interim Provider of Last Resort Supply Plan, Docket No. P-00052188 [Default Service policies] (December 2005 and January 2006).

Direct and Rebuttal Testimony on behalf of the Maine Office of Public Advocate before the Maine PUC, Investigation into Verizon Maine's Alternative Form of Regulation, Docket No. 2005-155 [Retail Service Quality] (January and May 2006).

Alexander, Barbara, "State Developments Changing for Default/Standard Retail Electric Service," Natural Gas & Electricity, September 2006.

Direct and Rebuttal Testimony on behalf of the Government and Consumer Parties (CUB, Attorney General of Illinois) before the Illinois Commerce Commission, Petition to Initiate Rulemaking with Notice and Comment for Approval of Certain Amendments to Illinois Administrative Code Part 280, Docket No. 06-0379 (May and September 2006). [Consumer Protection rules]

Direct Testimony on behalf of the Pennsylvania Office of Consumer Advocate before the Pennsylvania PUC, In Re Application of UGI Utilities, Inc., UGI Utilities Newco, Inc., and Southern Union Co., Docket Nos. A-120011F2000, A-125146, A-125146F5000 (June 2006). [Customer Service, Service Quality, and Universal Services]

Direct and Rebuttal Testimony on behalf of the Maryland Office of People's Counsel before the Maryland PSC, In The Competitive Selection of Electricity Supplier/Standard Offer or Default Service for Investor-Owned Utility Small Commercial Customers and, Delmarva Power and Light and Potomac Electric Power Residential Customers, Case No. 9064 (August and September 2006). [Default Service policies]

Direct and Rebuttal Testimony on behalf of the Maryland Office of People's Counsel before the Maryland PSC, In The Matter of the Optimal Structure of the Electric Industry of Maryland, Case No. 9063 (October and November 2006). [Default service policies]

Comments on behalf of AARP Maine before the Maine PUC on various dockets and notices concerning the implementation of Standard Offer Service for residential customers, Docket Nos. 2006-314, 2006-557, and 2006-411 (July-November 2006). [Default service policies]

Comments on behalf of AARP District of Columbia before the District of Columbia PSC, In the Matter of the Development and Designation of Standard Offer Service in the District of Columbia, Case No. 1017 (2006). [Default service policies]

Comments on behalf of AARP New Jersey before the New Jersey Board of Public Utilities, In the Matter of the Establishment of a Universal Service Fund Pursuant to Section 12 of the Electric Discount and Energy Competition Act of 1999, Docket No. EX00020091 (August 2006) [Recommendations for USF program changes]

Direct and Rebuttal Testimony on behalf of the Pennsylvania Office of Consumer Advocate before the Pennsylvania PUC, Joint Application of Equitable Resources, Inc. and the People's Natural Gas Co., d/b/a Dominion Peoples, for Approval of the Transfer of All Stock Rights of the Latter to the Former and for the Approval of the Transfer of All Stock of Hope Gas, Inc., d/b/a/ Dominion Hope to Equitable Resources, Inc., Docket No. A-122250F5000 (September and October 2006). [Customer Service, Service Quality, and Universal Service issues)

Direct Testimony on behalf of Pennsylvania Office of Consumer Advocate before the Pennsylvania PUC, Pennsylvania PUC v. Natural Fuel Gas Distribution Corp., Docket No. R-00061493 (September 2006) [Supplier Purchase of Receivables Program]

Direct Testimony on behalf of AARP Montana before the Montana Public Service Commission, Joint Application of NorthWestern Energy and BBI to purchase NorthWestern Energy, Docket No. 2006.6.82 [December 2006] [Conditions for approval of merger; low income and customer service programs]

Rebuttal Testimony on behalf of the Pennsylvania Office of Consumer Advocate before the Pennsylvania PUC, Petition by PPL Electric Utilities Corp. for Approval of a Competitive Bridge Plan, Docket No. P-00062227 (December 2006) [Default Service policies]

Direct and Rebuttal Testimony on behalf of the Pennsylvania Office of Consumer Advocate before the Pennsylvania PUC, Application of Duquesne Light Company for a Certificate of Public Convenience Under Section 1102(a)(3) of the Public Utility Code Approving the Acquisition of Duquesne Light Holding, Inc. by Merger, Docket A-110150F0035 (December 2006 and January 2007) [Conditions for approval of merger; low income and customer service programs]

Testimony before the House Least Cost Power Procurement Committee, Illinois General Assembly, on HB 1510, on behalf of AARP [March 22, 2007]

Rebuttal and Surrebuttal Testimony on behalf of Pennsylvania Office of Consumer Advocate before the Pennsylvania PUC, Petition of Duquesne Light Co. for Approval of Default Service Plan for January 1, 2008 to December 31, 2010, Docket No. P-00072247 [April 2007] [Default Service policies]

Comments and Reply Comments on behalf of AARP New Jersey before the Board of Public Utilities BGS Working Group concerning BGS procurement policies and proposed demand response program, (March-May 2007) [Default Service policies]

Comments on behalf of AARP New Jersey to the New Jersey BPU Staff on draft proposed USF regulations (May 2007) [Low income program design and implementation]

Alexander, Barbara, Smart Meters, Real Time Pricing, And Demand Response Programs: Implications For Low Income Electric Customers (May 2007)

Direct and Surrebuttal Testimony on behalf of Maine Office of Public Advocate before the Maine Public Utilities Commission, Re: Joint Application for Approvals Related to Verizon's Transfer of Property and Customer Relations to Company to be Merged with and into FairPoint Communications, Inc., Docket 2007-67 (July and September 2007) [Service Quality and Customer Service Conditions for Merger]

Testimony on behalf of AARP Montana before the Montana Public Service Commission, In the Matter of Montana Dakota Utilities Co., Public Service Commission Investigation and Direction on Electric and Natural Gas Universal System Benefits, Docket No. D2006.1.2 (July 30, 2007) [Design and funding for low income programs]

Direct and Surrebuttal Testimony on behalf of Maine Office of Public Advocate before the Maine Public Utilities Commission, Central Maine Power Co. Chapter 120 Information (Post ARP 2000) Transmission and Distribution Utility Revenue Requirement and Rate Design And Request for Alternative Rate Plan, Docket No. 2007-215 (August 30, 2007 and February 2008) [AMI deployment]

Direct and Reply Testimony on behalf of AARP Maryland before the Maryland Public Service Commission, In the Matter of the Commission's Investigation of Investor-Owned Electric Companies' Standard Offer Service for Residential and Small Commercial Customers in Maryland, Case No. 9117, Phase I and II (September 2007) [Default Service policies]

Testimony on behalf of AARP Maryland before the Maryland Public Service Commission, In the Matter of the Commission's Investigation of Advanced Metering Technical Standards, Demand Side Management Competitive Neutrality, and Recovery of Costs of Advanced Meters and Demand Side Management Programs, Case 9111 (November 2, 2007) [Default Service policies; AMI deployment]

Comments on behalf of AARP District of Columbia before the D.C. Public Service Commission, In the Matter of The Application Of Potomac Electric Power Co. For Authorization to Establish A Demand Side Management Surcharge and an Advanced Metering Infrastructure Surcharge And to Establish a DSM Collaborative and an AMI Advisory Group, Formal Case No. 1056 (August 10, September 10, November 13, 2007, April 2008) [Default Service policies; AMI deployment]

Comments on behalf of AARP District of Columbia before the D. C. Public Service Commission, Re: The Petition of the Office of the People's Counsel for the District of Columbia for an Investigation into the Structure of the Procurement Process for Standard Offer Service, Formal Case No. 1047 (November 2007) [Default Service policies]

Direct, Rebuttal and Surrebuttal testimony on behalf of the Pennsylvania Office of Consumer Advocate before the Pennsylvania PUC, Petition of the West Penn Power Co. d/b/a Allegheny Power for Approval of its Retail Electric Default Service Program and Competitive Procurement Plan for Service at the Conclusion of the Restructuring Transition Period, Docket No. P-00072342 (February-March 2008) {Default service procurement policies]

Testimony on behalf of AARP before the Virginia Commission on Electric Utility Restructuring in the General Assembly on HB 1523 and SB 311 (January 2007) [Electric Utility Integrated Resource Planning]

Testimony on behalf of AARP before the Ohio House of Representatives on SB 221 (February 2008) [Default Service procurement policies for post-transition period]

Alexander, Barbara, The Federalization Of Energy Prices: How Policies Adopted By The Federal Energy Regulatory Commission Impact Electricity Prices For Residential Customers: A Plain Language Primer (March 2008)

Comments on behalf of AARP before the New Jersey Board of Public Utilities, In the Matter of the Universal Service Fund, Docket Nos. EO07110888 and EX00020091 (April 2008) [low income program; automatic enrollment]

Direct and Surrebuttal testimony on behalf of the Pennsylvania Office of Consumer Advocate before the Pennsylvania Public Utility Commission, PUC v. Columbia Gas of Pennsylvania, Inc., Docket No. R-2008-2011621 (May and June 2008) [rate case: retail gas competition and Purchase of Receivables program]

Direct Testimony on behalf of Public Counsel and the Energy Project before the Washington Utilities and Transportation Commission, WUTC v. Puget Sound Energy, Inc., Docket Nos. UE-072300 and UG-072301 (May 2008) [revisions to Service Quality Index; storm cost recovery; fixed customer charge; low income program funding]

Direct Testimony on behalf of Public Counsel and the Energy Project before the Washington Utilities and Transportation Commission, In the matter of the Application of Puget Holdings LLC and Puget Sound Energy for an Order Authorizing Transaction, Docket No. U-072375 (June 2008) [Conditions for Sale: customer service; low income programs]

Direct Testimony on behalf of Local 223, UWUA before the Michigan Public Service Commission, In the Matter of the

application of Detroit Edison Co. for authority to increase its rates, Case No. U-15244 (July 2008) [Customer Service standards; Advanced Metering proposal]

Reply Testimony on behalf of AARP before the Mississippi Public Service Commission, Proceeding to Review Statewide Energy Generation Needs, Docket No. 2008-AD-158 (August 2008) [Integrated Resource Planning]

Comments on behalf of Local 223, UWUA before the Michigan Public Service Commission, In the matter, on the Commission's own Motion, to investigate the development of minimum functionality standards and criteria for advanced metering infrastructure (AMI), Case No. U-15620 {August 2008) [Advanced Metering policies and standards]

Direct and Rebuttal Testimony on behalf of Illinois Citizens Utility Board and AARP before the Illinois Commerce Commission, Citizens Utility Board, Citizens Action/Illinois and AARP vs. Illinois Energy Savings Corp. d/b/a U.S. Energy Savings Corp., Complaint pursuant to 220 ILCS 5/19-110 or 19-115, Docket 08-0175. (August and November 2008) [Investigation of marketing activities and licensing conditions of an alternative gas supplier]

Direct Testimony on behalf of Ohio Partners for Affordable Energy before the Public Utilities Commission of Ohio on filings by electric utilities pursuant to SB 221: Market Rate Option plan filed by FirstEnergy (Case No. 08-936-EL-SSO), Electric Security Plan filed by FirstEnergy (Case No. 08-935-EL-SSO), and Electric Security Plan filed by AEP Ohio (Case No.08-917-EL-SSO & Case No. 08-918-EL-SSO) (September-November 2008) [Default Service procurement policies; energy efficiency and smart meter proposals]

Reply, Surrebuttal, and Supplemental Testimony on behalf of Maryland Office of People's Counsel before the Maryland Public Service Commission, In the Matter of Appropriate Forms of Regulating Telephone Companies, Case No. 9133 (August and October 2008; July 2009) [service quality performance conditions for alternative rate regulation of Verizon-MD]

Comments on behalf of AARP before the Idaho Public Utilities Commission, In the Matter of the Application Of Idaho Power Co. for a Certificate of Public Convenience and Necessity to Install Advanced Metering Infrastructure ("AMI") Technology Throughout its Service Territory, Case No. IPC-E-08-16 (December 2008) [Smart Meter costs and benefits]

Direct and Surrebuttal Testimony on behalf of the Pennsylvania Office of Consumer Advocate before the Pennsylvania Public Utility Commission, Joint Application for the Authority and Necessary Certificates of Public Convenience to Transfer all of the Issued and Outstanding Shares of Capital Stock of the Peoples Natural Gas Co. d/b/a Dominion Peoples, Currently owned by Dominion Resources, Inc. to Peoples Hope Gas Companies LLC, an Indirect Subsidiary of Babcock & Brown Infrastructure Fund North America LP, and to Approve the Resulting Change in Control of the Peoples Natural Gas Co. d/b/a Dominion Peoples, Docket No. A-2008-2063737 (December 2008 and July 2009) [Proposed conditions relating to Service Quality and Universal Service programs]

Rebuttal Testimony on behalf of Pennsylvania Office of Consumer Advocate before the Pennsylvania PUC, Petition of PPL Electric Utilities Corp. for Approval of a Default Service Program and Procurement Plan, Docket No. P-2008-2060309 (January 2009) [Retail Market Programs]

Rebuttal Testimony on behalf of Pennsylvania Office of Consumer Advocate before the Pennsylvania PUC, Petition of PECO Energy Co. for Approval of its Default Service Program and Rate Mitigation Plan, Docket No. P-2008-2062739 (January 2009) [Retail Market Programs]

Comments on behalf of AARP before the Mississippi Public Service Commission, In Re: Order Establishing Docket to Consider standards established by the Energy Independence and Security Act of 2007, Docket No. 2008-ad-477 (February 2009) [PURPA Policies; Integrated Resource Planning; Time-Based Pricing]

Co-Author of Comments on behalf of The Utility Reform Network (TURN) before the California Public Utilities Commission, Order Instituting Rulemaking to consider Smart Grid Technologies Pursuant to Federal Legislation and on the Commission's own Motion to Actively Guide Policy in California's Development of a Smart Grid System, Docket R. 08-

12-009 (2009 and 2010) [Smart Grid policies]

Direct and Rebuttal Testimony on behalf of the Attorney General of the Commonwealth of Massachusetts before the Department of Public Utilities, Investigation by the Department of Public Utilities on its Own Motion into the Preparation and Response on Fitchburg Gas & Electric Co. d/b/a Unitil to the December 12, 2008 Winter Storm, D.P.U. 09-01-A (March and April 2009) [Investigation of storm restoration practices]

Testimony on behalf of UWUA Local 132 before the California Public Utilities Commission, Southern California Gas Co. Advanced Metering Infrastructure, Docket No. A.08-09-023 (April 2009) [Advanced metering deployment]

Direct and Rebuttal Testimony on behalf of the Delaware Public Service Commission Staff before the Delaware Public Service Commission, In the Matter of the Investigation into the Business and Marketing Practices of Horizon Power and Light, LLC, Docket No. 355-08 (April and June 2009) [Investigation into marketing and contract practices of licensed electricity supplier]

Testimony on behalf of AARP before the District of Columbia Public Service Commission, In the Matter of the Application of Potomac Electric Power Co. for Authority to Establish a Demand Side Management Surcharge and an Advanced Metering Infrastructure Surcharge and to Establish a DSM Collaborative and an AMI Advisory Group, Formal Case No. 1056 (June 2009) [Advanced Metering proposal]

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- Presentation, Smart Grid Future, Brookings Institute, Washington, DC [July 2010]
- Participant, Fair Pricing Conference, Rutgers Business School, New Jersey [April 2010]
- Presentation on Smart Metering, National Regulatory Conference, Williamsburg, VA [May 2010]
- Presentation on Smart Metering, Energy Bar Association Annual Meeting, Washington, DC [November 2009]
- Presentation at Workshop on Smart Grid policies, California PUC [July 2009]
- National Energy Affordability and Energy Conference (NEAUC) Annual Conference
- NARUC annual and regional meetings
- NASUCA annual an regional meetings
- National Community Action Foundation's Annual Energy and Community Economic Development Partnerships Conference
- Testimony and Presentations to State Legislatures: Virginia, New Jersey, Texas, Kentucky, Illinois, and Maine
- Training Programs for State Regulatory Commissions: Pennsylvania, Georgia, Kentucky, Illinois, New Jersey
- DOE-NARUC National Electricity Forum
- AIC Conference on Reliability of Electric Service
- Institute of Public Utilities, MSU (Camp NARUC) [Instructor 1996-2006]
- Training Programs on customer service and service quality regulation for international regulators (India and Brazil) on behalf of Regulatory Assistance Project
- Georgia Natural Gas Deregulation Task Force [December 2001]
- Mid Atlantic Assoc. of Regulatory Utility Commissioners [July 2003]
- Illinois Commerce Commission's Post 2006 Initiative [April 2004]
- Delaware Public Service Commission's Workshop on Standard Offer Service [August 2004]

BARBARA ALEXANDER

STATE MANDATES FOR AMI FUNCTIONALITIES IN EFFECT AT THE TIME OF DUKE'S INSTALLATION OF ITS ECHELON METERING SYSTEM

MARYLAND

In September 2007 the Maryland Public Service Commission adopted the following statewide minimum functionalities and criteria for an advanced metering system[1]:

- A minimum of hourly meter reads delivered one time per day.
- Non-discriminatory access for retail electric suppliers and curtailment service providers to meter data and demand response control functions that is equivalent to the electric company's own access to those functions.
- AMI shall be implemented for all customers of the electric company.
- Metering and meter data management should generally continue to be an electric company function including the implementation of AMI/MDM. Metering and data management options may be considered for larger non-residential customers (this does not exclude any customer from a requirement that their AMI shall at a minimum be fully consistent with all AMI standards). For example, if an industrial or commercial customer (and its retail

[1] Maryland Public Service Commission, *In The Matter Of The Commission's Investigation Of Advanced Metering Technical Standards, Demand Side Management Cost Effectiveness Tests, Demand Side Management Competitive Neutrality, And Recovery Of Costs Of Advanced Meters And Demand Side Management Programs*, Case No. 9111, Order No. 81637 (Sept. 28, 2007).

supplier or CSP) requires more frequent meter reads or downloads, the utility shall work in good faith to accommodate such requirements.

- All AMI meters shall have the ability to monitor voltage at each meter and report the data in a manner that allows the utility to react to the information.
- All meters shall have remote programming capability.
- All meters shall be capable of two-way communications.
- Remote disconnect / reconnect for all meters rated at or below 200 amps.
- Time-stamp capability for all AMI meters.
- All meters shall have a minimum of 14 days of data storage capability on the meter.
- All meters shall communicate outages and restorations.
- All meters shall be net metering and bi-directional metering capable.

Several of these key requirements cannot be met by Duke's Echelon metering system due to its inability to provide billing quality interval usage data, inability to communicate outages and restorations, voltage monitoring, or allow remote programming capability.

MAINE

Central Maine Power Co. proposed an AMI deployment for its electric customers to the Maine Public Utilities Commission in 2007, relying in part on funding from the U.S. Department of Energy under the same grant opportunity pursued by Duke.[2] In its filing that describes its AMI proposal, CMP defined a typical AMI system and proposed as part of its deployment that it would implement a peak time rebate program that relies on the interval hourly usage information to track customer usage and determine peak time rebate events. In its proposal to the Maine Commission, CMP identified the components of an "AMI" system:

- Advanced meters to record near real-time or real-time consumption, demand, voltage, and other information;
- Communications infrastructure to collect and transport the data between the customer premises and the utility data center; and
- A data center to support AMI Network Management Software and the Meter Data Management System ("MDMS"). The AMI Network Management Software will manage meter reading scheduling, the collection of reads, and the coordination of routine customer and meter data changes. The MDMS will handle the large volumes of data collected and link into key operating systems of the utility.

[2] Maine Public Utilities Commission, *Central Maine Power Co., Request for New Alternative Rate Plan*, Docket No. 2007-215, Testimony of Mary Elizabeth Nowack Cowan (Redacted). Volume V-B, Advanced Metering Infrastructure (May 1, 2007).

With regard to demand response potential with AMI, CMP described how the new system would "provide a platform for the delivery of new and enhanced demand response programs…" including using the hourly usage information to:

- provide enhanced price-based demand response pricing plans, including day-ahead RTF and CPP programs offered by energy suppliers;
- provide enhanced incentive-based demand response programs, including direct load control offered by third-party demand response providers or energy suppliers; and
- educate customers about electricity usage by providing access to customized usage information via the Company's Web portal.

CMP's AMI proposal, one year prior to Duke's smart grid application in Ohio, reflected basic functionalities that are not present with the Duke metering system, particularly with respect to Duke's Echelon metering system that cannot generate billing quality interval usage data either for Duke or for any CRES provider to provide time of use pricing options to consumers or connect with customer in-home devices.

TEXAS

The Texas Public Utilities Commission adopted a formal rule that was effective May 2007, two years prior to Duke's receipt of federal DOE "smart grid" grant funds for its Echelon metering system, that defined the functionalities of an "advanced metering system" to guide the Texas distribution utilities in such investments. The Texas PUC's Advanced Metering Rule[3] defines an Advanced Meter, an Advanced Metering System, and sets forth specific minimum functionalities that an Advanced Metering System must reflect in order to qualify for cost recovery:

> (1) Advanced meter -- Any new or appropriately retrofitted meter that functions as part of an advanced metering system and that has the features specified in this section.
>
> (2) Advanced Metering System (AMS) -- A system, including advanced meters and the associated hardware, software, and communications systems, including meter information networks, that collects time-differentiated energy usage and performs the functions and has the features specified in this section.
>
> (g) AMS features.
>
> (1) An AMS shall provide or support the following minimum system features in order to obtain cost recovery through a surcharge pursuant to subsection (k) of this section:
>
> (A) automated or remote meter reading;
>
> (B) two-way communications;
>
> (C) remote disconnection and reconnection capability for meters rated at or below 200 amps, provided that an electric utility shall be considered in compliance with this provision if it makes this function available in all advanced meters installed after the effective date of this rule, and the following meters shall also be considered in compliance with this provision: those advanced meters that were ordered prior to the effective date of this rule, not to exceed 65,000 meters over the number

[3] §25.130. Advanced Metering, eff. 5/30/2007.

of meters received or ordered as of May 10, 2007, and are provisioned with all the features enumerated in this paragraph except remote disconnect and reconnect capability, if those advanced meters are installed by December 31, 2007, and the number of advanced meters installed with all the features enumerated in this paragraph except remote disconnect and reconnect capability does not exceed 18% of the total number of advanced meters installed by the electric utility pursuant to a Deployment Plan.

(D) the capability to time-stamp meter data sent to the independent organization or regional transmission organization for purposes of wholesale settlement, consistent with time tolerance standards adopted by the independent organization or regional transmission organization;

(E) the capability to provide direct, real-time access to customer usage data to the customer and the customer's REP, provided that:

> (i) hourly data shall be transmitted to the electric utility's web portal on a day-after basis.
> (ii) the commission staff using a stakeholder process, as soon as practicable shall determine, subject to commission approval, when and how 15-minute IDR data shall be made available on the electric utility's web portal.

(F) means by which the REP [Retail Electricity Provider] can provide price signals to the customer;

(G) the capability to provide 15-minute or shorter interval data to REPs, customers, and the independent organization or regional transmission organization, on a daily basis, consistent with data availability, transfer and security standards adopted by the independent organization or regional transmission organization;

(H) on-board meter storage of meter data that complies with nationally recognized non-proprietary standards such as in American National Standards Institute (ANSI) C12.19 tables;
(I) open standards and protocols that comply with nationally recognized non-proprietary standards such as ANSI C12.22, including future revisions thereto;

> (J) capability to communicate with devices inside the premises, including, but not limited to, usage monitoring devices, load control devices, and prepayment systems through a home area network (HAN), based on open standards and protocols that comply with nationally recognized non-proprietary standards such as ZigBee, Home-Plug, or the equivalent; and
>
> (K) the ability to upgrade these minimum capabilities as technology advances and, in the electric utility's determination, become economically feasible.

Duke's Echelon metering system does not conform with the following requirements for Advanced Metering Systems adopted in Texas in 2007 as reflected in Paragraphs (E), (F), (G), (H), (I), (J), and (K).

Duke Energy Ohio
Case No. 17-0032-EL-AIR
OCC Fifth Set of Interrogatories
Date Received: May 18, 2017

OCC-INT-05-112
CONFIDENTIAL

REQUEST:

CONFIDENTIAL

Refer to Confidential Exhibit CDK-1 attached to Mr. Kiergan's smart grid business case testimony dated July 24, 2008 in Case 07-589-GA-AIR. The exhibit on pages 31-32 of 48 cites a variety of benefits categorized as "Metering" from smart meter installation as shown in the table below. Please complete the table by completing the fields described in the column headings for each benefit. If any estimates are made in the completion of a field, please provide all calculations, assumptions, and workpapers, with any electronic spreadsheet calculations intact and executable.

RESPONSE:

CONFIDENTIAL PROPRIETARY TRADE SECRET

Metering	Accounts used to record these expenses or revenues	Spending (or Revenue) 1/1/2010-12/31/2010	Spending (or Revenue) in test year 4/1/2016-3/31/2017	Notes (changes in accounting practices, reclassifications or recategorizations, or other issues which might impair comparisons of 2010 spending or revenues to 2016/ 2017 test year spending or revenues)
Regular Meter Reading Expense				
Off-Cycle Meter Reading Expense				
Reduce single call dispatches.				
Theft Recovered (Revenue)				
Theft Recovery Expense				
Meter Test & Repair Expense				

Avoided Capital Meter Costs				
Meter Salvage Revenue				

RESPONSE:

Objection. This Interrogatory is overly broad and unduly burdensome, given that it seeks information that is neither relevant to this proceeding nor likely to lead to the discovery of admissible evidence in this proceeding. Without waiving said objection, to the extent discoverable, the Stipulation that OCC agreed to that was adopted and approved by the Commission in Case No. 10-2326-GE-RDR governs the amount of savings the Company agreed to return to customers. The stipulating parties agreed to this amount due to the fact that some savings were quantifiable and some were not. Accordingly, other than to ensure compliance with the Commission's Opinion and Order in that case, the Company does not track savings the data requested.

PERSON RESPONSIBLE: Legal

Duke Energy Ohio
Case No. 17-0032-EL-AIR
OCC Fifth Set of Interrogatories
Date Received: May 18, 2017

OCC-INT-05-113
CONFIDENTIAL

REQUEST:

CONFIDENTIAL

Refer to Confidential Exhibit CDK-1 attached to Mr. Kiergan's smart grid business case testimony dated July 24, 2008 in Case 07-589-GA-AIR. The exhibit on page 33 of 48 cites a variety of benefits categorized as "Outage" resulting from smart meter installation as shown in the table below. Please complete the table by completing the fields described in the column headings for each benefit. If any estimates are made in the completion of a field, please provide all calculations, assumptions, and workpapers, with any electronic spreadsheet calculations intact and executable.

RESPONSE:

CONFIDENTIAL PROPRIETARY TRADE SECRET

Outage	Accounts used to record these expenses or revenues	Spending (or Revenue) 1/1/2010-12/31/2010	Spending (or Revenue) in test year 4/1/2016-3/31/2017	Notes (changes in accounting practices, reclassifications or recategorizations, or other issues which might impair comparisons of 2010 spending or revenues to 2017 GRC test year spending or revenues)
Outage Assessment Reduction.				
Outage Crew Time Reduction – Outage verifications.				
OCB/Recloser Failure Identification				

Expense.				
Incremental Revenue from faster restoration				

RESPONSE:

Objection. This Interrogatory is overly broad and unduly burdensome, given that it seeks information that is neither relevant to this proceeding nor likely to lead to the discovery of admissible evidence in this proceeding. Without waiving said objection, to the extent discoverable, the Stipulation that OCC agreed to that was adopted and approved by the Commission in Case No. 10-2326-GE-RDR governs the amount of savings the Company agreed to return to customers. The stipulating parties agreed to this amount due to the fact that some savings were quantifiable and some were not. Accordingly, other than to ensure compliance with the Commission's Opinion and Order in that case, the Company does not track savings the data requested.

PERSON RESPONSIBLE: Legal

Duke Energy Ohio
Case No. 17-0032-EL-AIR
OCC Fifth Set of Interrogatories
Date Received: May 18, 2017

OCC-INT-05-114
CONFIDENTIAL

REQUEST:

CONFIDENTIAL

Refer to Confidential Exhibit CDK-1 attached to Mr. Kiergan's smart grid business case testimony dated July 24, 2008 in Case 07-589-GA-AIR. The exhibit cites a variety of benefits on pages 34-35 of 48 categorized as "Distribution". Please complete the table by completing the fields described in the column headings for each benefit. If any estimates are made in the completion of a field, please provide all calculations, assumptions, and workpapers, with any electronic spreadsheet calculations intact and executable.

RESPONSE:

CONFIDENTIAL PROPRIETARY TRADE SECRET

Distribution	Accounts used to record these expenses or revenues	Spending (or Revenue) 1/1/2010-12/31/2010	Spending (or Revenue) in test year 4/1/2016-3/31/2017	Notes (changes in accounting practices, reclassifications or recategorizations, or other issues which might impair comparisons of 2010 spending or revenues to 2017 GRC test year spending or revenues)
System Voltage Control – Reduction in Demand				
Power Shortage Voltage Reduction – Reduction in Demand				
Reduction in				

number of FTE's monitoring voltage expense				
VAR Management – Reduction in Demand				
Reduction in CapEx – through improved asset management				
Reduced maintenance costs - Capacitor Inspection				
Reduced maintenance costs - Circuit Breaker Inspections.				
Reduced line losses through system fine-tuning (energy, capacity, CO2)				

RESPONSE:

Objection. This Interrogatory is overly broad and unduly burdensome, given that it seeks information that is neither relevant to this proceeding nor likely to lead to the discovery of admissible evidence in this proceeding. Without waiving said objection, to the extent discoverable, the Stipulation that OCC agreed to that was adopted and approved by the Commission in Case No. 10-2326-GE-RDR governs the amount of savings the Company agreed to return to customers. The stipulating parties agreed to this amount due to the fact that some savings were quantifiable and some were not. Accordingly, other than to ensure compliance with the Commission's Opinion and Order in that case, the Company does not track the data requested.

PERSON RESPONSIBLE: Legal

Duke Energy Ohio
Case No. 17-0032-EL-AIR
OCC Fifth Set of Interrogatories
Date Received: May 18, 2017

OCC-INT-05-115
CONFIDENTIAL

REQUEST:

CONFIDENTIAL

Refer to Confidential Exhibit CDK-1 attached to Mr. Kiergan's smart grid business case testimony dated July 24, 2008 in 07-589-GA-AIR. The exhibit cites a variety of benefits on pages 34-35 of 48 categorized as "Distribution" resulting from automated Volt-VAr control.

a. Please provide a database of hourly "head end" voltage readings for each circuit in the Company's distribution grid for 2010 (8,760 hours per circuit).
b. Please provide a database of "head end" voltage readings by hour for each circuit in the Company's distribution grid for 2016 (8,760 hours per circuit).
c. Please provide a list of every "shortage hour" – Month/Date/Hour – in 2010. You may simply indicate such hours in the database provided in response to "a" above.
d. Please provide a list of every "shortage hour" – Month/Date/Hour – in 2016. You may simply indicate such hours in the database provided in response to "b" above.

RESPONSE:

Objection. This Interrogatory is overly broad and unduly burdensome, given that it seeks information that is neither relevant to this proceeding nor likely to lead to the discovery of admissible evidence in this proceeding. Without waiving said objection, to the extent discoverable, the Stipulation that OCC agreed to that was adopted and approved by the Commission in Case No. 10-2326-GE-RDR governs the amount of savings the Company agreed to return to customers. The stipulating parties agreed to this amount due to the fact that some savings were quantifiable and some were not. Accordingly, other than to ensure compliance with the Commission's Opinion and Order in that case, the Company does not track the data requested.

PERSON RESPONSIBLE: Legal

Duke Energy Ohio
Case No. 17-0032-EL-AIR
OCC Fifth Set of Interrogatories
Date Received: May 18, 2017

OCC-INT-05-116
CONFIDENTIAL

REQUEST:

CONFIDENTIAL

Refer to Confidential Exhibit CDK-1 attached to Mr. Kiergan's smart grid business case testimony dated July 24, 2008 in Case 07-589-GA-AIR. The exhibit cites a variety of benefits on pages 34-35 of 48 categorized as "Distribution" resulting from automated Volt-VAr control. Please identify each use of Volt-VAr capabilities to reduce demand due to system or local load peaks in 2016. For each instance please provide:

a. A list of the circuits to which adjustments were made via the Volt-VAr control system
b. The date of the instance
c. The start time of the instance
d. The stop time of the instance

RESPONSE:

Objection. This Interrogatory is overly broad and unduly burdensome, given that it seeks information that is neither relevant to this proceeding nor likely to lead to the discovery of admissible evidence in this proceeding. Without waiving said objection, to the extent discoverable, the Stipulation that OCC agreed to that was adopted and approved by the Commission in Case No. 10-2326-GE-RDR governs the amount of savings the Company agreed to return to customers. The stipulating parties agreed to this amount due to the fact that some savings were quantifiable and some were not. Thus, the matters raised in Mr. Kiergan's business case were resolved in Case 10-2326-EL-RDR and are moot and otherwise not relevant to this proceeding.

PERSON RESPONSIBLE: Legal

Duke Energy Ohio
Case No. 17-0032-EL-AIR
OCC Fifth Set of Interrogatories
Date Received: May 18, 2017

OCC-INT-05-117
CONFIDENTIAL

REQUEST:

CONFIDENTIAL

Refer to Confidential Exhibit CDK-1 attached to Mr. Kiergan's smart grid business case testimony dated July 24, 2008 in Case 07-589-GA-AIR. The exhibit on pages 34-35 of 48 cites benefits categorized as "Distribution" including "Capital avoided through improved asset management".

a. Please describe how the Company uses distribution upgrades, deployed as part of its DOE Smart Grid Investment Grant-related deployment in the early part of this decade, to improve asset management.
b. Please provide copies of any Asset Management function processes or procedures which mention the use of any such distribution upgrades.
c. Please provide examples of any capital investments avoided through improved asset management processes or procedures making use of such distribution upgrades in 2016. Include the value of capital investments avoided for each example.
d. Please estimate the total amount of capital investments avoided through improved asset management processes or procedures making use of such distribution upgrades in 2016.

RESPONSE:

a. Objection. This Interrogatory is overly broad and unduly burdensome, given that it seeks information that is neither relevant to this proceeding nor likely to lead to the discovery of admissible evidence in this proceeding. Without waiving said objection, to the extent discoverable, the Stipulation that OCC agreed to that was adopted and approved by the Commission in Case No. 10-2326-GE-RDR governs the amount of savings the Company agreed to return to customers. The stipulating parties agreed to this amount due to the fact that some savings were quantifiable and some were not. Moreover, the Company cannot discern or otherwise report data as requested because there is no separate "DOE SmartGrid Investment Grant-related deployment."

b. See response to a. above.
c. See response to a. above.
d. See response to a. above.

PERSON RESPONSIBLE: Legal

Duke Energy Ohio
Case No. 17-0032-EL-AIR
OCC Fifth Set of Interrogatories
Date Received: May 18, 2017

OCC-INT-05-118
CONFIDENTIAL

REQUEST:

CONFIDENTIAL

Refer to Confidential Exhibit CDK-1 attached to Mr. Kiergan's smart grid business case testimony dated July 24, 2008 in Case 07-589-GA-AIR. The exhibit on pages 34-35 of 48 cites a variety of benefits categorized as "Distribution" including "Fine tuning to avoid kWh and kW".

a. Please describe how the Company uses distribution upgrades, deployed as part of its DOE Smart Grid Investment Grant-related deployment in the early part of this decade, to fine tune grid configurations, equipment settings, or similar adjustments.
b. Please provide copies of any Grid Operations or Capacity Planning function processes or procedures which mention the use of any such distribution upgrades.
c. Please provide examples of any fine tuning adjustments made by the grid operations or capacity planning functions which made use of such distribution upgrades in 2016. Include the value of kWh conserved or kW reduced for each example.
d. Please estimate the total amount of kWh conserved or kW reduced through fine tuning adjustments which made use of such distribution upgrades in 2016.

RESPONSE:

a. Objection. This Interrogatory is overly broad and unduly burdensome, given that it seeks information that is neither relevant to this proceeding nor likely to lead to the discovery of admissible evidence in this proceeding. Without waiving said objection, to the extent discoverable, the Stipulation that OCC agreed to that was adopted and approved by the Commission in Case No. 10-2326-GE-RDR governs the amount of savings the Company agreed to return to customers. The stipulating parties agreed to this amount due to the fact that some savings were quantifiable and some were not. Moreover, the Company cannot discern or otherwise report data as requested because there is no separate "DOE SmartGrid Investment Grant-related deployment."

b. See response to a. above.
c. See response to a. above.
d. See response to a. above.

PERSON RESPONSIBLE: Legal

Duke Energy Ohio
Case No. 17-0032-EL-AIR
OCC Fifth Set of Interrogatories
Date Received: May 18, 2017

OCC-INT-05-119
CONFIDENTIAL

REQUEST:

CONFIDENTIAL

Refer to Confidential Exhibit CDK-1 attached to Mr. Kiergan's smart grid business case testimony dated July 28, 2008 in Case 07-589-GA-AIR. The exhibit of page 36 of 48 cites a variety of benefits categorized as "Other" resulting from the Company's smart grid investments. Please complete the table by completing the fields described in the column headings for each benefit. If any estimates are made in the completion of a field, please provide all calculations, assumptions, and workpapers, with any electronic spreadsheet calculations intact and executable.

RESPONSE:

CONFIDENTIAL PROPRIETARY TRADE SECRET

Distribution	Accounts used to record these expenses or revenues	Spending (or Revenue) 1/1/2010-12/31/2010	Spending (or Revenue) in test year 4/1/2016-3/31/2017	Notes (changes in accounting practices, reclassifications or recategorizations, or other issues which might impair comparisons of 2010 spending or revenues to 2017 GRC test year spending or revenues)
Call Center Efficiency Expense (not including spending for automated calls)				
Reduction in Workers Comp Claims Expense				

Reduction in vehicle management Expense (Meter Reading Vehicle)				

RESPONSE:
Objection. This Interrogatory is overly broad and unduly burdensome, given that it seeks information that is neither relevant to this proceeding nor likely to lead to the discovery of admissible evidence in this proceeding. Without waiving said objection, to the extent discoverable, the Stipulation that OCC agreed to that was adopted and approved by the Commission in Case No. 10-2326-GE-RDR governs the amount of savings the Company agreed to return to customers. The stipulating parties agreed to this amount due to the fact that some savings were quantifiable and some were not. Accordingly, other than to ensure compliance with the Commission's Opinion and Order in that case, the Company does not track the data requested.

PERSON RESPONSIBLE: Legal

Duke Energy Ohio
Case No. 17-0032-EL-AIR
OCC Fifth Set of Interrogatories
Date Received: May 18, 2017

OCC-INT-05-120
CONFIDENTIAL

REQUEST:

CONFIDENTIAL

Refer to Confidential Exhibit CDK-1 attached to Mr. Kiergan's smart grid business case testimony dated July 24, 2008 in Case 07-589-GA-AIR. The exhibit cites on page 36 of 48 a variety of benefits categorized as "Other" resulting from the Company's smart grid investments. Please complete the table by completing the fields described in the column headings for each benefit. If any estimates are made in the completion of a field, please provide all calculations, assumptions, and workpapers, with any electronic spreadsheet calculations intact and executable.

RESPONSE:

CONFIDENTIAL PROPRIETARY TRADE SECRET

	1/1/2010-12/31/2010	Test Year 4/1/2016-3/31/2017
Call Center Call Volume (not including automated calls)		
Estimated Call Center expense reduction due to smart grid	Not applicable	
Average days, meter read to bill date		
Estimated economic benefit of shortened billing cycle	Not applicable	
Percent of Bills Estimated		
Estimated economic benefit of reduction in estimated bills		

RESPONSE:

Objection. This Interrogatory is overly broad and unduly burdensome, given that it seeks information that is neither relevant to this proceeding nor likely to lead to the discovery of admissible evidence in this proceeding. Without waiving said objection, to the extent discoverable, the Stipulation that OCC agreed to that was adopted and approved by the Commission in Case No. 10-2326-GE-RDR governs the amount of savings the Company agreed to return to customers. The stipulating parties agreed to this amount due to the fact that some savings were quantifiable and some were not. Accordingly, other than to ensure compliance with the Commission's Opinion and Order in that case, the Company does not track the data requested.

PERSON RESPONSIBLE: Legal

Duke Energy Ohio
Case No. 17-0032-EL-AIR
OCC Fifth Set of Interrogatories
Date Received: May 18, 2017

OCC-INT-05-121
CONFIDENTIAL

REQUEST:

CONFIDENTIAL

Refer to Confidential Exhibit CDK-1 attached to Mr. Kiergan's smart grid business case testimony dated July 24, 2008 in Case 07-589-GA-AIR. The exhibit on page 37 of 48 cites a variety of benefits categorized as "Customer/Societal" resulting from the Company's smart grid investments. Please complete the table by completing the fields described in the column headings for each benefit. If any estimates are made in the completion of a field, please provide all calculations, assumptions, and workpapers, with any electronic spreadsheet calculations intact and executable.

RESPONSE:

CONFIDENTIAL PROPRIETARY TRADE SECRET

	1/1/2010-12/31/2010	**Test Year 4/1/2016-3/31/2017**
SAIDI		
SAIFI		
Weighted Ave. Value of Service		
PRIUS (Customer Feedback) conservation estimate	Not applicable	
Estimate of capital investment otherwise likely avoided from PHEV		
Vehicle charging station count		

Average kW per PHEV charging station		

RESPONSE:

Objection. This Interrogatory is overly broad and unduly burdensome, given that it seeks information that is neither relevant to this proceeding nor likely to lead to the discovery of admissible evidence in this proceeding. Without waiving said objection, to the extent discoverable, the Stipulation that OCC agreed to that was adopted and approved by the Commission in Case No. 10-2326-GE-RDR governs the amount of savings the Company agreed to return to customers. The stipulating parties agreed to this amount due to the fact that some savings were quantifiable and some were not. Accordingly, other than to ensure compliance with the Commission's Opinion and Order in that case, the Company does not track the data requested.

PERSON RESPONSIBLE: Legal

Duke Energy Ohio
Case No. 17-0032-EL-AIR
OCC Fifth Set of Interrogatories
Date Received: May 18, 2017

OCC-INT-05-112 through 121

SUPPLEMENTAL RESPONSE:

This series of questions relates to the Smart Grid Business Case that was attached to the testimony of Christopher Kiergan in Case No.07-589-GA-AIR, July 24, 2008.

Duke Energy Ohio originally responded as follows:

Without waiving said objection, to the extent discoverable, the Stipulation that OCC agreed to that was adopted and approved by the Commission in Case No. 10-2326-GE-RDR governs the amount of savings the Company agreed to return to customers. The stipulating parties agreed to this amount due to the fact that some savings were quantifiable and some were not. Accordingly, other than to ensure compliance with the Commission's Opinion and Order in that case, the Company does not track the data requested.

In addition to the above response, see below:

For **INT-05-112, INT-05-113, INT-05-114**, as explained in the previous response, the Company does not track the data requested.

For **INT-05-115 and INT-05-116,** (Duke Energy Ohio is still compiling this data and will provide it as soon as it is available.)

Supplemental Response for OCC- INT-05-117:

Refer to Confidential Exhibit CDK-1 attached to Mr. Kiergan's smart grid business case testimony dated July 24, 2008 in Case 07-589-GA-AIR. The exhibit on pages 34-35 of 48 cites benefits categorized as "Distribution" including "Capital avoided through improved asset management".

a. Please describe how the Company uses distribution upgrades, deployed as part of its DOE Smart Grid Investment Grant-related deployment in the early part of this decade, to improve asset management.

Duke Energy Ohio assumes that the OCC refers to "Reduction in CapEx through improved asset management". That benefit is described in Confidential Exhibit CDK-1 as follows: "Avoided, deferred capital cost savings by improving asset utilization – enabled by more detailed and accurate system planning using more comprehensive operating datasets. Availability of better planning and optimized data improves asset management which enables a 2% reduction in the relevant capital expenditure budget. (Results in reduction of capital management for load growth projects, lower man-hours for load research, deferral of transformers, etc.)" This benefit was further described on page 99 of the Staff Audit and Assessment of Duke Energy Ohio Smart Grid.

b. Please provide copies of any Asset Management function processes or procedures which mention the use of any such distribution upgrades.

No such documents have been located.

c. Please provide examples of any capital investments avoided through improved asset management processes or procedures making use of such distribution upgrades in 2016. Include the value of capital investments avoided for each example.

The "value of capital investments avoided through improved asset management was quantified in Confidential Exhibit CDK-1 and on page 99 of the Staff Audit and Assessment of Duke Energy Ohio Smart Grid".

d. Please estimate the total amount of capital investments avoided through improved asset management processes or procedures making use of such distribution upgrades in 2016.

See response to part c above.

SUPPLEMENTAL RESPONSE FOR INT-OCC-05-118:

Refer to Confidential Exhibit CDK-1 attached to Mr. Kiergan's smart grid business case testimony dated July 24, 2008 in Case 07-589-GA-AIR. The exhibit on pages 34-35 of 48 cites a variety of benefits categorized as "Distribution" including "Fine tuning to avoid kWh and kW".

a. Please describe how the Company uses distribution upgrades, deployed as part of its DOE Smart Grid Investment Grant-related deployment in the early part of this decade, to fine tune grid configurations, equipment settings, or similar adjustments.

Duke Energy Ohio assumes that the OCC refers to "Reduced line losses through system fine-tuning (Energy, Capacity, CO2)". That benefit is described in Confidential Exhibit CDK-1 as follows: "Fine tuning enables more efficient distribution of power (e.g., reduced line losses in the distribution grid, prior to the secondary or the transformer) – which results in the need for less capital investment (in distribution, transmission and generation assets) for handling peak load and improved overall operating expenses (i.e., less power needs to be generated or purchased to service the load) – on an ongoing, real-time basis. This scenario is modeled by the DSMore software package (simulates the Ohio load situation (supply and demand) using actual load, supply, and weather data) and the results are entered into this model. Benefits include avoided energy, avoided capacity, and avoided CO2. (Precise information from customer meters regarding loads (the value of the unique load at the end of each feeder not just the value at the substation) is used to fine-tune the system and decrease line losses.)" This benefit was further described on page 100 of the Staff Audit and Assessment of Duke Energy Ohio Smart Grid.

b. Please provide copies of any Grid Operations or Capacity Planning function processes or procedures which mention the use of any such distribution upgrades.

No such documents have been located.

c. Please provide examples of any fine tuning adjustments made by the grid operations or capacity planning functions which made use of such distribution upgrades in 2016. Include the value of kWh conserved or kW reduced for each example.

The value of fine tuning adjustments was quantified in Confidential Exhibit CDK-1 and on page 100 of the Staff Audit and Assessment of Duke Energy Ohio Smart Grid.

d. Please estimate the total amount of kWh conserved or kW reduced through fine tuning adjustments which made use of such distribution upgrades in 2016.

See response to part c above.

For INT-05-119: The Company does not track the data requested.

For INT-05-120: The Company does not track the data requested.

For INT-05-121: The Company does not track the data requested.

Healey, Christopher

From: Watts, Elizabeth H <Elizabeth.Watts@duke-energy.com>
Sent: Tuesday, January 02, 2018 10:11 AM
To: Healey, Christopher
Cc: Spiller, Amy B
Subject: RE: Duke 17-32, 17-1263 - Confidential Documents

Chris:

Yes. I agree that the questions and responses in Case No.16-032-EL-AIR, OCC Interrogatories 05-112 through 05-121, need not be treated as confidential.

Happy New Year!

Elizabeth

From: Christopher.Healey@occ.ohio.gov [mailto:Christopher.Healey@occ.ohio.gov]
Sent: Friday, December 29, 2017 11:01 AM
To: Watts, Elizabeth H
Cc: Spiller, Amy B
Subject: Duke 17-32, 17-1263 - Confidential Documents

Elizabeth,

OCC previously asked Duke whether Mr. Kiergan's July 2009 testimony from Case Nos. 07-589, 07-590, and 07-591, which was deemed confidential at the time, could be used in the public record in the current cases. I understand that you agreed that it no longer needed to be redacted.

OCC served certain discovery requests in the rate case (INT 05-112 to 05-121) which relate to this same testimony. We marked them confidential at the time. Would you agree that we can include these discovery requests in the public record going forward?

Let me know if you want to discuss.

Happy new year,
Chris

Christopher M. Healey
Energy Resource Planning Counsel
Office of the Ohio Consumers' Counsel
65 East State Street, Suite 700

Columbus, Ohio 43215
614-466-9571
christopher.healey@occ.ohio.gov

GRANTS.GOV

Grant Application Package

Opportunity Title:	Recovery Act ~ Smart Grid Investment Grant Program
Offering Agency:	Headquarters
CFDA Number:	81.122
CFDA Description:	Electricity Delivery and Energy Reliability, Research,
Opportunity Number:	DE-FOA-0000058
Competition ID:	
Opportunity Open Date:	06/25/2009
Opportunity Close Date:	08/06/2009
Agency Contact:	DOESGIGQuestions@HQ.DOE.GOV

This electronic grants application is intended to be used to apply for the specific Federal funding opportunity referenced here.

If the Federal funding opportunity listed is not the opportunity for which you want to apply, close this application package by clicking on the "Cancel" button at the top of this screen. You will then need to locate the correct Federal funding opportunity, download its application and then apply.

☐ I will be submitting applications on my behalf, and not on behalf of a company, state, local or tribal government, academia, or other type of organization.

* Application Filing Name: Duke Energy Smart Grid Deployment

Mandatory Documents

Move Form to Complete

Move Form to Delete

Mandatory Documents for Submission

- Other Attachments Form
- Project/Performance Site Location(s)
- Application for Federal Assistance (SF-424)

Optional Documents

- Disclosure of Lobbying Activities (SF-LLL)

Move Form to Submission List

Move Form to Delete

Optional Documents for Submission

Instructions

1 Enter a name for the application in the Application Filing Name field.

- This application can be completed in its entirety offline; however, you will need to login to the Grants.gov website during the submission process.
- You can save your application at any time by clicking the "Save" button at the top of your screen.
- The "Save & Submit" button will not be functional until all required data fields in the application are completed and you clicked on the "Check Package for Errors" button and confirmed all data required data fields are completed.

2 Open and complete all of the documents listed in the "Mandatory Documents" box. Complete the SF-424 form first.

- It is recommended that the SF-424 form be the first form completed for the application package. Data entered on the SF-424 will populate data fields in other mandatory and optional forms and the user cannot enter data in these fields.

- The forms listed in the "Mandatory Documents" box and "Optional Documents" may be predefined forms, such as SF-424, forms where a document needs to be attached, such as the Project Narrative or a combination of both. "Mandatory Documents" are required for this application. "Optional Documents" can be used to provide additional support for this application or may be required for specific types of grant activity. Reference the application package instructions for more information regarding "Optional Documents".

- To open and complete a form, simply click on the form's name to select the item and then click on the => button. This will move the document to the appropriate "Documents for Submission" box and the form will be automatically added to your application package. To view the form, scroll down the screen or select the form name and click on the "Open Form" button to begin completing the required data fields. To remove a form/document from the "Documents for Submission" box, click the document name to select it, and then click the <= button. This will return the form/document to the "Mandatory Documents" or "Optional Documents" box.

- All documents listed in the "Mandatory Documents" box must be moved to the "Mandatory Documents for Submission" box. When you open a required form, the fields which must be completed are highlighted in yellow with a red border. Optional fields and completed fields are displayed in white. If you enter invalid or incomplete information in a field, you will receive an error message.

3 Click the "Save & Submit" button to submit your application to Grants.gov.

- Once you have properly completed all required documents and attached any required or optional documentation, save the completed application by clicking on the "Save" button.
- Click on the "Check Package for Errors" button to ensure that you have completed all required data fields. Correct any errors or if none are found, save the application package.
- The "Save & Submit" button will become active; click on the "Save & Submit" button to begin the application submission process.
- You will be taken to the applicant login page to enter your Grants.gov username and password. Follow all onscreen instructions for submission.

OMB Number: 4040-0004
Expiration Date: 01/31/2009

Application for Federal Assistance SF-424

Version 02

* 1. Type of Submission:
- [ ] Preapplication
- [x] Application
- [ ] Changed/Corrected Application

* 2. Type of Application:
- [x] New
- [ ] Continuation
- [ ] Revision

* If Revision, select appropriate letter(s):

* Other (Specify)

* 3. Date Received: Completed by Grants.gov upon submission.

4. Applicant Identifier:

5a. Federal Entity Identifier:

* 5b. Federal Award Identifier:

State Use Only:

6. Date Received by State:

7. State Application Identifier:

8. APPLICANT INFORMATION:

* a. Legal Name: Duke Energy Business Services, LLC

* b. Employer/Taxpayer Identification Number (EIN/TIN): [redacted]

* c. Organizational DUNS: 830760216

d. Address:

* Street1: 526 S. Church St.
Street2: EC-03T
* City: Charlotte
County: Mecklenburg
* State: NC: North Carolina
Province:
* Country: USA: UNITED STATES
* Zip / Postal Code: 28202

e. Organizational Unit:

Department Name: US Franchised Electric & Gas

Division Name: Smart Grid & Customer Systems

f. Name and contact information of person to be contacted on matters involving this application:

Prefix:
* First Name: Jeff
Middle Name:
* Last Name: Gates
Suffix:

Title: Director, Commercial Strategy

Organizational Affiliation: Duke Energy

* Telephone Number: 704-382-7268
Fax Number: 704-382-4338

* Email: jeff.gates@duke-energy.com

OMB Number: 4040-0004
Expiration Date: 01/31/2009

Application for Federal Assistance SF-424 Version 02

9. Type of Applicant 1: Select Applicant Type:

Q: For-Profit Organization (Other than Small Business)

Type of Applicant 2: Select Applicant Type:

Type of Applicant 3: Select Applicant Type:

* Other (specify):

*** 10. Name of Federal Agency:**

Headquarters

11. Catalog of Federal Domestic Assistance Number:

81.122

CFDA Title:

Electricity Delivery and Energy Reliability, Research, Development and Analysis

*** 12. Funding Opportunity Number:**

DE-FOA-0000058

* Title:

Recovery Act - Smart Grid Investment Grant Program

13. Competition Identification Number:

Title:

14. Areas Affected by Project (Cities, Counties, States, etc.):

See Project/Performance Site Locations Form (in Optional Other Attachments). The areas affected include various locations in Duke Energy's Service Territory in Indiana (68 counties), Ohio (10 counties) and Kentucky (6 counties).

*** 15. Descriptive Title of Applicant's Project:**

Duke Energy Smart Grid Deployment

Attach supporting documents as specified in agency instructions.

Add Attachments | Delete Attachments | View Attachments

OMB Number: 4040-0004
Expiration Date: 01/31/2009

Application for Federal Assistance SF-424

Version 02

16. Congressional Districts Of:

* a. Applicant: NC-012 * b. Program/Project: IN-001

Attach an additional list of Program/Project Congressional Districts if needed.

SF424 Attachment Question 16 | Add Attachment | Delete Attachment | View Attachment

17. Proposed Project:

* a. Start Date: 01/01/2010 * b. End Date: 12/31/2012

18. Estimated Funding ($):

* a. Federal	200,000,000.00
* b. Applicant	651,700,000.00
* c. State	0.00
* d. Local	0.00
* e. Other	0.00
* f. Program Income	0.00
* g. TOTAL	851,700,000.00

*** 19. Is Application Subject to Review By State Under Executive Order 12372 Process?**

☐ a. This application was made available to the State under the Executive Order 12372 Process for review on .

☐ b. Program is subject to E.O. 12372 but has not been selected by the State for review.

☒ c. Program is not covered by E.O. 12372.

*** 20. Is the Applicant Delinquent On Any Federal Debt? (If "Yes", provide explanation.)**

☐ Yes ☒ No Explanation

21. *By signing this application, I certify (1) to the statements contained in the list of certifications and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances** and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 218, Section 1001)**

☒ ** I AGREE

** The list of certifications and assurances, or an internet site where you may obtain this list, is contained in the announcement or agency specific instructions.

Authorized Representative:

Prefix: * First Name: Todd

Middle Name:

* Last Name: Arnold

Suffix:

* Title: SVP, Smart Grid & Customer Systems

* Telephone Number: 513-287-2844 Fax Number: 513 287-1902

* Email: todd.arnold@duke-energy.com

* Signature of Authorized Representative: Completed by Grants.gov upon submission. * Date Signed: Completed by Grants.gov upon submission.

OMB Number: 4040-0004
Expiration Date: 01/31/2009

Application for Federal Assistance SF-424 Version 02

*** Applicant Federal Debt Delinquency Explanation**

The following field should contain an explanation if the Applicant organization is delinquent on any Federal Debt. Maximum number of characters that can be entered is 4,000. Try and avoid extra spaces and carriage returns to maximize the availability of space.

Other Attachment File(s)

* Mandatory Other Attachment Filename: Project_Plan.pdf

Add Mandatory Other Attachment | Delete Mandatory Other Attachment | View Mandatory Other Attachment

To add more "Other Attachment" attachments, please use the attachment buttons below.

Add Optional Other Attachment | Delete Optional Other Attachment | View Optional Other Attachment

DE-FOA-0000058

Appendix 5
NEPA Questionnaire

Smart Grid Investment Grant DE-FOA-0000058A

ENVIRONMENTAL QUESTIONNAIRE

I. BACKGROUND

The Department of Energy (DOE) National Environmental Policy Act (NEPA) Implementing Procedures (10 CFR 1021) require careful consideration of the potential environmental consequences of all proposed actions during the early planning stages of a project or activity. DOE policy directs at the earliest possible stage in a project whether such actions will require preparation of an Environmental Assessment, an Environmental Impact Statement, or a Categorical Exclusion. To comply with these requirements, this Environmental Questionnaire must be completed for each proposed action to provide DOE with the information necessary to determine the appropriate level of NEPA review and documentation.

II. INSTRUCTIONS

Separate copies of the Environmental Questionnaire should be completed by the principal proposer and principal subcontractor(s) as needed to address the proposed project/activity. In addition, if the proposed project includes activities at different locations, an independent questionnaire should be prepared for each location. Supporting information can be provided as attachments.

In completing this Questionnaire, the proposer is requested to provide specific information and quantities, when applicable, regarding air emissions, wastewater discharges, solid wastes, etc., to facilitate the necessary review. The proposer should identify the location of the project and specifically describe the activities that would occur at that location. In addition, the proposer will be required to submit an official copy of the project's statement of work (SOW) or statement of project objective (SOPO) that will be used in the contract/agreement between the proposer and DOE.

III. QUESTIONNAIRE

A. PROJECT SUMMARY

1. Solicitation/Project Number: 81.122
2. Proposer and Subcontractors: Duke Energy Business Services, LLC
3. Principal Investigator: Todd Arnold
   Telephone Number: (513) 287-2844
4. Project Title: Duke Energy Smart Grid Deployment
5. Duration: 2010-2012
6. Location(s) of Performance (City/Township, County, State): **The following counties in Indiana - Bartholomew, Benton, Boone, Brown, Carroll, Cass, Clark, Clay, Clinton, Crawford, Daviess, Dearborn, Decatur, Delaware, Dubois, Fayette, Floyd, Fountain, Franklin, Fulton, Gibson, Grant, Greene, Hamilton, Hancock, Harrison, Hendricks, Henry, Howard, Hunington, Jackson, Jefferson, Jennings, Johnson, Knox, Kosciusko, Lawrence, Madison, Marion, Martin, Miami, Monroe, Montgomery, Morgan, Orange, Owen, Parke, Pike, Posey, Putnam, Randolph, Ripley, Rush, Scott, Shelby, Sullivan, Switzerland, Tippecanoe, Tipton, Union, Vermillion, Vigo, Wabash, Warren, Washington, Wayne, Wells, Whitley**

   The following counties in Ohio - Adams, Brown, Butler, Clermont, Clinton, Hamilton, Highland, Montgomery, Preble, Warren

   The following counties in Kentucky - Boone, Campbell, Gallatin, Grant, Kenton, Pendleton
7. Identify and select checkbox with the predominant project work activities under Group A-7a, A-7b, or A-7c. A-7b

Group A-7a

☐ Routine administrative, procurement, training, and personnel actions. Contract activities/awards for management support, financial assistance, and technical services in support of agency business, programs, projects, and goals. Literature searches and information gathering, material inventories, property surveys; data analysis, computer modeling, analytical reviews, technical summary, conceptual design, feasibility studies, document preparation, data dissemination, and paper studies. Technical assistance including financial planning, assistance, classroom training, public meetings, management training, survey participation, academic contribution, technical consultation, stakeholders surveys. Workshop and conference planning, preparation, and implementation which may involve promoting energy efficiency, renewable energy, and energy conservation.

Group A-7b

☒ Work does NOT involve new building/facilities construction and site preparation activities. This work typically involves routine operation, modification, and retrofit of existing utilities and transportation infrastructure, laboratories, commercial buildings/properties, offices and homes, test facilities, factories/power plants, vehicle test stands and components, refueling facilities, greenspace infrastructure, or other existing facilities.

Group A-7c

☐ Work or project activities typically involves major building or facility construction, site preparation; the installation, replacement, or major modifications of energy system prototypes and infrastructure, access right-of-ways and roads; utility, greenspace, and transportation infrastructure, vehicle test facilities; commercial buildings/properties, fuel refinery/mixing facilities, factories/power plants; and other types of energy efficiency/conservation related systems, structures, and facilities. This work may require new or modified regulatory permits, environmental sampling and monitoring requirements, master planning, public involvement, and environmental impact review.

☐ Other types of work or project activities not listed (please describe):

If all work activities related to this project can be classified and described within categories under item A-7a, it is a categorically excluded action. Proceed directly to Section IV CERTIFICATION BY PROPOSER, completing information and signatures as requested. The questionnaire is now complete and no additional information is required.

If project work activities are described under either item(s) A-7b, or A-7c.; then continue filling out questionnaire starting below with Question.A.8.

8. Summarize the objectives of the proposed work. List activities planned at the location as covered by this Environmental Questionnaire.

The proposed project will include implementation of two-way grid communications networks, automated metering infrastructure (AMI) including installation of 1.4 million smart meters, advanced distribution automation and control capabilities, Smart Grid IT systems and infrastructure, home area network (HAN) pilots including technologies that advance energy efficiency, new customer pricing pilots and support for plug-in hybrid electric vehicles (PHEV) and electric vehicles (EV).

9. List all other locations where work would be performed by the primary contractor of the project and primary subcontractors.

None identified. All work performed by the primary contractor and subcontractors for the proposed project will occur at existing homes and facilities.

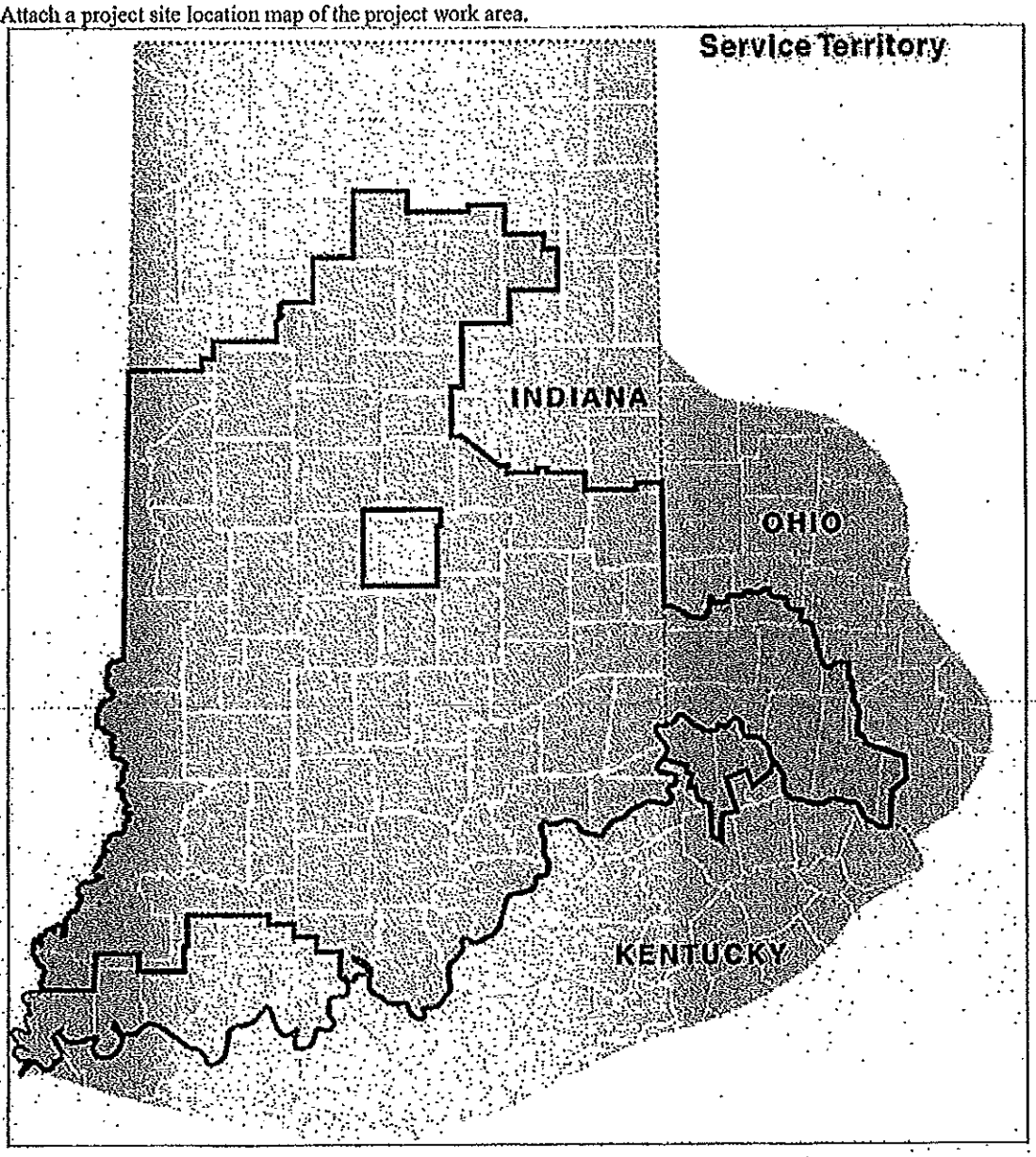
10. Identify major project operation related materials and waste that would be used, consumed, and produced by this project or activity.

The proposed project will generate approximately 1.4 million obsolete meters from customer facilities and homes as they are replaced with smart meters.

11. Provide a brief description of the project location (physical location, surrounding area, adjacent structures).

The proposed project will occur at various customer homes, facilities, and distribution substations throughout the Duke Energy service territory in Indiana, Ohio, and Kentucky.

12. Attach a project site location map of the project work area.



B. ENVIRONMENTAL IMPACTS

This section is designed to obtain information concerning environmental impacts and regulatory compliance of a proposed project. NEPA procedures require evaluations of possible effects (including land use, energy resource use, natural, historic and cultural resources, and pollutants) from proposed projects on the environment.

1. Land Use

a. Characterize present land use where the proposed project would be located.

☒ Urban	☒ Industrial	☒ Commercial	☐ Agricultural
☒ Suburban	☒ Rural	☒ Residential	☐ Research Facilities
☐ Forest	☐ University Campus	☐ Other	

b. Identify the total size of the facility, structure, or system and what portion would be used for the proposed project.

The proposed project will include implementation of two-way grid communications networks, automated metering infrastructure (AMI) including installation of 1.4 million smart meters, advanced distribution automation and control capabilities, Smart Grid IT systems and infrastructure, home area network (HAN) pilots including technologies that advance energy efficiency, new customer pricing pilots and support for plug-in hybrid electric vehicles (PHEV) and electric vehicles (EV).

c. Describe planned construction, installation, and/or demolition activities, i.e., roads, utilities system right-of-ways, parking lots, buildings, laboratories, storage tanks, fueling facilities, underground wells, pipelines, or other structures.
☒ No construction would be anticipated for this project.

d. Describe how land use would be affected by operational activities associated with the proposed project.
☒ No land areas would be affected.

e. Describe any plans to reclaim areas that would be affected by the proposed project.
☒ No land areas would be affected.

f. Would the proposed project affect any unique or unusual landforms (e.g., cliffs, waterfalls, etc.)?
☒ No ☐ Yes (describe)

g. Would the proposed project be located in or near local, state, or federal parks; forests; monuments; scenic waterways; wilderness; recreation facilities; or tribal lands?
☒ No ☐ Yes (describe)

If project work activities falls under item A-7b; then proceed directly to question D.6 (Atmospheric Conditions/Air Quality) and continue to fill out questionnaire.

If project work falls under item A-7c; then proceed directly below to question D.2 (Construction Activities and/or Operations) and continue to fill out questionnaire.

2. **Construction Activities and/or Operation**

a. Identify project structure(s), power line(s), pipeline(s), utilities systems(s), right-of-way(s) or road(s) that will be constructed and clearly mark them on a project site map or topographic map as appropriate.
☐ None

b. Would the proposed project require the construction of waste pits or settling ponds?
☐ No ☐ Yes (describe and identify location, and estimate surface area disturbed)

c. Would the proposed project affect any existing body of water?
☐ No ☐ Yes (describe)

d. Would the proposed project impact a floodplain or wetland?
☐ No ☐ Yes (describe)

e. Would the proposed project cause runoff/sedimentation/erosion?

☐ No ☐ Yes (describe)

3. **Vegetation and Wildlife Resources**

a. Identify any State- or Federal-listed endangered or threatened plant or animal species affected by the proposed project.
☐ None

b. Would any foreign substances/materials be introduced into ground or surface waters, soil, or other earth/geologic resource because of project activities? How would these foreign substances/materials affect the water, soil, and geologic resources.
☐ No ☐ Yes (describe)

c. Would any migratory animal corridors be impacted or disrupted by the proposed project?
☐ No ☐ Yes (describe)

4. **Socioeconomic and Infrastructure Conditions.**

a. Would local socio-economic changes result from the proposed project?
☐ No ☐ Yes (describe)

b. Would the proposed project generate increased traffic use of roads through local neighborhoods, urban or rural areas.?
☐ No ☐ Yes (describe)

c. Would the proposed project require new transportation access (roads, rail, etc.)? Describe location, impacts, costs.
☐ No ☐ Yes (describe)

d. Would the proposed project create a significant increase in local energy usage?
☐ No ☐ Yes (describe)

5. **Historical/Cultural Resources**

a. Describe any historical, archeological, or cultural sites in the vicinity of the proposed project; note any sites included on the National Register of Historic Places.
☐ None

b. Would construction or operational activities planned under the proposed project disturb any historical, archeological, or cultural sites?
☐ No planned construction ☐ No historic sites ☐ Yes (describe) ☐ No Impact (Discuss)

c. Would the proposed project interfere with visual resources (e.g., eliminate scenic views) or alter the present landscape?
☐ No ☐ Yes (describe)

For all proposed project work activities identified under item A-7b, respond to item D6 directly below and continue filling out environmental questionnaire.

6. **Atmospheric Conditions/Air Quality**

a. Identify air quality conditions in the immediate vicinity of the proposed project with regard to attainment of National Ambient Air Quality Standards (NAAQS). This information is available under the NAAQS tables from the U.S. EPA Air and Radiation Division.

	Attainment	Non-Attainment
O_3 - 1 Hour	☒	☐
O_3 – 8 Hour	☐	☒
SO_x	☒	☐
PM-2.5	☐	☒
PM-10	☒	☐
CO	☒	☐
NO_2	☒	☐
Lead	☒	☐

b. Would proposed project require issuance of new or modified major air quality permits?
☒ No ☐ Yes (describe)

c. Would the proposed project be in compliance with the National Emissions Standards for Hazardous Air Pollutants?
☐ No (explain) ☒ Yes

d. Would the proposed project be classified as either a New Source or a major modification to an existing source?
☒ No ☐ Yes (describe)

e. Would the proposed action be in compliance with the New Source Performance Standards?
☒ Not Applicable ☐ No (explain) ☐ Yes

f. Would the proposed project be subject to prevention of significant deterioration air quality review?
☒ Not applicable ☐ No (Explain) ☐ Yes (describe)

g. What types of air emissions, including fugitive emissions, would be anticipated from the proposed project?

No air emissions, including fugitive emissions are anticipated from equipment installed during the proposed project.

h. Would any types of emission control or particulate collection devices be used?
☒ No ☐ Yes (describe, including collection efficiencies)

i. If no control devices are used, how would emissions be vented?

N/A.

7. Hydrologic Conditions/Water Quality

a. What is the closest body of water to the proposed project area and what is its distance from the project site?

Locations where the proposed project will occur will cover a wide geographic area of the Duke Energy service territory in Indiana, Ohio, and Kentucky. Therefore, the closest body of water to the individual project sites will vary. However, no bodies of water will be impacted by the proposed project.

b. What sources would supply potable and process water for the proposed project?

No potable or process water will be needed for the proposed project.

c. Quantify the daily or annual amount of wastewater that would be generated by the proposed project.

No wastewater will be generated by the proposed project.

d. Identify the local treatment facility that would receive wastewater from the proposed project.
☒ No discharges to local treatment facility

e. Describe how wastewater would be collected and treated.

No wastewater will be generated by the proposed project.

f. Would any run-off or leachates be produced from storage piles or waste disposal sites?
☒ No ☐ Yes (describe source)

g. Would project require issuance of new or modified water permits to perform project work or site development activities?
☒ No ☐ Yes (describe)

h. Where would wastewater effluents from the proposed project be discharged?
☒ No wastewater produced

i. Would the proposed project be permitted to discharge effluents into an existing body of water?
☒ No ☐ Yes (describe water use and effluent impact)

j. Would a new or modified National Pollutant Discharge Elimination System (NPDES) permit be required?
☒ No ☐ Yes (describe)

k. Would the proposed project adversely affect the quality or movement of groundwater?
☒ No ☐ Yes (describe)

8. **Solid and Hazardous Wastes**

a. Identify and estimate major nonhazardous solid wastes that would be generated from the project. Solid wastes are defined as any solid, liquid, semi-solid, or contained gaseous material that is discarded or has served its intended purpose, or is a manufacturing or mining by-product (40 CFR 260, Appendix I).

The proposed project will generate approximately 1.4 million obsolete meters from customer facilities and homes as they are replaced with smart meters.

b. Would project require issuance of new or modified solid waste and/or hazardous waste related permits to perform project work activities?
☒ No ☐ Yes (explain)

c. How and where would solid waste disposal be accomplished?
☐ On-site (identify and describe location)
☒ Off-site (identify location and describe facility and treatment)

All waste generated (i.e., meters) would be either refurbished and reused, disposed of through a salvage agreement or through an electronic recycling program that is compliant with EPA's responsible recycling guidelines as well as all legal requirements.

d. How would wastes for disposal be transported?

Any solid wastes (i.e., meters) generated during the proposed project will be transported for disposal by approved transport.

e. Describe and estimate the quantity of hazardous wastes (40 CFR 261.31) that would be generated, used, or stored under this project.
☒ None

f. How would hazardous or toxic waste be collected and stored?

☒ None used or produced

g. If hazardous wastes would require off-site disposal, have arrangements been made with a certified TSD (Treatment, Storage, and Disposal) facility?
☒ Not required ☐ Arrangements not yet made ☐ Arrangements made with a certified TSD facility (identify):

C. DESCRIBE ANY ISSUES THAT WOULD GENERATE PUBLIC CONTROVERSY REGARDING THE PROPOSED PROJECT.
☒ None

D. WOULD THE PROPOSED PROJECT PRODUCE ADDITIONAL DEVELOPMENT, OR ARE OTHER MAJOR DEVELOPMENTS PLANNED OR UNDERWAY, IN THE PROJECT AREA?
☒ No ☐ Yes (describe)

E. SUMMARIZE THE SIGNIFICANT IMPACTS THAT WOULD RESULT FROM THE PROPOSED PROJECT.
☒ None (provide supporting detail) *No significant impacts* ☐ Significant impacts (describe)

IV. Categorical Exclusion (CX) Project Identification

A. List any Categorical Exclusions that would apply to the project and a short summary of the project activities that would apply to the CX.

For example;

Categorical Exclusion B.4.6, Additions or modifications to electric power transmission facilities that would not affect the environment beyond the previously developed facility area including, but not limited to, switchyard rock grounding upgrades, secondary containment projects, paving projects, seismic upgrading, tower modifications, changing insulators, and replacement of poles, circuit breakers, conductors, transformers, and cross arms" would encompass the following proposed activities: [applicant description].

General Administration/Management- A.1 through A.15

Facility Operations -B.1

Safety and Health- B.2

Site Monitoring and General Research -B.3

Power Marketing and Power Resources-B.4

Duke Energy believes that our Duke Energy Smart Grid Deployment project qualifies under the following categorical

exclusions:

- *B5.1 Actions to conserve energy*

> *"B5.1 Actions to conserve energy, demonstrate potential energy conservation, and promote energy-efficiency that do not increase the indoor concentrations of potentially harmful substances. These actions may involve financial and technical assistance to individuals (such as builders, owners, consultants, designers), organizations (such as utilities), and state and local governments. Covered actions include, but are not limited to: programmed lowering of thermostat settings, placement of timers on hot water heaters, installation of solar hot water systems, installation of efficient lighting, improvements in generator efficiency and appliance efficiency ratings, development of energy-efficient manufacturing or industrial practices, and small-scale conservation and renewable energy research and development and pilot projects. The actions could involve building renovations or new structures in commercial, residential, agricultural, or industrial sectors. These actions do not include rulemakings; standard-settings, or proposed DOE legislation."*

Duke Energy's project meets this categorical exclusion because it will create a unique regional Smart Grid distribution backbone. It will also demonstrate end-to-end functionality through integration of AMI, Distribution Automation, Energy Efficiency Programs and other pilot scale customer initiatives. Smart Grid will allow more renewables onto the electric grid. Customers will have access to real-time data and pricing, which will encourage them to conserve energy. Smart Grid will enable the offering of many energy efficiency conservation and demand response programs, including load control of appliances and plug-in electric vehicles.

- *B4.6 Additions/modifications to electric power transmission facilities within previously developed area*

> *"B4.6 Additions or modifications to electric power transmission facilities that would not affect the environment beyond the previously developed facility area including, but not limited to, switchyard rock grounding upgrades, secondary containment projects, paving projects, seismic upgrading, tower modifications, changing insulators, and replacement of poles, circuit breakers, conductors, transformers, and crossarms".*

Duke Energy's project meets this categorical exclusion because it includes the installation of distributed automation equipment and relays on the Company's electric distribution and the installation of new smart meters on customer's homes and businesses.

Conservation, Fossil, and Renewable Energy Activities-B.5

Environmental Restoration/Waste Minimization-B.6

International Activities- B.7

B. Are any portions or the proposed scope of work or activities that impact workers, the public or the environment not included in the CX (s) identified above?

☐ Yes

☒ No (Explain)

C. Would the proposed action violate any ES& H requirements, or any other actions listed at 10 CFR Part 1021 Subpart D (B) Conditions that are Integral Elements of the Classes of Actions in Appendix B?

☐ Yes

☒ No (Explain)

V. CERTIFICATION BY PROPOSER

I hereby certify that the information provided herein is current, accurate, and complete as of the date shown immediately below.

SIGNATURE: Angela M Grooms DATE: 08 / 05 / 09
month day year

TYPED NAME: Angela Grooms

TITLE: Director EHS Integration and Governance

ORGANIZATION: Corporate EHS Services, Duke Energy

Kelley A. Karn
Associate General Counsel
1000 E. Main Street
Plainfield, Indiana 46168
317-838-2461
317-838-1842 fax
Kelley.Karn@duke-energy.com

September 22, 2009

Ms. Donna Williams
Contracting Officer
Donna.Williams@hq.doe.gov
Office of HQ PS (HQ)
U.S. Department of Energy
Office of Headquarters Procurement
MA-64
1000 Independence Ave., S.W.
Washington, DC 20585

VIA Email and U.S. Mail

Subject: Supplemental Appendix 9 Certifications for Duke Energy Carolinas, LLC Application under DE-FOA-0000058

Dear Ms. Williams:

Duke Energy Carolinas, LLC (Duke Energy) respectfully submits a supplemental Appendix 9 (Certifications) to its PMU Deployment and Communication System Modernization application.

The only information supplemented is the attachment of an Explanatory Statement page to the Certification of Debarment, Suspension, and Other Responsibility Matters and new signature pages. Duke Energy has provided a similar Explanatory Statement in other subsequent Department of Energy (DOE) applications which have required this certification and in the interest of ensuring DOE has consistent information for each application, we respectfully submit this supplemental appendix.

We apologize for the delay in providing the Explanatory Statement. We prepared and submitted it as soon as the omission was discovered. We accordingly respectfully request that DOE treat this submission as a supplement to its August 6, 2009 application. Please feel free to contact me if you have any questions.

Sincerely,

Kelley Karn

DE-FOA-0000058
Appendix 9

U.S. DEPARTMENT OF ENERGY

FINANCIAL ASSISTANCE CERTIFICATIONS AND ASSURANCES FOR USE WITH SF 424

Applicant: Duke Energy Carolinas, LLC

Solicitation No.: DE-FOA-0000058

The following certifications and assurances must be completed and submitted with each application for financial assistance. The name of the person responsible for making the certifications and assurances must be typed in the signature block on the forms.

Certifications Regarding Lobbying; Debarment, Suspension and Other Responsibility Matters; and Drug Free Workplace Requirements

DOE F 1600.5, Assurance of Compliance Nondiscrimination in Federally Assisted Programs

DE-FOA-0000058
Appendix 9

CERTIFICATIONS REGARDING LOBBYING; DEBARMENT, SUSPENSION AND OTHER RESPONSIBILITY MATTERS; AND DRUG FREE WORKPLACE REQUIREMENTS

Applicants should refer to the regulations cited below to determine the certification to which they are required to attest. Applicants should also review the instructions for certification included in the regulations before completing this form. Signature of this form provides for compliance with certification requirements under 10 CFR Part 601 "New Restrictions on Lobbying," 10 CFR Part 606 "Governmentwide Debarment and Suspension (Nonprocurement) and 10 CFR Part 607 "Governmentwide Requirements for Drug-Free Workplace (Grants)." The certifications shall be treated as a material representation of fact upon which reliance will be placed when the Department of Energy determines to award the covered transaction, grant, or cooperative agreement.

1. LOBBYING

The undersigned certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

2. ADDITIONAL LOBBYING REPRESENTATION

Applicant organizations which are described in section 501(c)(4) of the Internal Revenue Code of 1986 and engage in lobbying activities after December 31, 1995, are not eligible for the receipt of Federal funds constituting an award, grant, or loan.

As set forth in section 3 of the Lobbying Disclosure Act of 1995 as amended, (2 U.S.C. 1602), lobbying activities are defined broadly to include, among other thins, contacts on behalf of an organization with specified employees of the Executive Branch and Congress with regard to Federal legislative, regulatory, and program administrative matters.

Check the appropriate block:

The applicant is an organization described in section 501(c)(4) of the Internal Revenue Code of 1986? ☐ Yes ☒ No

If you checked "Yes" above, check the appropriate block:

The applicant represents that after December 31, 1995 it ☐ has ☐ has not engaged in any lobbying activities as defined in the Lobbying Disclosure Act of 1995, as amended.

3. DEBARMENT, SUSPENSION, AND OTHER RESPONSIBILITY MATTERS

(1) The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:

(a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

(b) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery; falsification or destruction of records, making false statements, or receiving stolen property;

(c) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and

(d) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

(2) Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

4. DRUG-FREE WORKPLACE

This certification is required by the Drug-Free Workplace Act of 1988 (Pub.L. 100-690, Title V, Subtitle D) and is implemented through additions to the Debarment and Suspension regulations, published in the Federal Register on January 31, 1989, and May 25, 1990.

ALTERNATE I (GRANTEES OTHER THAN INDIVIDUALS)

(1) The grantee certifies that it will or will continue to provide a drug-free workplace by:

(a) Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the grantee's workplace and specifying the actions that will be taken against employees for violation of such prohibition;

(b) Establishing an ongoing drug-free awareness program to inform employees about:

(1) The dangers of drug abuse in the workplace;
(2) The grantee's policy of maintaining a drug-free workplace;
(3) Any available drug counseling, rehabilitation, and employee assistance programs; and
(4) The penalties that may be imposed upon employees for drug abuse violations occurring in the workplace;

(c) Making it a requirement that each employee to be engaged in the performance of the grant be given a copy of the statement required by paragraph (a);

(d) Notifying the employee in the statement required by paragraph (a) that, as a condition of employment under the grant, the employee will:

(1) Abide by the terms of the statement; and
(2) Notify the employer in writing of his or her conviction for a violation of a criminal drug statute occurring in the workplace not later than five calendar days after such conviction;

(e) Notifying the agency, in writing, within ten calendar days after receiving notice under subparagraph (d)(2) from an employee or otherwise receiving actual notice of such conviction. Employers of convicted employees must provide notice, including position title, to every grant officer or other designee on whose grant activity the convicted employee was working, unless the Federal agency has designated a central point for the receipt of such notices. Notice shall include the identification number(s) of each affected grant;

(f) Taking one of the following actions, within 30 calendar days of receiving notice under subparagraph (d)(2), with respect to any employee who is so convicted:

(1) Taking appropriate personnel action against such an employee, up to and including termination, consistent with the requirements of the Rehabilitation Act of 1973, as amended; or
(2) Requiring such employee to participate satisfactorily in a drug abuse assistance or rehabilitation program approved for such purposes by a Federal, State or local health, law enforcement, or other appropriate agency;

(g) Making a good faith effort to continue to maintain a drug- free workplace through implementation of paragraphs (a),(b),(c),(d),(e), and (f).

(2) The grantee may insert in the space provided below the site(s) for the performance of work done in connection with the specific grant:

Place of Performance: (Street address, city, county, state, zip code)

_____

_____

_____

☐ Check if there are workplaces on file that are not identified here.

ALTERNATE II (GRANTEES WHO ARE INDIVIDUALS)

(1) The grantee certifies that, as a condition of the grant, he or she will not engage in the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance in conducting any activity with the grant.

(2) If convicted of a criminal drug offense resulting from a violation occurring during the conduct of any grant activity, he or she will report the conviction, in writing, within 10 calendar days of the conviction, to every grant officer or other designee, unless the Federal agency designates a central point for the receipt of such notices. When notice is made to such a central point, it shall include the identification number(s) of each affected grant.

5. SIGNATURE

As the duly authorized representative of the applicant, I hereby certify that the applicant will comply with the above certifications.

Name of Applicant: Duke Energy Carolinas, LLC

Printed Name and Title of
Authorized Representative: Marc E. Manly, Chief Legal Officer

Marc E Manly

SIGNATURE

September 21, 2009

DATE

Kelley A. Karn
Associate General Counsel
1000 E. Main Street
Plainfield, Indiana 46168
317-838-2461
317-838-1842 fax
Kelley.Karn@duke-energy.com

September 22, 2009

Ms. Donna Williams
Contracting Officer
Donna.Williams@hq.doe.gov
Office of HQ PS (HQ)
U.S. Department of Energy
Office of Headquarters Procurement
MA-64
1000 Independence Ave., S.W.
Washington, DC 20585

VIA Email and U.S. Mail

Subject: Supplemental Appendix 9 Certifications for Duke Energy Business Services, LLC Application under DE-FOA-0000058

Dear Ms. Williams:

Duke Energy Business Services LLC on behalf of Duke Energy Indiana, Inc., Duke Energy Kentucky, Inc. and Duke Energy Ohio, Inc. (collectively, Duke Energy) respectfully submits a supplemental Appendix 9 (Certifications) to its Midwest Smart Grid Deployment application.

The only information supplemented is the attachment of an Explanatory Statement page to the Certification of Debarment, Suspension, and Other Responsibility Matters and new signature pages. Duke Energy has provided a similar Explanatory Statement in other subsequent Department of Energy (DOE) applications which have required this certification and in the interest of ensuring DOE has consistent information for each application, we respectfully submit this supplemental appendix.

We apologize for the delay in providing the Explanatory Statement. We prepared and submitted it as soon as the omission was discovered. We accordingly respectfully request that DOE treat this submission as a supplement to its August 6, 2009 application. Please feel free to contact me if you have any questions.

Sincerely,

Kelley Karn

DE-FOA-0000058
Appendix 9

U.S. DEPARTMENT OF ENERGY

FINANCIAL ASSISTANCE CERTIFICATIONS AND ASSURANCES FOR USE WITH SF 424

Applicant: Duke Energy Business Services LLC on behalf of Duke Energy Indiana, Inc., Duke Energy Kentucky, Inc. and Duke Energy Ohio, Inc.

Solicitation No.: DE-FOA-0000058

The following certifications and assurances must be completed and submitted with each application for financial assistance. The name of the person responsible for making the certifications and assurances must be typed in the signature block on the forms.

Certifications Regarding Lobbying; Debarment, Suspension and Other Responsibility Matters; and Drug Free Workplace Requirements

DOE F 1600.5, Assurance of Compliance Nondiscrimination in Federally Assisted Programs

DE-FOA-0000058
Appendix 9

CERTIFICATIONS REGARDING LOBBYING; DEBARMENT, SUSPENSION AND OTHER RESPONSIBILITY MATTERS; AND DRUG FREE WORKPLACE REQUIREMENTS

Applicants should refer to the regulations cited below to determine the certification to which they are required to attest. Applicants should also review the instructions for certification included in the regulations before completing this form. Signature of this form provides for compliance with certification requirements under 10 CFR Part 601 "New Restrictions on Lobbying," 10 CFR Part 606 "Governmentwide Debarment and Suspension (Nonprocurement) and 10 CFR Part 607 "Governmentwide Requirements for Drug-Free Workplace (Grants)." The certifications shall be treated as a material representation of fact upon which reliance will be placed when the Department of Energy determines to award the covered transaction, grant, or cooperative agreement.

1. LOBBYING

The undersigned certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

2. ADDITIONAL LOBBYING REPRESENTATION

Applicant organizations which are described in section 501(c)(4) of the Internal Revenue Code of 1986 and engage in lobbying activities after December 31, 1995, are not eligible for the receipt of Federal funds constituting an award, grant, or loan.

As set forth in section 3 of the Lobbying Disclosure Act of 1995 as amended, (2 U.S.C. 1602), lobbying activities are defined broadly to include, among other thins, contacts on behalf of an organization with specified employees of the Executive Branch and Congress with regard to Federal legislative, regulatory, and program administrative matters.

Check the appropriate block:

The applicant is an organization described in section 501(c)(4) of the Internal Revenue Code of 1986? ☐ Yes ☒ No

If you checked "Yes" above, check the appropriate block:

The applicant represents that after December 31, 1995 it ☐ has ☐ has not engaged in any lobbying activities as defined in the Lobbying Disclosure Act of 1995, as amended.

3. DEBARMENT, SUSPENSION, AND OTHER RESPONSIBILITY MATTERS

(1) The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:

(a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

(b) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery; falsification or destruction of records, making false statements, or receiving stolen property;

(c) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and

(d) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

(2) Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

4. DRUG-FREE WORKPLACE

This certification is required by the Drug-Free Workplace Act of 1988 (Pub.L. 100-690, Title V, Subtitle D) and is implemented through additions to the Debarment and Suspension regulations, published in the Federal Register on January 31, 1989, and May 25, 1990.

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(b) Establishing an ongoing drug-free awareness program to inform employees about:

(1) The dangers of drug abuse in the workplace;
(2) The grantee's policy of maintaining a drug-free workplace;
(3) Any available drug counseling, rehabilitation, and employee assistance programs; and
(4) The penalties that may be imposed upon employees for drug abuse violations occurring in the workplace;

(c) Making it a requirement that each employee to be engaged in the performance of the grant be given a copy of the statement required by paragraph (a);

(d) Notifying the employee in the statement required by paragraph (a) that, as a condition of employment under the grant, the employee will:

(1) Abide by the terms of the statement; and
(2) Notify the employer in writing of his or her conviction for a violation of a criminal drug statute occurring in the workplace not later than five calendar days after such conviction;

(e) Notifying the agency, in writing, within ten calendar days after receiving notice under subparagraph (d)(2) from an employee or otherwise receiving actual notice of such conviction. Employers of convicted employees must provide notice, including position title, to every grant officer or other designee on whose grant activity the convicted employee was working, unless the Federal agency has designated a central point for the receipt of such notices. Notice shall include the identification number(s) of each affected grant;

(f) Taking one of the following actions, within 30 calendar days of receiving notice under subparagraph (d)(2), with respect to any employee who is so convicted:

(1) Taking appropriate personnel action against such an employee, up to and including termination, consistent with the requirements of the Rehabilitation Act of 1973, as amended; or
(2) Requiring such employee to participate satisfactorily in a drug abuse assistance or rehabilitation program approved for such purposes by a Federal, State or local health, law enforcement, or other appropriate agency;

(g) Making a good faith effort to continue to maintain a drug- free workplace through implementation of paragraphs (a),(b),(c),(d),(e), and (f).

(2) The grantee may insert in the space provided below the site(s) for the performance of work done in connection with the specific grant:

Place of Performance: (Street address, city, county, state, zip code)

_____

_____

_____

☐ Check if there are workplaces on file that are not identified here.

ALTERNATE II (GRANTEES WHO ARE INDIVIDUALS)

(1) The grantee certifies that, as a condition of the grant, he or she will not engage in the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance in conducting any activity with the grant.

(2) If convicted of a criminal drug offense resulting from a violation occurring during the conduct of any grant activity, he or she will report the conviction, in writing, within 10 calendar days of the conviction, to every grant officer or other designee, unless the Federal agency designates a central point for the receipt of such notices. When notice is made to such a central point, it shall include the identification number(s) of each affected grant.

5. SIGNATURE

As the duly authorized representative of the applicant, I hereby certify that the applicant will comply with the above certifications.

Name of Applicant: Duke Energy Business Services LLC

Printed Name and Title of
Authorized Representative: Marc E. Manly, Chief Legal Officer

Marc E Manly
SIGNATURE

September 21, 2009
DATE

DE-FOA-0000058
Appendix 9

DOE F 1600.5
(06-94)
All Other Editions are Obsolete

U.S. Department of Energy

OMB Control No.
1910-0400

Assurance of Compliance

Nondiscrimination in Federally Assisted Programs

OMB Burden Disclosure Statement

Public reporting burden for this collection of information is estimated to average 15 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Office of Information Resources Management Policy, Plans, and Oversight, Records Management Division, HR-422 - GTN, Paperwork Reduction Project (1900-0400), U.S. Department of Energy, 1000 Independence Avenue, S.W., Washington, DC 20585; and to the Office of Management and Budget (OMB), Paperwork Reduction Project (1900-0400), Washington, DC 20503.

Duke Energy Business Services LLC on behalf of Duke Energy Indiana, Inc., Duke Energy Kentucky, Inc. and Duke Energy Ohio, Inc. (Hereinafter called the "Applicant")

HEREBY AGREES to comply with Title VI of the Civil Rights Act of 1964 (Pub. L.88-352), Section 16 of the Federal Energy Administration Act of 1974 (Pub.L.93-275), Section 401 of the Energy Reorganization Act of 1974 (Pub.L.93-438), Title IX of the Education Amendments of 1972, as amended (Pub.L.92-318, Pub.L.93-568, and Pub.L.94-482), Section 504 of the Rehabilitation Act of 1973 (Pub.L.93-112), the Age Discrimination Act of 1975 (Pub.L.94-135), Title VIII of the Civil Rights Act of 1968 (Pub.L.90-284), the Department of Energy Organization Act of 1977 (Pub.L.95-91), and the Energy Conservation and Production Act of 1976, as amended (Pub.L.94-385) and Title 10, Code of Federal Regulations, Part 1040. In accordance with the above laws and regulations issued pursuant thereto, the Applicant agrees to assure that no person in the United States shall, on the ground of race, color, national origin, sex, age, or disability, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity in which the Applicant receives Federal assistance from the Department of Energy.

Applicability and Period of Obligation

In the case of any service, financial aid, covered employment, equipment, property, or structure provided, leased, or improved with Federal assistance extended to the Applicant by the Department of Energy, this assurance obligates the Applicant for the period during which Federal assistance is extended. In the case of any transfer of such service, financial aid, equipment, property, or structure, this assurance obligates the transferee for the period during which Federal assistance is extended. If any personal property is so provided, this assurance obligates the Applicant for the period during which it retains ownership or possession of the property. In all other cases, this assurance obligates the Applicant for the period during which the Federal assistance is extended to the Applicant by the Department of Energy.

Employment Practices

Where a primary objective of the Federal assistance is to provide employment or where the Applicant's employment practices affect the delivery of services in programs or activities resulting from Federal assistance extended by the Department, the Applicant agrees not to discriminate on the ground of race, color, national origin, sex, age, or disability, in its employment practices. Such employment practices may include, but are not limited to, recruitment advertising, hiring, layoff or termination, promotion, demotion, transfer, rates of pay, training and participation in upward mobility programs; or other forms of compensation and use of facilities.

Subrecipient Assurance

The Applicant shall require any individual, organization, or other entity with whom it subcontracts, subgrants, or subleases for the purpose of providing any service, financial aid, equipment, property, or structure to comply with laws cited above. To this end, the subrecipient shall be required to sign a written assurance form, however, the obligation or both recipient and subrecipient to ensure compliance is not relieved by the collection or submission of written assurance forms.

Data Collection and Access to Records

The Applicant agrees to compile and maintain information pertaining to programs or activities developed as a result of the Applicant's receipt of Federal assistance from the Department of Energy. Such information shall include, but is not limited to, the following: (1) the manner in which services are or will be provided and related data necessary for determining whether any persons are or will be denied such services on the basis of prohibited discrimination; (2) the population eligible to be served by race, color, national origin, sex, age, and disability; (3) data regarding covered employment including use or planned use of bilingual public contact employees serving beneficiaries of the program where necessary to permit effective participation by beneficiaries unable to speak or understand English; (4) the location of existing or proposed facilities connected with the program and related information adequate for determining whether the location has or will have the effect of unnecessarily denying access to any person on the basis of prohibited discrimination; (5) the present or proposed membership by race, color, national origin, sex, age, and disability, in any planning or advisory body which is an integral part of the program; and (6) any additional written data determined by the Department of Energy to be relevant to its obligation to assure compliance by recipients with laws cited in the first paragraph of this assurance.

DE-FOA-0000058
Appendix 9

DOE F 1600.5
(06-94)
All Other Editions are Obsolete

1910-0400

The Applicant agrees to submit requested data to the Department of Energy regarding programs and activities developed by the Applicant from the use of Federal assistance funds extended by the Department of Energy, Facilities of the Applicant (including the physical plants, building, or other structures) and all records, books, accounts, and other sources of information pertinent to the Applicant's compliance with the civil rights laws shall be made available for inspection during normal business hours on request of an officer or employee of the Department of Energy specifically authorized to make such inspections. Instructions in this regard will be provided by the Director, Office of Civil Rights, U.S. Department of Energy.

This assurance is given in consideration of and for the purpose of obtaining any and all Federal grants, loans, contracts (excluding procurement contracts), property, discounts or other Federal assistance extended after the date hereto, to the Applicants by the Department of Energy, including installment payments on account after such data of application for Federal assistance which are approved before such date. The Applicant recognizes and agrees that such Federal assistance will be extended in reliance upon the representation and agreements made in this assurance and that the United States shall have the right to seek judicial enforcement of this assurance. This assurance is binding on the Applicant, the successors, transferees, and assignees, as well as the person(s) whose signature appears below and who are authorized to sign this assurance on behalf of the Applicant.

Applicant Certification

The Applicant certifies that it has complied, or that, within 90 days of the date of the grant, it will comply with all applicable requirements of 10 C.F.R. § 1040.5 (a copy will be furnished to the Applicant upon written request to DOE).

Designated Responsible Employee

Marc E. Manly, Chief Legal Officer
Name and Title (Printed to Typed)

(704) 382 - 2204
Telephone Number

Marc E. Manly
Signature

September 21, 2009
Date

Duke Energy Business Services LLC
Applicant's Name

(800) 488 - 3853
Telephone Number

526 S. Church St.
Address:

Charlotte, NC, 28285

September 21, 2009
Date

Authorized Official:
President, Chief Executive Officer
or Authorized Designee

Marc E. Manly, Chief Legal Officer
Name and Title (Printed to Typed)

(704) 382 - 2204
Telephone Number

Marc E. Manly
Signature

September 21, 2009
Date

EXPLANATION REQUIRED BY
CERTIFICATIONS FOR USE WITH
DUKE ENERGY BUSINESS SERVICES LLC APPLICATIONS FOR
SMART GRID INVESTMENT GRANT
DE-FOA-0000058

1. The applicant provides the following information in the interest of full disclosure and not as a requirement for this certificate or as any admission:

a. The Missouri Public Service Commission is a plaintiff in *Missouri Public Service Commission v. ONEOK, Inc., et al.*, No. 0616-27565, Div. 6 (Mo. Cir. Ct.). This suit was filed on October 8, 2006, in the Circuit Court of Jackson County, Missouri, against certain affiliates of applicant, Duke Energy Corporation (now known as Duke Energy Carolinas, LLC) and its affiliate, Duke Energy Trading and Marketing, LLC, along with numerous other energy companies. Plaintiff claims it is the assignee of various local gas distribution companies (LDC's) and alleges that defendants, alone and in concert with others, manipulated the natural gas markets by various means, including providing false information to natural gas trade publications and unlawfully exchanging information, resulting in artificially high natural gas prices paid by the LDC's. In an attempt to avoid a statute of limitations defense, plaintiff alleges that defendants violated state antitrust laws and engaged in fraudulent concealment of their activities. Plaintiff seeks class certification, unspecified statutory damages, attorney's fees and costs, and other appropriate relief. The Duke Energy defendants have been dismissed from the case. In February, 2009, Plaintiffs filed their notice of appeal of the order dismissing Duke Energy Trading and Marketing, LLC.

b. The Topeka Unified School District 501 is a plaintiff in *Learjet, Inc., et al. v. ONEOK, Inc., et al.*, No. 2:06-cv-00233-PMP-PAL (D. Nev.). On September 26, 2005, plaintiffs filed a class action petition in state court in Wyandotte County, Kansas against certain affiliates of applicant, Duke Energy Corporation (now Duke Energy Carolinas, LLC) and its affiliate, Duke Energy Trading and Marketing, L.L.C, as well as other energy companies, claiming that plaintiffs were harmed by defendants' alleged manipulation of the natural gas markets by various means in the 2000 through 2002 time frame, including providing false information to natural gas trade publications and entering into unlawful arrangements and agreements. The plaintiffs claim the defendants violated Kansas' antitrust laws and seek compensatory and statutory damages in unspecified amounts. This lawsuit was removed and transferred to Nevada in MDL 1566. On February 23, 2009, the court dismissed Duke Energy Carolinas, LLC (formerly Duke Energy Corporation) from the case.

c. In addition to the 2 cases described above, a total of 11 other lawsuits have been filed against Duke Energy Corporation (now known as Duke

Energy Carolinas, LLC) and its affiliate, Duke Energy Trading and Marketing, LLC (DETM), along with numerous other energy companies. Ten of these cases (plus the *Learjet* case) have been consolidated into the MDL proceeding in Nevada. DETM was dismissed from one of the cases in January, 2009. In February 2009, Duke Energy Carolinas was also dismissed from that case as well as four others of the consolidated cases. One case was filed in Tennessee state court, which dismissed the case. The Tennessee Court of Appeals reversed and the case is on appeal to the Tennessee Supreme Court. Each of these cases contains similar claims, that the respective plaintiffs, and the classes they claim to represent, were harmed by the defendants' alleged manipulation of the natural gas markets by various means, including providing false information to natural gas trade publications and entering into unlawful arrangements and agreements in violation of the antitrust laws of the respective states. Plaintiffs seek damages in unspecified amounts. In September, 2009, settlement was finalized with the class plaintiffs in five of the consolidated cases.

d. In January 2008, four plaintiffs, including individual, industrial and non-profit customers, filed a lawsuit against Duke Energy Ohio in federal court in the Southern District of Ohio. Plaintiffs allege that Duke Energy Ohio (then The Cincinnati Gas & Electric Company (CG&E)), conspired to provide inequitable and unfair price advantages for certain large business consumers by entering into non-public option agreements with such consumers in exchange for their withdrawal of challenges to Duke Energy Ohio's (then CG&E's) pending RSP, which was implemented in early 2005.. Plaintiffs also contend that the contracts at issue were an illegal rebate which violate antitrust and Racketeer Influenced and Corrupt Organizations (RICO) statutes. Duke Energy Ohio denies the allegations made in the lawsuit. On March 31, 2009, the District Court granted Duke Energy Ohio's motion to dismiss. Plaintiffs have filed a motion to alter or set aside the judgment.

e. An affiliate of applicant, DEGS of Narrows, LLC (formerly known as Cinergy Solutions of Narrows), owns and operates a power plant and ancillary assets located at the Celanese Acetate facility in Narrows, Virginia. The power plant operations are subject to a Title V permit issued by Virginia Department of Environmental Quality to DEGS of Narrows, LLC. The operation is also subject to the NOx Budget Trading Program, and the Leak Detection and Repair Program ("LDAR").

DEGS of Narrows is required by state and federal law to maintain a continuous emissions monitoring system ("CEMS") to monitor heat input and NOx emissions during the ozone season, including the performance of certain linearity tests. In the third quarter of 2006, while reviewing third quarter linearity test results generated by the Facility's trained Instrumentation & Controls Technician, the Air Management Group of Duke Energy's Environmental Department identified some irregularities in the information being reported. Because these potential violations involve both federal and state laws and

regulations, voluntary self-disclosures were made to both the US Environmental Protection Agency ("EPA") and the Virginia Department of Environmental Quality on December 22, 2006.

On December 10, 2007, DEGS of Narrows received a Notice of Violation ("NOV") from the EPA, which asserted various violations consistent with the self-disclosures described above. The NOV asserts that DEGS of Narrows failed to monitor equipment subject to the LDAR program and failed to set pressure relief devices at the level required by LDAR.

In addition, the United States Department of Justice ("DOJ") commenced criminal investigations of DEGS of Narrows, LLC, its personnel and/or third party contractors in connection with both the CEMS and LDAR alleged violations. By letter dated March 20, 2009, the DOJ communicated that it had dropped its criminal investigation of DEGS of Narrows, LLC on all alleged violations.

f. In 2001, a criminal case was commenced in Peru regarding alleged forgery of a reporting document submitted by two former employees of a Duke affiliate in Peru to the electric regulatory authorities in Peru. Judgment was entered against both defendants; however, the case against one defendant was ultimately closed by the court without any remedial action being taken. The case against the other defendant is still open, but no action has yet been taken against him.

g. In December 1999, Duke Energy International Brazil Ltda ("DEIB") issued a floating rate note ("FRN") to fund the acquisition of Duke Energy International, Geracao Paranapanema, S.A. ("DEIGP"). At that time, in an attempt to promote foreign investment in Brazil, the government had passed legislation providing for a withholding tax exemption on payment of interest for certain floating rate notes as defined in the legislation. DEIB issued the FRN pursuant to the law, and the FRN was approved by and registered with the Brazilian Central Bank. In November 2008, as a result of a regular course audit by the Brazilian taxing authorities, DEIB received a R$282 million (approximately US$ 140 million) assessment in connection with the FRN. Among other allegations, the taxing authority claims that DEIB defrauded the government and attributes a portion of the assessment to that alleged fraud. DEIB believes the claims are without merit and has challenged the fines and the allegations in the Brazilian administrative tax court. On July 31, 2009, the Brazilian taxing authorities ruled in DEIB's favor, confirming the arguments of our defense, i.e., that the FRNs issued by DEIB are valid and lawful and the allegation of fraud by the taxing authorities has been ruled groundless. An appeal of this decision by the taxing authority is mandatory.

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Appendix 9

DOE F 1600.5
(06-94)
All Other Editions are Obsolete

OMB Control No.
1910-0400

U.S. Department of Energy

Assurance of Compliance

Nondiscrimination in Federally Assisted Programs

OMB Burden Disclosure Statement

Public reporting burden for this collection of information is estimated to average 15 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Office of Information Resources Management Policy, Plans, and Oversight, Records Management Division, HR-422 - GTN, Paperwork Reduction Project (1900-0400), U.S. Department of Energy, 1000 Independence Avenue, S.W., Washington, DC 20585; and to the Office of Management and Budget (OMB), Paperwork Reduction Project (1900-0400), Washington, DC 20503.

Duke Energy Carolinas, LLC (Hereinafter called the "Applicant")
HEREBY AGREES to comply with Title VI of the Civil Rights Act of 1964 (Pub. L.88-352), Section 16 of the Federal Energy Administration Act of 1974 (Pub.L.93-275), Section 401 of the Energy Reorganization Act of 1974 (Pub.L.93-438), Title IX of the Education Amendments of 1972, as amended (Pub.L.92-318, Pub.L.93-568, and Pub.L.94-482), Section 504 of the Rehabilitation Act of 1973 (Pub.L.93-112), the Age Discrimination Act of 1975 (Pub.L.94-135), Title VIII of the Civil Rights Act of 1968 (Pub.L.90-284), the Department of Energy Organization Act of 1977 (Pub.L.95-91), and the Energy Conservation and Production Act of 1976, as amended (Pub.L.94-385) and Title 10, Code of Federal Regulations, Part 1040. In accordance with the above laws and regulations issued pursuant thereto, the Applicant agrees to assure that no person in the United States shall, on the ground of race, color, national origin, sex, age, or disability, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity in which the Applicant receives Federal assistance from the Department of Energy.

Applicability and Period of Obligation

In the case of any service, financial aid, covered employment, equipment, property, or structure provided, leased, or improved with Federal assistance extended to the Applicant by the Department of Energy, this assurance obligates the Applicant for the period during which Federal assistance is extended. In the case of any transfer of such service, financial aid, equipment, property, or structure, this assurance obligates the transferee for the period during which Federal assistance is extended. If any personal property is so provided, this assurance obligates the Applicant for the period during which it retains ownership or possession of the property. In all other cases, this assurance obligates the Applicant for the period during which the Federal assistance is extended to the Applicant by the Department of Energy.

Employment Practices

Where a primary objective of the Federal assistance is to provide employment or where the Applicant's employment practices affect the delivery of services in programs or activities resulting from Federal assistance extended by the Department, the Applicant agrees not to discriminate on the ground of race, color, national origin, sex, age, or disability, in its employment practices. Such employment practices may include, but are not limited to, recruitment advertising, hiring, layoff or termination, promotion, demotion, transfer, rates of pay, training and participation in upward mobility programs; or other forms of compensation and use of facilities.

Subrecipient Assurance

The Applicant shall require any individual, organization, or other entity with whom it subcontracts, subgrants, or subleases for the purpose of providing any service, financial aid, equipment, property, or structure to comply with laws cited above. To this end, the subrecipient shall be required to sign a written assurance form, however, the obligation or both recipient and subrecipient to ensure compliance is not relieved by the collection or submission of written assurance forms.

Data Collection and Access to Records

The Applicant agrees to compile and maintain information pertaining to programs or activities developed as a result of the Applicant's receipt of Federal assistance from the Department of Energy. Such information shall include, but is not limited to, the following: (1) the manner in which services are or will be provided and related data necessary for determining whether any persons are or will be denied such services on the basis of prohibited discrimination; (2) the population eligible to be served by race, color, national origin, sex, age, and disability; (3) data regarding covered employment including use or planned use of bilingual public contact employees serving beneficiaries of the program where necessary to permit effective participation by beneficiaries unable to speak or understand English; (4) the location of existing or proposed facilities connected with the program and related information adequate for determining whether the location has or will have the effect of unnecessarily denying access to any person on the basis of prohibited discrimination; (5) the present or proposed membership by race, color, national origin, sex, age, and disability, in any planning or advisory body which is an integral part of the program; and (6) any additional written data determined by the Department of Energy to be relevant to its obligation to assure compliance by recipients with laws cited in the first paragraph of this assurance.

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(06-94)
All Other Editions are Obsolete

1910-0400

The Applicant agrees to submit requested data to the Department of Energy regarding programs and activities developed by the Applicant from the use of Federal assistance funds extended by the Department of Energy, Facilities of the Applicant (including the physical plants, building, or other structures) and all records, books, accounts, and other sources of information pertinent to the Applicant's compliance with the civil rights laws shall be made available for inspection during normal business hours on request of an officer or employee of the Department of Energy specifically authorized to make such inspections. Instructions in this regard will be provided by the Director, Office of Civil Rights, U.S. Department of Energy.

This assurance is given in consideration of and for the purpose of obtaining any and all Federal grants, loans, contracts (excluding procurement contracts), property, discounts or other Federal assistance extended after the date hereto, to the Applicants by the Department of Energy, including installment payments on account after such data of application for Federal assistance which are approved before such date. The Applicant recognizes and agrees that such Federal assistance will be extended in reliance upon the representation and agreements made in this assurance and that the United States shall have the right to seek judicial enforcement of this assurance. This assurance is binding on the Applicant, the successors, transferees, and assignees, as well as the person(s) whose signature appears below and who are authorized to sign this assurance on behalf of the Applicant.

Applicant Certification

The Applicant certifies that it has complied, or that, within 90 days of the date of the grant, it will comply with all applicable requirements of 10 C.F.R. § 1040.5 (a copy will be furnished to the Applicant upon written request to DOE).

Designated Responsible Employee

Marc E. Manly, Chief Legal Officer
Name and Title (Printed to Typed)

(704) 382 - 2204
Telephone Number

Marc E. Manly
Signature

September 21, 2009
Date

Duke Energy Carolinas, LLC
Applicant's Name

(800) 488 - 3853
Telephone Number

526 S. Church St.
Address:

September 21, 2009
Date

Charlotte, NC, 28285

Authorized Official:
President, Chief Executive Officer
or Authorized Designee

Marc E. Manly, Chief Legal Officer
Name and Title (Printed to Typed)

(704) 382 - 2204
Telephone Number

Marc E. Manly
Signature

September 21, 2009
Date

EXPLANATION REQUIRED BY
CERTIFICATIONS FOR USE WITH DUKE ENERGY CAROLINAS, LLC
APPLICATIONS FOR SMART GRID INVESTMENT GRANT
DE-FOA-0000058

1. The applicant provides the following information in the interest of full disclosure and not as a requirement for this certificate or as any admission:

a. The Missouri Public Service Commission is a plaintiff in *Missouri Public Service Commission v. ONEOK, Inc., et al.*, No. 0616-27565, Div. 6 (Mo. Cir. Ct.). This suit was filed on October 8, 2006, in the Circuit Court of Jackson County, Missouri, against applicant, Duke Energy Corporation (now known as Duke Energy Carolinas, LLC) and its affiliate, Duke Energy Trading and Marketing, LLC, along with numerous other energy companies. Plaintiff claims it is the assignee of various local gas distribution companies (LDC's) and alleges that defendants, alone and in concert with others, manipulated the natural gas markets by various means, including providing false information to natural gas trade publications and unlawfully exchanging information, resulting in artificially high natural gas prices paid by the LDC's. In an attempt to avoid a statute of limitations defense, plaintiff alleges that defendants violated state antitrust laws and engaged in fraudulent concealment of their activities. Plaintiff seeks class certification, unspecified statutory damages, attorney's fees and costs, and other appropriate relief. The Duke Energy defendants have been dismissed from the case. In February, 2009, Plaintiffs filed their notice of appeal of the order dismissing Duke Energy Trading and Marketing, LLC.

b. The Topeka Unified School District 501 is a plaintiff in *Learjet, Inc., et al. v. ONEOK, Inc., et al.*, No. 2:06-cv-00233-PMP-PAL (D. Nev.). On September 26, 2005, plaintiffs filed a class action petition in state court in Wyandotte County, Kansas against applicant, Duke Energy Corporation (now Duke Energy Carolinas, LLC) and its affiliate, Duke Energy Trading and Marketing, L.L.C, as well as other energy companies, claiming that plaintiffs were harmed by defendants' alleged manipulation of the natural gas markets by various means in the 2000 through 2002 time frame, including providing false information to natural gas trade publications and entering into unlawful arrangements and agreements. The plaintiffs claim the defendants violated Kansas' antitrust laws and seek compensatory and statutory damages in unspecified amounts. This lawsuit was removed and transferred to Nevada in MDL 1566. On February 23, 2009, the court dismissed Duke Energy Carolinas, LLC (formerly Duke Energy Corporation) from the case.

c. In addition to the 2 cases described above, a total of 11 other lawsuits have been filed against applicant Duke Energy Corporation (now known as Duke Energy Carolinas, LLC) and its affiliate, Duke Energy Trading and Marketing, LLC (DETM), along with numerous other energy companies. Ten of

these cases (plus the *Learjet* case) have been consolidated into the MDL proceeding in Nevada. DETM was dismissed from one of the cases in January, 2009. In February 2009, applicant was also dismissed from that case as well as four others of the consolidated cases. One case was filed in Tennessee state court, which dismissed the case. The Tennessee Court of Appeals reversed and the case is on appeal to the Tennessee Supreme Court. Each of these cases contains similar claims, that the respective plaintiffs, and the classes they claim to represent, were harmed by the defendants' alleged manipulation of the natural gas markets by various means, including providing false information to natural gas trade publications and entering into unlawful arrangements and agreements in violation of the antitrust laws of the respective states. Plaintiffs seek damages in unspecified amounts. In September, 2009, settlement was finalized with the class plaintiffs in five of the consolidated cases.

d. In January 2008, four plaintiffs, including individual, industrial and non-profit customers, filed a lawsuit against Duke Energy Ohio in federal court in the Southern District of Ohio. Plaintiffs allege that Duke Energy Ohio (then The Cincinnati Gas & Electric Company (CG&E)), conspired to provide inequitable and unfair price advantages for certain large business consumers by entering into non-public option agreements with such consumers in exchange for their withdrawal of challenges to Duke Energy Ohio's (then CG&E's) pending RSP, which was implemented in early 2005.. Plaintiffs also contend that the contracts at issue were an illegal rebate which violate antitrust and Racketeer Influenced and Corrupt Organizations (RICO) statutes. Duke Energy Ohio denies the allegations made in the lawsuit. On March 31, 2009, the District Court granted Duke Energy Ohio's motion to dismiss. Plaintiffs have filed a motion to alter or set aside the judgment.

e. An affiliate of applicant, DEGS of Narrows, LLC (formerly known as Cinergy Solutions of Narrows), owns and operates a power plant and ancillary assets located at the Celanese Acetate facility in Narrows, Virginia. The power plant operations are subject to a Title V permit issued by Virginia Department of Environmental Quality to DEGS of Narrows, LLC. The operation is also subject to the NOx Budget Trading Program, and the Leak Detection and Repair Program ("LDAR").

DEGS of Narrows is required by state and federal law to maintain a continuous emissions monitoring system ("CEMS") to monitor heat input and NOx emissions during the ozone season, including the performance of certain linearity tests. In the third quarter of 2006, while reviewing third quarter linearity test results generated by the Facility's trained Instrumentation & Controls Technician, the Air Management Group of Duke Energy's Environmental Department identified some irregularities in the information being reported. Because these potential violations involve both federal and state laws and regulations, voluntary self-disclosures were made to both the US Environmental

Protection Agency ("EPA") and the Virginia Department of Environmental Quality on December 22, 2006.

On December 10, 2007, DEGS of Narrows received a Notice of Violation ("NOV") from the EPA, which asserted various violations consistent with the self-disclosures described above. The NOV asserts that DEGS of Narrows failed to monitor equipment subject to the LDAR program and failed to set pressure relief devices at the level required by LDAR.

In addition, the United States Department of Justice ("DOJ") commenced criminal investigations of DEGS of Narrows, LLC, its personnel and/or third party contractors in connection with both the CEMS and LDAR alleged violations. By letter dated March 20, 2009, the DOJ communicated that it had dropped its criminal investigation of DEGS of Narrows, LLC on all alleged violations.

f. In 2001, a criminal case was commenced in Peru regarding alleged forgery of a reporting document submitted by two former employees of a Duke affiliate in Peru to the electric regulatory authorities in Peru. Judgment was entered against both defendants; however, the case against one defendant was ultimately closed by the court without any remedial action being taken. The case against the other defendant is still open, but no action has yet been taken against him.

g. In December 1999, Duke Energy International Brazil Ltda ("DEIB") issued a floating rate note ("FRN") to fund the acquisition of Duke Energy International, Geracao Paranapanema, S.A. ("DEIGP"). At that time, in an attempt to promote foreign investment in Brazil, the government had passed legislation providing for a withholding tax exemption on payment of interest for certain floating rate notes as defined in the legislation. DEIB issued the FRN pursuant to the law, and the FRN was approved by and registered with the Brazilian Central Bank. In November 2008, as a result of a regular course audit by the Brazilian taxing authorities, DEIB received a R$282 million (approximately US$ 140 million) assessment in connection with the FRN. Among other allegations, the taxing authority claims that DEIB defrauded the government and attributes a portion of the assessment to that alleged fraud. DEIB believes the claims are without merit and has challenged the fines and the allegations in the Brazilian administrative tax court. On July 31, 2009, the Brazilian taxing authorities ruled in DEIB's favor, confirming the arguments of our defense, i.e., that the FRNs issued by DEIB are valid and lawful and the allegation of fraud by the taxing authorities has been ruled groundless. An appeal of this decision by the taxing authority is mandatory.

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Appendix 9

U.S. DEPARTMENT OF ENERGY

FINANCIAL ASSISTANCE CERTIFICATIONS AND ASSURANCES FOR USE WITH SF 424

Applicant: Duke Energy Business Services LLC on behalf of Duke Energy Indiana, Inc., Duke Energy Kentucky, Inc. and Duke Energy Ohio, Inc.

Solicitation No.: DE-FOA-0000058

The following certifications and assurances must be completed and submitted with each application for financial assistance. The name of the person responsible for making the certifications and assurances must be typed in the signature block on the forms.

Certifications Regarding Lobbying; Debarment, Suspension and Other Responsibility Matters; and Drug Free Workplace Requirements

DOE F 1600.5, Assurance of Compliance Nondiscrimination in Federally Assisted Programs

DE-FOA-0000058
Appendix 9

CERTIFICATIONS REGARDING LOBBYING; DEBARMENT, SUSPENSION AND OTHER RESPONSIBILITY MATTERS; AND DRUG FREE WORKPLACE REQUIREMENTS

Applicants should refer to the regulations cited below to determine the certification to which they are required to attest. Applicants should also review the instructions for certification included in the regulations before completing this form. Signature of this form provides for compliance with certification requirements under 10 CFR Part 601 "New Restrictions on Lobbying," 10 CFR Part 606 "Governmentwide Debarment and Suspension (Nonprocurement) and 10 CFR Part 607 "Governmentwide Requirements for Drug-Free Workplace (Grants)." The certifications shall be treated as a material representation of fact upon which reliance will be placed when the Department of Energy determines to award the covered transaction, grant, or cooperative agreement.

1. LOBBYING

The undersigned certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

2. ADDITIONAL LOBBYING REPRESENTATION

Applicant organizations which are described in section 501(c)(4) of the Internal Revenue Code of 1986 and engage in lobbying activities after December 31, 1995, are not eligible for the receipt of Federal funds constituting an award, grant, or loan.

As set forth in section 3 of the Lobbying Disclosure Act of 1995 as amended, (2 U.S.C. 1602), lobbying activities are defined broadly to include, among other things, contacts on behalf of an organization with specified employees of the Executive Branch and Congress with regard to Federal legislative, regulatory, and program administrative matters.

Check the appropriate block:

The applicant is an organization described in section 501(c)(4) of the Internal Revenue Code of 1986? ☐ Yes ☒ No

If you checked "Yes" above, check the appropriate block:

The applicant represents that after December 31, 1995 it ☐ has ☐ has not engaged in any lobbying activities as defined in the Lobbying Disclosure Act of 1995, as amended.

3. DEBARMENT, SUSPENSION, AND OTHER RESPONSIBILITY MATTERS

(1) The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:

(a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

(b) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery; falsification or destruction of records, making false statements, or receiving stolen property;

(c) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and

(d) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

(2) Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

4. DRUG-FREE WORKPLACE

This certification is required by the Drug-Free Workplace Act of 1988 (Pub.L. 100-690, Title V, Subtitle D) and is implemented through additions to the Debarment and Suspension regulations, published in the Federal Register on January 31, 1989, and May 25, 1990.

ALTERNATE I (GRANTEES OTHER THAN INDIVIDUALS)

(1) The grantee certifies that it will or will continue to provide a drug-free workplace by:

(a) Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the grantee's workplace and specifying the actions that will be taken against employees for violation of such prohibition;

(b) Establishing an ongoing drug-free awareness program to inform employees about:

(1) The dangers of drug abuse in the workplace;
(2) The grantee's policy of maintaining a drug-free workplace;
(3) Any available drug counseling, rehabilitation, and employee assistance programs; and
(4) The penalties that may be imposed upon employees for drug abuse violations occurring in the workplace;

(c) Making it a requirement that each employee to be engaged in the performance of the grant be given a copy of the statement required by paragraph (a);

(d) Notifying the employee in the statement required by paragraph (a) that, as a condition of employment under the grant, the employee will:

(1) Abide by the terms of the statement; and
(2) Notify the employer in writing of his or her conviction for a violation of a criminal drug statute occurring in the workplace not later than five calendar days after such conviction;

(e) Notifying the agency, in writing, within ten calendar days after receiving notice under subparagraph (d)(2) from an employee or otherwise receiving actual notice of such conviction. Employers of convicted employees must provide notice, including position title, to every grant officer or other designee on whose grant activity the convicted employee was working, unless the Federal agency has designated a central point for the receipt of such notices. Notice shall include the identification number(s) of each affected grant;

(f) Taking one of the following actions, within 30 calendar days of receiving notice under subparagraph (d)(2), with respect to any employee who is so convicted:

(1) Taking appropriate personnel action against such an employee, up to and including termination, consistent with the requirements of the Rehabilitation Act of 1973, as amended; or
(2) Requiring such employee to participate satisfactorily in a drug abuse assistance or rehabilitation program approved for such purposes by a Federal, State or local health, law enforcement, or other appropriate agency;

OMB Number: 4040-0010
Expiration Date: 08/31/2011

Project/Performance Site Location(s)

Project/Performance Site Primary Location ☐ I am submitting an application as an individual, and not on behalf of a company, state, local or tribal government, academia, or other type of organization.

Organization Name: Duke Energy Business Services, LLC

DUNS Number: 8307602160000

* Street1: 526 S. Church St.

Street2: EC-03T

* City: Charlotte County:

* State: NC: North Carolina

Province:

* Country: USA: UNITED STATES

* ZIP / Postal Code: 28202-1802 * Project/ Performance Site Congressional District: NC-012

Project/Performance Site Location 1 ☐ I am submitting an application as an individual, and not on behalf of a company, state, local or tribal government, academia, or other type of organization.

Organization Name:

DUNS Number:

* Street1:

Street2:

* City: County:

* State:

Province:

* Country: USA: UNITED STATES

* ZIP / Postal Code: * Project/ Performance Site Congressional District:

OMB Number: 4040-0010
Expiration Date: 08/31/2011

Project/Performance Site Location(s)

Indicate the primary site where the work will be performed. If a portion of the project will be performed at any other site(s), identify the site location(s) in the blocks provided. You can copy the informational table as many times as needed, or delete tables that are not needed.

Note that the Project/Performance Site Congressional District is entered in the format of the 2 digit state code followed by a dash and a 3 digit Congressional district code, for example VA-001.

Project/Performance Site Primary Location:
Organization Name: Duke Energy Business Services, LLC
DUNS Number: 83-076-0216
*Street1: 526 S. Church St.
Street2: EC-03T
*City: Charlotte
County:
*State: NC
Province:
*Country: USA
ZIP / Postal Code: 28202
Project / Performance Site Congressional District: NC-012

Project/Performance Site Location:
Organization Name: Duke Energy Business Services, LLC
DUNS Number: 83-076-0216
*Street1: 1000 E. Main St.
Street2:
*City: Plainfield
County:
*State: IN
Province:
*Country: USA
ZIP / Postal Code: 46168
Project / Performance Site Congressional District: IN-001

Project/Performance Site Location:
Organization Name: Duke Energy Business Services, LLC
DUNS Number: 83-076-0216
*Street1: 1000 E. Main St.
Street2:
*City: Plainfield
County:
*State: IN
Province:
*Country: USA
ZIP / Postal Code: 46168
Project / Performance Site Congressional District: IN-002

OMB Number: 4040-0010
Expiration Date: 08/31/2011

Project/Performance Site Location:
Organization Name: Duke Energy Business Services, LLC
DUNS Number: 83-076-0216
*Street1: 1000 E. Main St.
Street2:
*City: Plainfield
County:
*State: IN
Province:
*Country: USA
ZIP / Postal Code: 46168
Project / Performance Site Congressional District: IN-003

Project/Performance Site Location:
Organization Name: Duke Energy Business Services, LLC
DUNS Number: 83-076-0216
*Street1: 1000 E. Main St.
Street2:
*City: Plainfield
County:
*State: IN
Province:
*Country: USA
ZIP / Postal Code: 46168
Project / Performance Site Congressional District: IN-004

Project/Performance Site Location:
Organization Name: Duke Energy Business Services, LLC
DUNS Number: 83-076-0216
*Street1: 1000 E. Main St.
Street2:
*City: Plainfield
County:
*State: IN
Province:
*Country: USA
ZIP / Postal Code: 46168
Project / Performance Site Congressional District: IN-005

OMB Number: 4040-0010
Expiration Date: 08/31/2011

Project/Performance Site Location:
Organization Name: Duke Energy Business Services, LLC
DUNS Number: 83-076-0216
*Street1: 1000 E. Main St.
Street2:
*City: Plainfield
County:
*State: IN
Province:
*Country: USA
ZIP / Postal Code: 46168
Project / Performance Site Congressional District: IN-006

Project/Performance Site Location:
Organization Name: Duke Energy Business Services, LLC
DUNS Number: 83-076-0216
*Street1: 1000 E. Main St.
Street2:
*City: Plainfield
County:
*State: IN
Province:
*Country: USA
ZIP / Postal Code: 46168
Project / Performance Site Congressional District: IN-007

Project/Performance Site Location:
Organization Name: Duke Energy Business Services, LLC
DUNS Number: 83-076-0216
*Street1: 1000 E. Main St.
Street2:
*City: Plainfield
County:
*State: IN
Province:
*Country: USA
ZIP / Postal Code: 46168
Project / Performance Site Congressional District: IN-008

OMB Number: 4040-0010
Expiration Date: 08/31/2011

Project/Performance Site Location:
Organization Name: Duke Energy Business Services, LLC
DUNS Number: 83-076-0216
*Street1: 1000 E. Main St.
Street2:
*City: Plainfield
County:
*State: IN
Province:
*Country: USA
ZIP / Postal Code: 46168
Project / Performance Site Congressional District: IN-009

Project/Performance Site Location:
Organization Name: Duke Energy Business Services, LLC
DUNS Number: 83-076-0216
*Street1: 139 E. 4TH St.
Street2:
*City: CINCINNATI
County:
*State: OH
Province:
*Country: USA
ZIP / Postal Code: 45202
Project / Performance Site Congressional District: OH-001

Project/Performance Site Location:
Organization Name: Duke Energy Business Services, LLC
DUNS Number: 83-076-0216
*Street1: 139 E. 4TH St.
Street2:
*City: CINCINNATI
County:
*State: OH
Province:
*Country: USA
ZIP / Postal Code: 45202
Project / Performance Site Congressional District: OH-002

OMB Number: 4040-0010
Expiration Date: 08/31/2011

Project/Performance Site Location:
Organization Name: Duke Energy Business Services, LLC
DUNS Number: 83-076-0216
*Street1: 139 E. 4TH St.
Street2:
*City: CINCINNATI
County:
*State: OH
Province:
*Country: USA
ZIP / Postal Code: 45202
Project / Performance Site Congressional District: OH-003

Project/Performance Site Location:
Organization Name: Duke Energy Business Services, LLC
DUNS Number: 83-076-0216
*Street1: 139 E. 4TH St.
Street2:
*City: CINCINNATI
County:
*State: OH
Province:
*Country: USA
ZIP / Postal Code: 45202
Project / Performance Site Congressional District: OH-008

Project/Performance Site Location:
Organization Name: Duke Energy Business Services, LLC
DUNS Number: 83-076-0216
*Street1: 1697-A Monmouth St.
Street2:
*City: Newport
County:
*State: KY
Province:
*Country: USA
ZIP / Postal Code: 41071
Project / Performance Site Congressional District: KY-004

OMB Number: 4040-0010
Expiration Date: 08/31/2011

Please note:

Here is our full response to Question 14 on SF-424.

14. Areas affected by project (Cities, Counties, States, etc.):

Various locations (in the cities and townships that make up Duke Energy's service territory) in the following counties...

In Indiana:

Bartholomew, Benton, Boone, Brown, Carroll, Cass, Clark, Clay, Clinton, Crawford, Daviess, Dearborn, Decatur, Delaware, Dubois, Fayette, Floyd, Fountain, Franklin, Fulton, Gibson, Grant, Greene, Hamilton, Hancock, Harrison, Hendricks, Henry, Howard, Hunington, Jackson, Jefferson, Jennings, Johnson, Knox, Kosciusko, Lawrence, Madison, Marion, Martin, Miami, Monroe, Montgomery, Morgan, Orange, Owen, Parke, Pike, Posey, Putnam, Randolph, Ripley, Rush, Scott, Shelby, Sullivan, Switzerland, Tippecanoe, Tipton, Union, Vermillion, Vigo, Wabash, Warren, Washington, Wayne, Wells, Whitley

In Ohio:

Adams, Brown, Butler, Clermont, Clinton, Hamilton, Highland, Montgomery, Preble, Warren

In Kentucky:

Boone, Campbell, Gallatin, Grant, Kenton, Pendleton

1. Project Abstract

Project Title: Duke Energy Smart Grid Deployment

Topic Area: Integrated and/or Cross-cutting systems

Duke Energy's Smart Grid Deployment Project (the "Project"),is a comprehensive grid modernization undertaking that will transform its Midwest electric system, and lead to "beyond the meter" products and services which will increase the consumer's role in managing energy use and reducing carbon emissions. This Project is truly "shovel-ready," having achieved a state regulatory order to proceed in Ohio, while awaiting a similar order in Indiana.

Duke Energy requests $200 million in funding from DOE on a total initial investment of over $800 million. Such federal cost sharing will significantly accelerate deployment, front-loading a five year project such that approximately 80 percent of the deployment will be completed in the first three years and will support more rapid investments in automated metering, distribution automation technology and the interfacing communications network.

The Project will create more than 1,900 new jobs, while also yielding expected economic benefits of nearly $1.8 billion over its 20-year expected asset life.

The Project's key design features and activities include, but are not limited to:

- Installing open, interoperable two-way communications networks
- Installing automated metering infrastructure for 1.4 million premises
- Installing advanced distribution automation applications
- Developing dynamic pricing programs (e.g., time-of-use, critical peak pricing)
- Introducing home area networking and plug-in electric vehicle support

Cisco Systems, Inc., Verizon Communications, Inc., and GridPoint, Inc. will participate as key equipment and software suppliers, working with Duke Energy to deploy a robust smart grid solution. Participation of industry-leading technology vendors, who share a commitment to open architecture communication solutions, and deployment on a wide scale regional basis, make this project unique. Successful execution will have a major impact on driving the market forward, setting future smart grid industry standards for years to come.

2. Project Foundation, Scope, Schedule and Tasks

Duke Energy has a wealth of experience managing multimillion-dollar projects. Many of these necessitate the participation of multiple vendors, which should give the DOE confidence in our ability to deliver the Project in a schedule efficient, cost effective manner. The Project is well defined and has a clear and logical breakdown of project tasks and activities. The plan includes identification of inter-dependencies, tasks, milestones, deliverables and critical path tasks.

2.1 Project Foundation and Smart Grid Experience

Duke Energy's Smart Grid Approach

Duke Energy believes that the smart grid will provide the foundation for the future of electricity delivery, revolutionizing the way the utility interacts with its customers. Thus we have been developing our approach to the smart grid since 2006, developing a solid foundation that includes:

- A strategic smart grid vision focusing on the communications network
- Smart grid solution deployment experience
- Well defined smart grid architecture

- A highly qualified management team, experienced in project management, and with a well defined management structure
- Intellectual capital including smart grid models
- Significant vendor selection experience over a period of many years

Duke Energy's Smart Grid Planning & Preparation

Duke Energy is prepared to deploy cutting-edge smart grid solutions with the ability to update the tools, technologies, and techniques as they continue to evolve. Duke Energy's smart grid vision is much more than simply the functions it is capable of performing. Our smart grid solution is an integration of many nodes on the electric distribution system, which will deliver efficient power delivery and advanced communications capabilities, and provide the platform for emerging technologies, many of which will be beyond the meter.

Duke Energy's Smart Grid Vision

Duke Energy's smart grid vision starts with a secure, interoperable network instead of a smart meter based solution with proprietary communications. Since 2006, Duke Energy has led the industry in moving towards a smart grid strategy where the network is the foundation. Through Duke Energy's extensive initial and field deployment experience, the utility has learned how to overcome obstacles associated with nascent technology and integrate the multiple technologies that must interact seamlessly to achieve the full potential of the smart grid. For example, we have:

- Deployed advanced pilot smart grid solutions in Ohio, North Carolina, South Carolina, and Kentucky
- Deployed 87,000 AMI Endpoints in Ohio
- Deployed 15,000 integrated communication boxes that lays the initial foundation for Duke Energy's communications network
- Developed Automated Meter Infrastructure solutions in Kentucky, utilizing new communications media
- Completed Distribution Automation (DA) pilots for substation communication, breaker automation and self-healing, sectionalizing, and other distribution line enhancements with full automation as a vehicle to prepare for full deployment
- Significant knowledge in assessing and selecting strategic vendors as referenced in Section 3.5.
- An experienced Program Management Office (PMO), fully capable of delivering the Duke Energy Smart Grid Deployment

Our architecture and experience will allow us to apply open and flexible products to allow for future expansion of potential smart grid capabilities

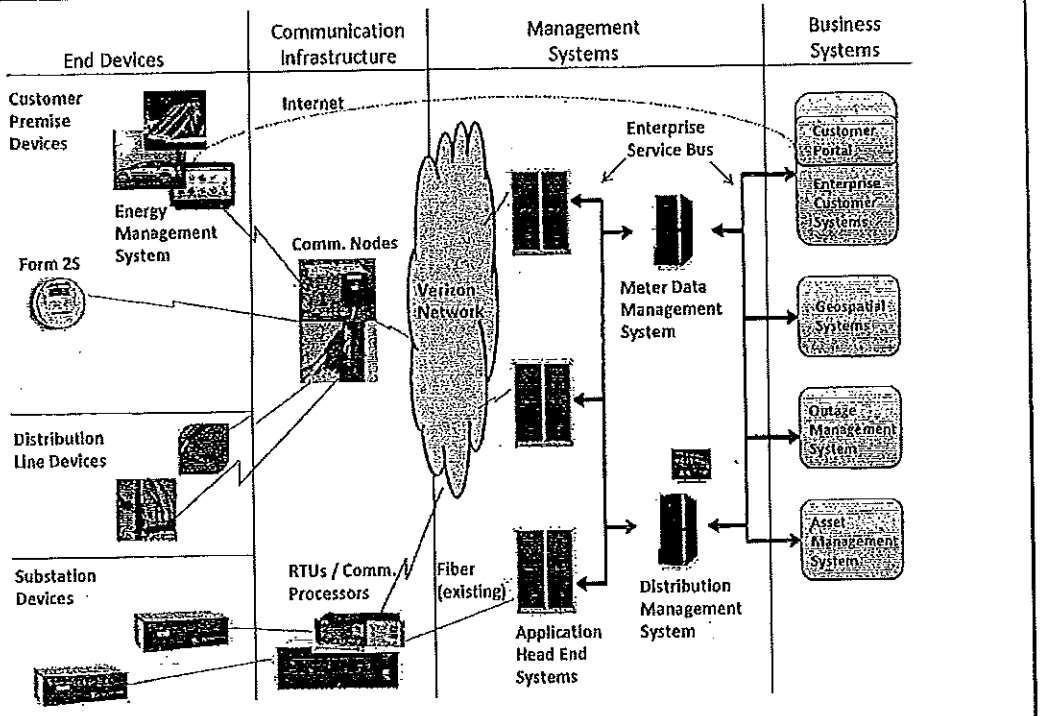
Project Scope

The primary scope of the Duke Energy Smart Grid Deployment Project is to implement smart grid technologies that will improve operational efficiencies, empower customer options, and lower carbon emissions through energy efficiency. The project will create a network that will provide two-way communications, linking Duke Energy's electric distribution power lines/grid to intelligent devices such as meters, data aggregators, transformers and devices in substations and customer's homes.

This functionality includes implementation of the smart grid communications network, deployment of automated metering infrastructure (AMI), distribution automation (DA) technologies, dynamic pricing programs including residential and large commercial pricing options, IT systems implementation and enhancements and customer pilot programs that include home area network capabilities and support for integration with plug-in electric vehicle (PEV) charging stations. Cisco Systems, Verizon Communications, and GridPoint will participate as key equipment suppliers, working with Duke Energy to deploy a robust smart grid solution. Participation of industry leading technology vendors, who share a commitment to open

architecture communication solutions, and deployment on such a wide scale regional basis, make this project unique. Exhibit 2-1 depicts the Project architecture.

Exhibit 2-1: Duke Energy Smart Grid Architecture



2.2 Project Impact

Duke Energy proposes to implement this Project over a wide geographic region in the heart of the Midwest, which encompasses three states, namely Ohio, Indiana and Kentucky. The region, as depicted in Exhibit 2-2, has a total effected population of almost five million people. Duke Energy estimates that the Project will create approximately 1900 jobs (500 direct and 1400 indirect).

Exhibit 2-2: Smart Grid Deployment Project Service Territory

System modeling for a 20-year lifecycle demonstrated the following estimated annual results, due to distribution system improvements, for the Duke Energy Smart Grid Deployment Project:

- Annual average demand reduction – 84,000 kW
- Annual average energy savings – 323,000,000 kWh
- Annual average CO_2 reduction – 262,000 tons

The enhanced functionality created by this Project will also enable Duke Energy's industry-leading energy efficiency programs. Conservatively assuming that 30% of the 1.4 million customers adopt these programs, we estimate the following additional beneficial impacts on energy and carbon emissions:

- Average demand reduction–1.3 kW per customer
- Annual average energy savings–1,400 kWh per customer
- Annual average CO_2 reduction– 1.6 tons per customer

The Duke Energy Smart Grid Deployment uses a holistic approach to deploy appropriate technology that meets the primary purposes and goals of the DOE Smart Grid Investment Grant. Table 1 summarizes the project benefits, goals, and objectives.

Table 1: Project Benefits Relative to Goals and Objectives

SGIG Purpose and Goals	Project Objectives	Project Goals	Benefits
Improve electric power system reliability	Improve reliability of Midwest service territory distribution power system	Reduce Customer Downtime Improve SAIDI	☒Lower O&M Costs ☒Reduce Costs of Power Interruptions ☒Improve Customer Satisfaction ☒Fewer Outages ☒Improve Power Quality
Optimize asset utilization	Extend the life of current transmission, distribution, and generation assets and limit new generation	Enhance distribution equipment performance Improve power quality Reduce number of equipment inspections	☒Lower Electricity Costs ☒Lower O&M Costs ☒Reduce damages by lowering GHG/Carbon
Anticipate and respond to system disturbances	Implement the capability to understand system reactions and interactions	Reduce Customer Downtime Improve system diagnostic capabilities	☒Lower T&D Losses ☒Fewer Outages ☒Reduce Costs of Power Interruptions ☒Improve Power Quality ☒Enhance security
Accommodate all types of distributed generation, clean power, and storage options	Provide communication capabilities to support distributed resources	Connect to and monitor distributed resources including PEV and distributed generation assets	☒Lower Electricity Costs ☒Lower Peak Demand ☒Enhance Customer Flexibility ☒Enable New Technologies ☒Reduce Transmission Congestion Costs ☒Reduce Costs of Power Interruptions ☒Increases Energy Independence ☒Reduce damages by lowering GHG/Carbon
Reduce electric power system costs and peak demand	Delay the construction of generation facilities	Realize lowered consumption & peak demand fluctuations Reduce system losses	☒Lower Electricity Costs ☒Lower T&D Losses ☒Reduce Transmission Congestion Costs ☒Reduce damages by lowering GHG/Carbon ☒Avoids new plant construction

Table 1: Project Benefits Relative to Goals and Objectives			
SGIG Purpose and Goals	Project Objectives	Project Goals	Benefits
Enable informed participation by consumers	Engage customers consumption and demand	Grow customer interaction base with AMI Identify, test, expand dynamic pricing	☒Lower customer aggregate costs ☒Lower Peak Demand ☒Lower O&M Costs ☒Reduce damages by lowering GHG/Carbon
Enable clean technology development and reduce greenhouse gas emissions	Meet demand and operate electricity system without new fossil fuel generation	Increase efficiency across the entire system	☒Lower Peak Demand ☒Lower O&M Costs ☒Reduce Costs from Better Power Quality ☒Reduce damages by lowering GHG/Carbon ☒Greater security from reduced oil consumption
Operating resiliently to attacks and natural disasters	Provide secure communications from Duke Energy to the customer	Enable secure and distributed generation and storage	☒Enhance cyber security ☒Increases Energy Independence ☒Risk mitigation

2.3 Summary Explanation of Major Project Tasks, Activities and Deliverables

The project has several major tasks and activities as depicted in Table 2. A summary schedule highlighting the milestones and interdependencies is included in Exhibit 2-3.

Table 2: Major Project Activities and Tasks	
Major Project Activities and Tasks	Activity and Deliverables
Customer Offerings and Enterprise Customer Systems	• Several programs for various customer levels and locations • Enable customers to interact with and control their energy environment • Dynamic pricing and enterprise customer system daily usage information • Will occur during 2010 through 2012
Grid Support Systems	• Composed of distribution management systems, outage management systems, head-end application systems, and meter data management systems • Specification, vendor evaluation, selection, engineering and deployment of IT support that support smart grid is underway • Interdependent with customer offerings • Begins by early 2010
Distribution Automation Systems	• Field deployment of the smart grid devices will consist of distribution automation, automated metering infrastructure, and the interconnecting communication systems • Deployment will include installation of line sensors, capacitance control, sectionalizers, intelligent electronic devices and monitoring equipment on circuits and within substations • Planned deployment will be divided into three phases on select circuits in

Table 2: Major Project Activities and Tasks	
Major Project Activities and Tasks	Activity and Deliverables
	Indiana and Ohio, beginning in early 2010 and completed in 2012
Automated Metering Infrastructure	• Install nearly 1.4 million advanced, two-way digital meters in Ohio and Indiana • Divided into three tranches • Select customer deployment will be completed by late 2012
Communications Network	• Engineered and deployed starting in early 2010 • Comprised of communication data collectors, wired and wireless modules for the meters, and distribution automation equipment • Deliver performance and control data to and from the devices through wide area network nodes • Engineering and deployment take place in advance of the distribution automation and automated metering infrastructure deployments • IT and field equipment dependent on communication network

Additional detail is provided in Table 3 on the numbers and types of equipment that will be installed.

Table 3: Smart Grid Deployment Project Field Devices	
Scope of Field Equipment Installation (2010-2012)	Quantity
Residential Electric Meters	1,270,000
Commercial Electric Meters	130,000
Integrated Communication Boxes	[redacted]
Line Sensors	[redacted]
Line Sensor Aggregators	709
Modems on Distribution Equipment	[redacted]
Capacitor Controls Upgraded	3,698
Reclosers Upgraded	101
Substation Data Lines Upgraded	158
New Circuit Breakers (Combination of Outdoor Oil CBs and 12-kV Reclosers)	338
Circuit Breaker Relays Replaced / Upgraded (Multiple types of CB)	730
Regulator Controls Upgraded (Multiple types of Regulators)	722
Sectionalizers	360
Self-Healing Technology / Switches	30

2.4 Project Schedule with Key Milestones

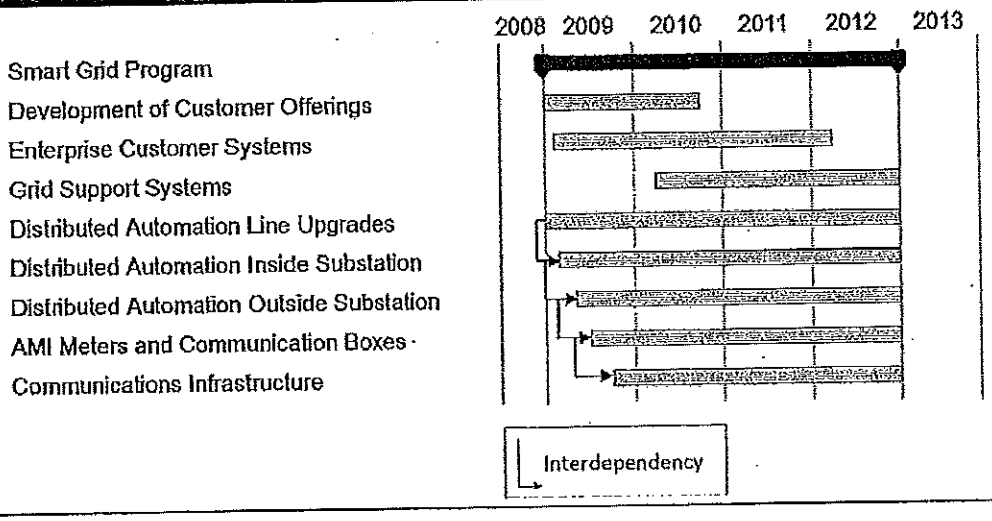
The Project is scheduled and implemented by the Duke Energy Program Management Office (PMO). This PMO has structured its project management plan such that it is in a position to continuously adjust the engineering and installation of all systems including: automated metering infrastructure, distribution automation, dynamic pricing programs, the communications network, IT systems and customer systems.

A detailed integrated project schedule is in place with specific tasks and detailed critical path analyses. This detailed project schedule is in Attachment B. Below is an extract of the key milestones for this project:

- Complete the development of new customer offerings: 2010
- Complete phase A distribution automation in specific Ohio/Indiana substations: 2010
- Complete phase B distribution automation in specific Ohio /Indiana substations: 2011
- Complete phase C distribution automation in specific Ohio /Indiana substations: 2012
- Automated metering infrastructure tranche 1 implementation: 2010
- Automated metering infrastructure tranche 2 implementation: 2011
- Automated metering infrastructure tranche 3 implementation: 2012
- Completion of communications network: 2012
- Launch of service offerings within the smart grid project to phase 1 customers: mid-2010
- Launch of service offerings with the smart grid project to phase 2 customers: mid-2011
- Realization of smart grid benefits by customers: 2011-12

Exhibit 2-3 depicts the major tasks and their interdependencies, the latter of which are shown with arrows preceding the tasks that would be required to be completed first.

Exhibit 2-3: Duke Energy Smart Grid Deployment Project Summary Schedule



2.5 Approval Process for Local, State, Regional and/or Federal Agencies

Ohio

A regulatory mechanism for cost recovery of smart grid systems and equipment for the electric service territory of Duke Energy Ohio was approved by The Public Utilities Commission of Ohio ("PUCO") in an order issued on December 17, 2008 in PUCO Case No. 08-920-EL-SSO[1], wherein the PUCO approved a Stipulation which was filed on October 27, 2008. Additionally, the PUCO approved a process for working groups, or a collaborative process, designed to maximize the benefits of the smart grid investment by

[1] The PUCO Order has been appealed by the Office of the Ohio Consumers' Counselor, but the issues under appeal are not related to the Smart Grid portion of the PUCO Order.

designing and implementing tariffs such as dynamic pricing programs (e.g. critical peak pricing and residential time of use), load control and providing access to meter information. Duke Energy Ohio has plans to convene such a working group shortly and their results will be used to develop the specific pilots proposed as part of Duke Energy's Smart Grid Deployment Project in this application. Any such tariff offerings will require the approval of the PUCO, with such approval process anticipated to take four to six months.

Indiana

A smart grid proposal, including cost recovery, for the electric service territory of Duke Energy Indiana was filed with the Indiana Utility Regulatory Commission (IURC) on May 23, 2008 in IURC Cause No. 43501. ***A Settlement Agreement with the Indiana Office of Utility Consumer Counselor and other customer groups was filed with the IURC on June 4, 2009. The Settlement Agreement provides for timely cost recovery of Duke Energy Indiana's smart grid deployment*** in addition to the creation of a collaborative process for developing time differentiated Dynamic Pricing program pilots, including real time pricing, time of use and critical peak pricing. The IURC proceeding will be fully briefed by August 5, 2009 and an IURC Order is expected in the 3rd or 4th quarter 2009. Subject to approval by the IURC, Duke Energy Indiana has plans to convene the pricing collaborative process 30 days after the IURC Order and the results of such collaborative will be used to develop the specific pilots proposed as part of Duke Energy's Smart Grid Deployment Project in this application. Any such tariff offerings will require the approval of the IURC, with such approval process anticipated to take four to six months.

Kentucky

Portions of the Project that impact Duke Energy Kentucky customers include the addition of distribution automation equipment, communications infrastructure and IT systems. ***Duke Energy Kentucky is not required to obtain a Certificate of Public Convenience and Necessity from the Kentucky Public Service Commission (KyPSC)*** for this type of investment if it qualifies as an ordinary extension of an existing system in the usual course of business, or unless special cost recovery is requested by the utility. Duke Energy Kentucky has no current plans to request KyPSC approval or special cost recovery associated with the proposed Project in this application.

3. Project Management Plan

Duke Energy's executive management recognizes that a transformational deployment of this scale will also require organizational redevelopment. The Duke Energy Smart Grid Deployment Project Management Plan is mature and built upon the overall project objectives; which are aligned with the SGIG goals. The plan is fully supported by executive management and key personnel are already assigned. Having a detailed project schedule and organizational commitment will ensure an effective deployment of this accelerated project strategy. A complete Program Management Office playbook was developed which includes financial, technical, and regulatory risks and mitigation actions.

3.1 Relevance of the Project to the Purpose and Goals of the SGIG

Table 1 in Section 2 demonstrates how the Duke Energy Smart Grid Deployment Project's goals, objectives, and expected benefits are relevant to the SGIG purpose and goals.

3.2 Project Team with Project Organization Chart, Respective Roles and Responsibilities

Based on current regulatory proceedings and orders, Duke Energy has expanded its smart grid workforce to include more than 100 staff led by the PMO.

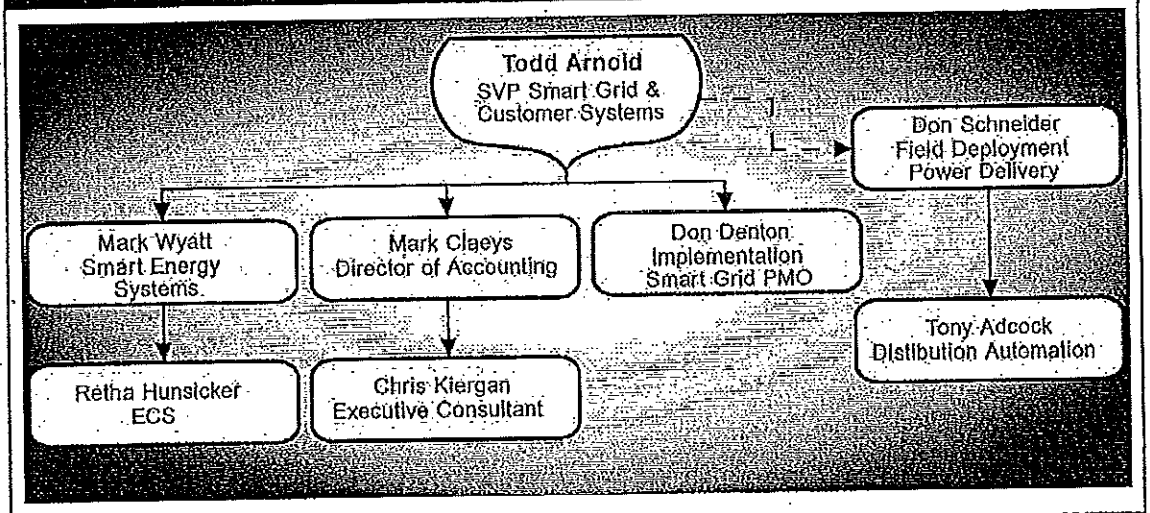
Smart Grid Program Management Organization

The Smart Grid Program Management Office (PMO) is responsible for the day-to-day management of the Duke Energy Smart Grid program working in close cooperation with the Duke Energy Senior Management,

Executive Review Board, Working Sponsors, and the Working Sponsors' departments across the organization. The Working Sponsors are responsible for the following:

- Ensuring that the overall program structure and program management processes enable the component teams to successfully complete the work and that the deliverables can be integrated into the smart grid program's end product, service, results, and/or benefits
- Supporting the Program Manager by providing information needed to make good decisions that guide the program and by providing administrative support to manage schedules, budgets, risks, and other areas required for effective smart grid program management. Meetings will be conducted bi-weekly with the Program Managers to status accordingly
- Prioritizing, scheduling, and resolving conflicts for projects within the Smart Grid PMO
- Providing program management best practices including program communications, issues and risk management, formal change control procedures, document management policies, and project governance
- Performing quality assurance practices including appropriate testing for validation and quality purposes, and cross project impact analysis and mitigation
- Providing a robust project management review detailing project schedule and budget through a smart grid program dashboard
- Coordinating the change management plan across organizational boundaries, programs and projects, and the communication of the significant impacts to organizations, business processes or procedures
- Providing appropriate internal and external project communications
- Providing a program management schedule depicting the critical path and integration of all projects which are a part of the Duke Energy Smart Grid Deployment Project

Exhibit 3-1: Smart Grid PMO



The Smart Grid Program Management Organization is depicted in Exhibit 3-1. The dashed line demonstrates the interaction of the PMO with the Power Delivery group that will operate within Duke Energy Indiana, Duke Energy Ohio, and Duke Energy Kentucky to deploy the smart grid. The Smart Grid Program Management Office will also interact with other Duke Energy internal organizations and departments to maximize collaboration on major projects and activities:

Table 4: Organizational Responsibilities

Major Project Activities and Tasks	Collaborative Team Members (lead person responsible is italicized)	Role
Development of Customer Offerings	• *Ted Schultz – VP Marketing & Energy Efficiency* • Steve Hinkel - Advanced Customer Applications	Customer offering development and finalization
Enterprise Customer Systems	• *Mark Wyatt - VP Smart Energy Systems*	System implementation
Grid Support Systems	• *Don Denton-GM Implementation Planning, Smart Grid PMO* • Mark Wyatt - VP Smart Energy Systems	System selection and implementation
Distribution Automation Systems	• *Don Denton - GM Implementation Planning, Smart Grid PMO* • Tony Adcock – Distribution Automation	Field deployment, engineering , installation
Automated Metering Infrastructure	• *Don Denton - GM Implementation Planning, Smart Grid PMO*	Field deployment, engineering , installation
Cyber Security	• *Terrell Garren – Managing Director IT Client & Security Services*	Ensuring all new equipment installed is secure

Smart Grid Structured Governance Model

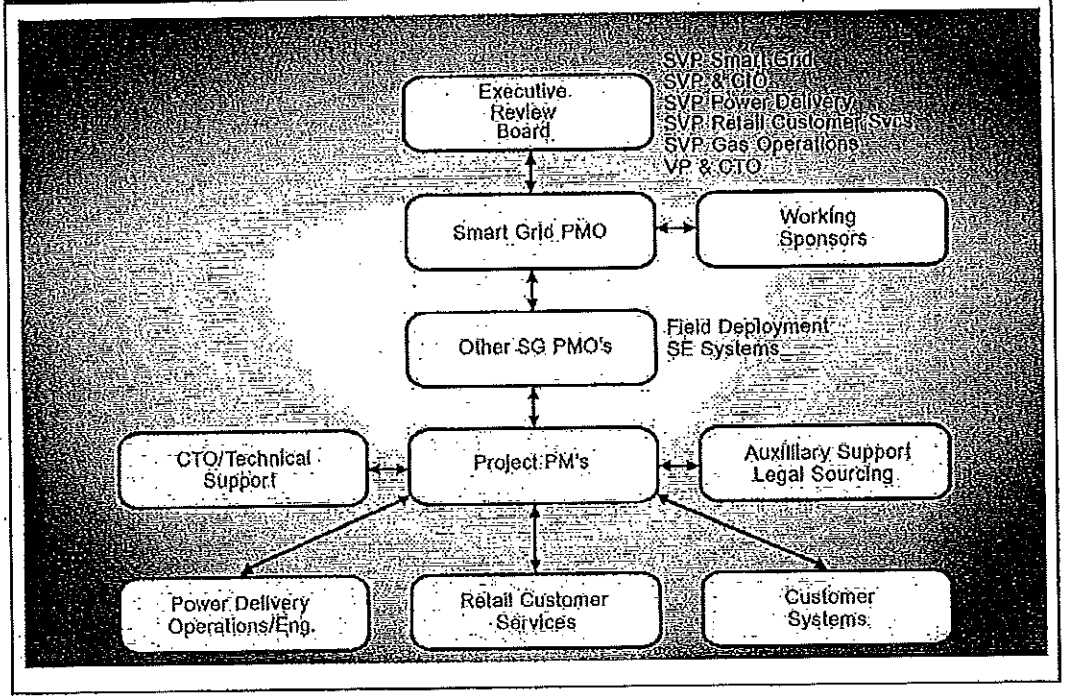
The Program Management Office utilizes a structured governance model. Todd Arnold is the Chairman for the Executive Review Board. The model, as depicted in Exhibit 3-2, consists of the SVP Power Delivery, SVP Gas Operations, SVP Retail Customer Services, SVP and Chief Information Officer (CIO) and VP / CTO. The governance framework is one of the most significant efforts required for program mobilization, execution, and success. Effective governance provides the framework for enterprise integration of interdependent smart grid related projects and processes. Governance will address:

- Continuous linkage to enterprise business strategy and direction
- Clear and well-understood decision-making authority
- Effective oversight of (and insight into) program progress and direction, including the capability to identify and execute necessary adjustments in the face of internal / external events and changes
- Executive control over program evolution and outcomes

Executive Review Board Responsibilities

- Ensure strategic alignment, priority, overall budget, and delivery
- Provide coaching & decision making on policy, sourcing, key program issues, or change requests
- Include upper management from key vendor partners to ensure appropriate influence
- Set overall project objectives, direction and prioritization of projects within the Smart Grid PMO
- Approve budget, and requests for funding, and contingency expense
- Select new projects and programs that belong in the Smart Grid Program
- Provide the highest level of escalation for program issues, risk conflicts, & management decisions
- Approval of change requests for budget, schedule, and resources in excess of 20 percent, or requests to either put projects on hold or to terminate projects
- Ensure compliance across organizational boundaries

Exhibit 3-2: Program Management Office Governance Model



3.3 Organization and Management of Tasks and Activities

Organization of PMO Activities and Tasks: Design Basis Document (DBD)

The Smart Grid Design Basis Document (DBD), a comprehensive document developed over the course of several months to fully characterize the design of the system, provides a consistent design approach to smart grid at Duke Energy. A copy of the DBDs table of contents is included as Attachment D to provide an overview of the detailed scope of this document. The DBD guides the engineering design of the digital networked infrastructure which will be capable of delivering and receiving information from intelligent devices and automating components of Duke Energy's power system. This document states the criteria, functional requirements, standards, and assumptions and includes supporting calculations for the design of Duke Energy's smart grid. The document also includes specific approved technology solutions to be used for mass deployment, and will be used as the design basis for the development and implementation of smart grid infrastructure and system projects anywhere in the Duke Energy service territory. The DBD applies to standards, approved technology, operations and projects governed under the Smart Grid PMO.

Organization of PMO Activities and Tasks: PMO Playbook

The project management approach is documented and organized in the Smart Grid PMO Playbook to ensure all aspects of the project are organized and run in a consistent fashion; a copy of the table of contents for this document is also included as Attachment C. Specific project guidelines are provided in the Smart Grid PMO Playbook. The smart grid PMO project approach provides a foundation to maximize and reutilize opportunities by providing common design, reusable templates and processes that can be leveraged by other projects within the smart grid program. The smart grid PMO will use the stages and required transition points described below to execute this project management approach.

Project Review Process

The following describes the review process for any incremental subtasks that are undertaken as part of the deployment, as well as changes to the existing charter and project schedule as required due to acceleration of the Project as a result of obtaining stimulus funding. Requirements for each stage vary according to the nature of the work packages that must be reviewed during the process. The activities undertaken during the Project Review Process will vary according to the following stages.

- Determination Stage
- Initiation Stage
- Define/Plan Stage
- Design Stage
- Build/Executing Stage
- Deploy/Go Live

Quality Assurance Scope

The Quality Assurance Plan defines the program quality scope across the PMO, supply chain, power delivery, metering, communications and information technology, as well as the various value chain programs (i.e., design, manufacturing, delivery, installation and testing), and fully meets or exceeds all requirements under ARRA guidelines. This plan intends to achieve the following objectives:

- Verifying that smart grid supplier requirements are established and being followed. Those that go beyond Duke Energy's standard requirements have already been identified:
  - Use of certain (additional) reporting templates
  - Company technical capabilities or certifications (for product support)
  - Company PMO capabilities (for project integration)
  - Extended confidentiality agreements
  - Production/operating standby capabilities (for ramping up from pilots to full rollout)
  - Transparency of their own supply chain
- Requesting random inspection of project deliverables and materials, particularly if a project risk has been identified related to material quality issues
- Recommending corrective actions
- Identifying non-conformance / defective products on project delivery
- Performing random audits and assessments
- Reviewing the end-to-end test strategy

3.4 Qualifications of the Team, including the Lead and Major Organizations and Key Individuals

The following individuals are responsible for the tasks as mentioned above, including the lead and the major organizations that they represent. The two-page resumes are in Attachment A.

- Todd Arnold – SVP, Smart Grid and Customer Service
- Mark Claeys – Director, Accounting for Smart Grid
- Don Denton – GM, Implementation Strategy and Planning and PMO Project Manager
- Mark Wyatt – VP, Smart Energy Systems
- Ted Schultz – VP, Marketing and Energy Efficiency / Customer and Energy Efficiency
- Tony Adcock – Manager, Distribution Automation Deployment
- David Masters – Manager, BPL Projects / PLC Engineering and Network Design
- Retha Hunsicker – Director, Enterprise Customer Service / Business Standards and Integration
- Casey Mather – Director, Mass Market Strategy & Market Plans / R&B Strategy & Market Plans
- Steve Hinkel – Director, Advanced Customer Applications / Advanced Customer Technology

- Don Schneider – General Manager, Smart Grid Field Deployment
- Terrell Garren - Managing Director IT Client & Security Services
- Chris Kiergan – Executive Consultant (KEMA Inc.), Smart Grid Financial Planning

As requested, two executive letters of commitment are provided as Attachment J to the entire application file. The first is signed by Jim Rogers - Chief Executive Officer, Lynn Good - Chief Financial Officer, Jim Turner - President and COO of US Franchised Electric and Gas, and Todd Arnold - Senior Vice President, Smart Grid and Customer Systems.

The second is signed by Julie Janson, President, Duke Energy Ohio and Duke Energy Kentucky and Jim Stanley, President, Duke Energy Indiana.

In addition to the qualifications of our PMO team members and leaders, Duke Energy is proud to outline highlights of its relevant corporate qualifications. For example, Duke Energy is an active participant in leading industry consortia, such as the GridWise Alliance, the GridWise Architecture Council, and Utilimetrics. As a founding member of the GridWise Architecture Council, Duke Energy has hosted various membership and working group meetings of this organization, as well as the GridWise Alliance Implementation Work Group. Duke Energy employees have been invited to provide presentations at major conferences for each of these organizations, as well as for additional industry event organizers, such as KEMA's Utility of the Future Executive Forum. Duke Energy was also represented at the Department of Energy's Smart Grid Implementation Workshop in June 2008, contributing to the thought leadership on smart grid metrics in several of the breakout sessions. More recently, Duke Energy has been actively tracking and participating in the National Institute of Standards and Technology's Smart Grid Interoperability Framework workshops, conducted in recent months.

Finally, Duke Energy has developed and opened industry-leading smart grid demonstration facilities, the Envision Center, in both the Cincinnati and Raleigh metro locations. Duke Energy's Envision Center demonstrates firsthand how new energy technologies are transforming today's power delivery system into tomorrow's smart grid. The Envision Center is the first interactive exhibit to demonstrate integrated smart grid technologies. Designed like a studio, it features modernized power equipment, a "smart" home – complete with solar panels, an apartment complex with advanced meters, and a power delivery work center with real-time monitoring capabilities. The center promotes energy efficiency and innovation, and gives visitors an inside look at how smart grid technologies can help customers conserve energy, save money and improve the environment. Since their inception, thousands of visitors have toured the Envision Centers, including significant policy makers. The Envision Centers allow Duke Energy to provide educational awareness of the benefits of smart grid technology investments.

3.5 Names and Qualifications of the Key Project Participants / Significant Vendors and Their Products or Services

Table 5 details the key project participants, significant vendors, their products and/or services, and qualifications for the Duke Energy Smart Grid Deployment. Support letters are included in Attachment H.

Table 5: Key Project Participant /Significant Vendor Product, Services, & Qualifications

Organization and Role	Products/ Services	Qualifications
Cisco Systems, Inc. *Key Project Participant*	Open architecture communication solutions and residential energy management systems	Cisco's smart grid solution takes advantage of a secure, standards-based Internet Protocol-infrastructure for energy providers and consumers. Cisco smart grid is a combination of commercially available products, technologies, services, and eco-system partners that help utilities deliver a solution designed to: • Reduce energy network outages and disruptions

Table 5: Key Project Participant /Significant Vendor Product, Services, & Qualifications		
Organization and Role	Products/ Services	Qualifications
		• Minimize risks by increasing the resiliency and security of the power grid • Lower the cost of energy storage, transmission, and distribution • Improve management operational efficiency • Increase environmental sustainability
GridPoint, Inc. *Key Project Participant*	Customer Portal Software	GridPoint, a leading clean tech company, is the pioneer of innovative smart grid platform that empowers utilities to optimize electrical grid management, achieve business objectives, increase grid reliability, promote environmental stewardship and fuel the adoption of renewable energy sources.
Verizon Communications *Key Project Participant*	Communications Network	Verizon operates the nation's most reliable and largest wireless data network, including the largest 3G broadband network. Verizon is the largest wireless carrier in the U.S. with 87.7 million customers and has the highest customer loyalty in the industry.
Ambient Corporation *Significant Vendor*	Ambient Smart Grid Communications Technologies and Equipment	The *Ambient Smart Grid*™ facilitates a two-way, real-time communications network to serve the "last mile" backhaul, necessary for utilities to implement smart grid applications such as Advanced Meter Reading (AMR), real-time pricing, Demand Side Management (DSM) and direct load control.
Areva T&D *Significant Vendor*	Distribution and Management Systems	AREVA, world energy expert, offers its customers technological solutions for highly reliable electricity transmission and distribution.
Convergys *Significant Vendor*	Customer billing platform supporting smart grid requirements, customer offerings.	Convergys is a global leader in relationship management. They deliver a broad range of customer and HR solutions, backed by technology, business analytics and consulting services that help create valuable relationships between clients, their customers and their employees.
Cooper Power Systems *Significant Vendor*	Electrical equipment for distribution automation	Cooper Power Systems engineers and manufactures medium- and high-voltage electrical equipment, components, and systems that deliver reliable electric power to homes, industries, businesses, and institutions worldwide. Through the Energy Automation Solutions group, which includes Cannon Technologies and Cybectec Inc., they are also a leader in providing software, communications and integration solutions that enable customers to increase productivity, improve system reliability, and reduce costs.
Echelon Corporation *Significant Vendor*	Smart Meters and related technologies	Echelon is a pioneer and world leader in control networks, which connect machines and other electronic devices; embedded control networks, which are networks inside machines that connect tiny sensors and actuators that comprise the workings of a machine; and *smart metering*, a next-generation utility infrastructure for automated metering and other utility services.
Schneider Electric US (formerly known as Square D) *Significant Vendor*	Electrical Equipment for Distribution Automation	Schneider Electric/Square D offers integrated solutions across multiple market segments, including leadership positions in energy and infrastructure, industrial processes, building automation, data centers/networks, and a broad presence in residential applications.
Schweitzer Engineering	Protective relaying and other power	SEL digital protective relays respond to system faults, such as downed power lines caused by accidents or harsh weather, within

Table 5: Key Project Participant /Significant Vendor Product, Services, & Qualifications		
Organization and Role	Products/ Services	Qualifications
Laboratories, Inc. (SEL) *Significant Vendor*	system automation equipment	milliseconds. SEL equipment serves thousands of utilities and, in turn, millions of their customers, by contributing to safer operations and minimizing outages and damage caused by faults. Innovative SEL communications technology enables customers to use the information in SEL and other substation products to monitor, control, and automate the operation of power systems.

3.6 Technical Approach to Address Potential Risks

Table 6 on the following page provides a summary of high level potential risks, a description of the potential impacts on project tasks and schedule, and the mitigation strategies to be employed. As other potential risks are identified, Duke Energy will utilize the established processes within the PMO to assess potential impacts, those affected, estimate likelihood and magnitude of impact, and develop effective mitigation strategies.

Table 6: Potential Risks, Impacts, and Mitigation Strategies			
Risk Area	Potential Risk	Potential Impact	Mitigation Strategies
Technical Risks (Systems)	(b)(4)		

Table 6: Potential Risks, Impacts, and Mitigation Strategies

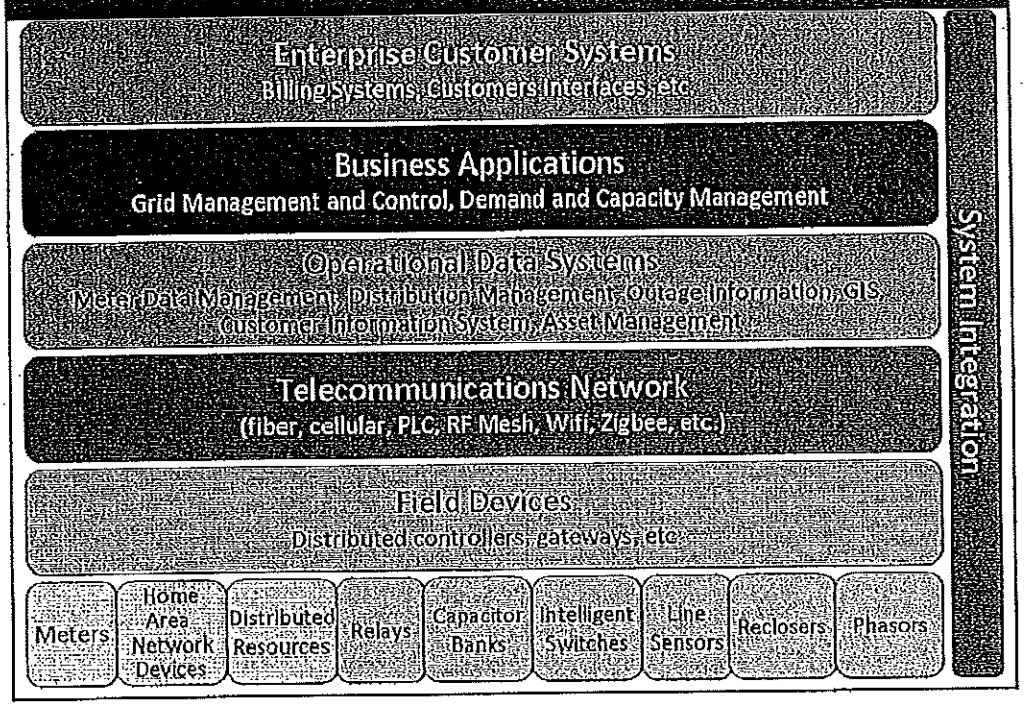
Risk Area	Potential Risk	Potential Impact:	Mitigation Strategies
Technical Risks (Communi-cations)	(b)(4)		
Institutional Risks (Field Deployment)			
Regulatory Risks			

4. Technical Approach to Enabling Smart Grid Functions

As previously outlined, the Duke Energy Smart Grid Deployment Project seeks to integrate a number of advanced automation and communications technologies, providing new grid management and customer interface experiences. These technology applications are further described in Table 6.

The integration of these various components and systems is the heart of the Project and is conceptually illustrated in Exhibit 4-1. This section of the project plan outlines the technical approach and specifies key elements of the various components of Duke Energy's system architecture.

Exhibit 4-1: Integrated Smart Grid Design Components



4.1 Smart Grid Technologies, Tools, or Techniques That Meet "Qualifying Investments"

Duke Energy's smart grid design includes components that must be integrated to provide a functional system to meet all specified business goals. These components include intelligent devices for metering solutions, distribution automation systems, two-way communications networks, supporting IT systems, home area networks, and integration of distributed resources to offer advanced customer programs.

Communications Network

Our design is unique in that it entails an end-to-end approach enabled by a communication structure based on open Internet Protocol (IP) architecture. The open IP will allow us to adapt to changing and advancing technologies with little impact to customers, analogous to plug and play standards in the technology sector. It also allows for direct communication with a wide variety of devices, such as line sensors, Wi-Fi networks, and beyond the meter devices inside the home, rather than communicating solely to the meter and other proprietary equipment.

Duke Energy's smart grid will employ several wired and wireless communications technologies that accommodate current network requirements and the evolving nature of smart grid communications

protocols. The network architecture facilitates data transfer across multiple parallel pathways providing a failsafe and fault tolerant infrastructure. The individual communications nodes will be configured remotely and allow version and security upgrades to be performed without manual intervention. If major changes in metering or distribution automation hardware are required, replacement of a single removable data card will fully change the operating protocols without replacing the physical devices.

Automated Metering Infrastructure

Installing smart meters and other devices with two-way communications capability will allow Duke Energy to increase operational efficiency. Remote and automatic operations reduce the number of field trips and move the inspection process towards condition based maintenance. Smart meter enabled functions include outage detection, alerts and alarms to identify potential theft situations or variations in expected values or set-points and remote fulfillment of service orders. Remotely monitoring power status at the meter will save additional field trips by providing data to crews concerning what meters or areas have been restored (power outage verification) and where outages remain. The deployment of smart metering and communications infrastructure will also support home area networking and the management of distributed generation assets.

Distribution Automation

The distribution system will be transformed with automation at substations, through the feeder circuits, to the home. Duke Energy plans to significantly improve reliability by upgrading substations, adding sectionalization and self-healing technologies to isolate faults and minimize outages. Conservation voltage reduction schemes will be incorporated to lower power consumption and thereby reduce demand.

Information Technology (IT) Systems

Duke Energy will implement a distributed intelligence architecture that enables local autonomous processing and SCADA functionality for remote operations. The telecommunication system will serve as the infrastructure backbone to deliver the desired smart grid functionality. Advanced Volt/VAR optimization systems will be implemented to improve power management and system performance. The enhanced voltage control system will include a mode of operations for power shortage situations.

Dynamic Pricing Programs

Dynamic pricing trials with randomization will be enabled through the deployment of metering technology. Duke Energy will create dynamic pricing programs by giving customers pertinent information regarding their energy usage, consumption patterns, and pricing information in an effort to encourage conservation. Duke Energy intends to demonstrate the customers' responses to availability of energy usage data, pricing options and conservation efforts enabled by home energy management system technology.

Customer Pilot Programs

The new customer experience will enable customers to participate in dynamic pricing programs with home automation and help optimize plug-in electric vehicles to better manage electricity usage and potentially offset building new generation.

Table 7 illustrates the involvement of technology, tools, and techniques for qualified smart grid investments..

4.2 Installation and Connection of Qualified Smart Grid Technologies to the Electric System

Smart grid projects require that safe work practices be observed while installing equipment in the field. The process also involves device commissioning for desired functionalities and modes of operation. Duke Energy is addressing these practices and will reference them in the smart grid PMO Playbook as part of Duke Energy's overall Environmental, Health, & Safety Policy, as well as require its vendor installation partners to adhere to the same level of safety compliance. As such, Duke Energy's Power Delivery organization has

established work practices consistent with its current methods employed today in normal and emergency T&D operations.

Automated Metering Infrastructure

The automated metering infrastructure includes advanced two-way communicating smart meters installed for residential, small commercial and general electric service customers. Installation of smart meters may necessitate a brief disruption of service, which would require a service outage to be scheduled with the customer, consistent with current meter replacement processes. Meter data concentrators will be installed in communications nodes at distribution transformers and connected to the wide area network for communication to the head-end system. The communication nodes will be installed on distribution transformers without disrupting customer service, except in limited instances. Commission processes will validate meter data tests to ensure reception by head-end systems to the desired performance levels.

Distribution Automation

The distribution automation devices will be installed on feeder circuits by distribution line personnel and inside substations by substation electricians. Equipment may be placed in the bypass mode to allow installation without disrupting customer service.

IT Systems

IT systems will be implemented to integrate with existing legacy systems such as work management, customer billing and outage management systems. The project management office will utilize systems integration resources to implement and integrate these systems into the existing infrastructure.

*Legend for Table 7, Column D - Smart Grid Functions Served (From FOA 58 Part III, Section B)

1 - The ability to develop, store, send and receive ... combination of devices and technologies

2 - The ability to develop, store, send and receive ... computer or other control device

3 - The ability to measure or monitor electricity use ... report that information by digital means

4 - The ability to sense and localize disruptions ... sustain reliability and security of grid operations

5 - The ability to detect, prevent, communicate ... using digital information, media, and devices

6 - The ability of any appliance or machine to respond ... without independent human intervention

7 - The ability to use digital information ... functionalities ... previously electro-mechanical or manual

8 - The ability to use digital controls to manage ... demand ... frequency regulation

**Legend for Table 7, Column E - Qualified Investments (From FOA 58 Part III, Section C)

A - In the case of appliances ... to engage smart grid functions

B - In the case of specialized electricity using equipment ... to engage smart grid functions

C - In the case of transmission and distribution equipment ... and communications devices

D - In the case of metering devices, sensors, control devices ... install such devices

E - In the cases of software that enables devices or computers ... costs of the software

F - In the case of entities that operate or coordinate operations ... between that region and other regions

G - In the case of persons or entities other than electric utilities ... utilizing smart grid functions

H - In the case of electric or hybrid electric vehicles ... storage for the vehicle

I - The documented expenditures related to purchasing ... as the Secretary shall identify

Table 7: Involvement of Technology, Tools and Techniques for Qualified Investments

Smart Grid Application	Technology, Tools, and Techniques	Enabled Smart Grid Functions	*FOA Smart Grid Functions	**Qualified Investments
Automated Metering Infrastructure	Technology • Smart electric meters with interval data collection, power quality, tamper detection, remote connect/disconnect, and secure protocols • Data concentrators with interval data storage, alarming capability Tools • Meter data acquisition or head end systems to monitor meter reading, alarms / events and enable remote connect/disconnect of electric meters Technique • Deploy in entire service areas based on circuit feeders and/or routes • Remote configuration and firmware upgrade capability	• Dynamic pricing • Remote connect / disconnect (Remote Order Fulfillment) • Outage management • Tamper detection • Remote diagnostics • Net metering • Daily usage • Asset management	1, 2, 3, 4, 7, 8	C, D, E
Information Technology Systems	Technology and tools • Enterprise Customer Systems – includes many customer interaction applications and services, including web portal • Energy Data Management System – collection, storage, normalization of data, editing and validation, between customer meters and Duke Energy systems • Distribution Management System – SCADA system to enable the visualization and control of the distribution system and provide power flow calculations, simulations, fault location projections and device status and alarming • Servers, interface hardware • Cyber security hardware and software • Integration to Work Management System, GIS and other applications	• Enable smart grid functions mentioned under other project work areas	1 through 8	E

Table 7: Involvement of Technology, Tools and Techniques for Qualified Investments

Smart Grid Application	Technology, Tools, and Techniques	Enabled Smart Grid Functions	*FOA Smart Grid Functions	**Qualified Investments
Distribution Automation	Technology • New breakers and micro-processor based protective relays • Wide Area Network (WAN) connectivity from Intelligent Electronic Devices (IEDs) to data centers • Electronic and hydraulic reclosers to isolate faulted circuits • Intelligent automated switching controls to isolate faults and minimize outages • Capacitor banks and voltage regulator remote control and monitoring enhancements • Volt / VAR optimization to allow system output voltage to be lowered • Line fault sensors Tools • Distribution management system to monitor and control DA devices • Local data logging on selected local controls and back office data archive to enable analysis of historical data • Engineer access to protective relays Technique • Deployment strategy will initially target areas with reduced system reliability • Reclosers installed in strategic points where major load divisions occur • Remote configuration and firmware upgrade capability	• Supervisory control and monitoring Self-Healing • Sectionalization • Voltage regulation • Enhanced monitoring with line sensors • Asset management	1, 2, 3, 4, 5, 7, 8	C, D, E, G

Table 7: Involvement of Technology, Tools and Techniques for Qualified Investments

Smart Grid Application	Technology, Tools, and Techniques	Enabled Smart Grid Functions	*FOA Smart Grid Functions	**Qualified Investments

Communi-cations Network	Technology
	• Gateway devices, communications nodes, communications processors, and Remote Terminal Units (RTUs)
	• Network devices integrating multiple local area IEDs with the WAN
	• Local processing
	• Reliable, secure, and standard interfaces for two–way communications
	• Transport technologies
	  o Wired (fiber optic, power line carrier, leased circuit)
	  o Wireless (Cellular, mobile radio, microwave)
	Tools
	• Tools to monitor network performance and health of network devices
	Technique
	• Technology selection will be based on topology, bandwidth, performance and business requirements
	• Remote configuration and firmware upgrade capability
		• Two way data transfer between IEDs and data centers
		• Two way data transfer between local area IEDs as required for autonomous controls
			1, 2, 5, 7	C, D, E, G

Customer Programs	• Customer Interaction: implement variety of communication options to notify customers depending on their preference • Home Energy Management devices will be installed to interface with HVAC systems, hot water heaters, pool pumps, etc. The devices will interface with communication nodes or the internet to allow customers to have portal access to data. • Distributed resources will be integrated with smart grid systems to allow remote control and monitoring based on customer program offerings	• Dynamic pricing • Energy management by customer • Load control • Distributed resource controls • Pricing programs • Two-way communications	1, 2, 3, 6, 8	C, D, E, G

Customer Programs including Home Area Networks and PEVs

Home area networking will enable customers or their residential energy management systems to react to demand response events. Select piloted locations will have the communications capability to control the power to vehicles for load management or data collection. Integration of these resources will be accomplished with standard gateway devices or communication nodes and interfaces to the distribution management system for monitoring and controls. Power connections to the grid will be accomplished per required electrical service specifications and proper engineering practices.

4.3 Summary of Smart Grid Technologies, Tools or Techniques, Functionality and Operations

Communications Network

The network will facilitate two-way communications between intelligent field devices and the associated data acquisitions systems. Distributed data processing on the local communications nodes will enable faster, autonomous control decisions and limit the quantity of data transferred to and from centralized databases.

Duke Energy's distributed smart grid architecture will integrate the vast array of devices in the territory. Communications technologies are split across the categories defined below to handle the data traffic:

- Wide Area Networks (WAN): These large networks spanning urban centers to aggregate communications from local area networks
- Local Area Networks (LAN): Local area networks aggregate sensors and end control devices to communicate between themselves
- Home Area Networks (HAN): These networks allow intelligent devices at the customer premises to communicate with each other and the LAN

Automated Metering Infrastructure

Automated Metering Infrastructure incorporates the two-way communication technology to enable functionality including demand response, remote connect/disconnect, enhanced customer billing and energy management. Interval data, in contrast to monthly data reads, will be used for implementing dynamic pricing programs (TOU, CPP, and RTP) to empower customers. In order to change energy usage patterns in conjunction with peak demand, customers shall be able to view consumption information on the Internet. Enabling technology for automated metering infrastructure includes meter data management system (software) that validates, estimates and edits data due to the interval data quantities; application data server to aggregate the data; smart meters, with two-way communication capabilities; full integration with back-office systems; and backhaul communications network

Distribution Automation

The distribution system is operated with Duke Energy standards, consistent with IEEE, ANSI, NESC and NERC standards. Distribution automation devices will improve reliability indices by implementing programmed relay protection schemes, sectionalization, and other self-healing technologies. Energy efficiency will be enhanced via voltage regulation functions. These devices will integrate with the distribution management system to allow oversight, monitoring, and remote control. The system will provide alarms, diagnostics and analytic capabilities that allow operators to effectively control devices, make decisions, and maximize system performance. Distribution automation equipment within the substations will be used to provide operation capabilities as listed above as well as support engineering and planning functions. The engineering and planning team will use the substation information, including power quality to enhance asset management.

Customer Programs

HAN will enable customers to better manage energy by giving them the ability to remotely control and view the status of their home equipment and meters. Data collection from the home devices as well as PEVs and distributed resources will empower customers to make educated decisions regarding energy usage. Demand

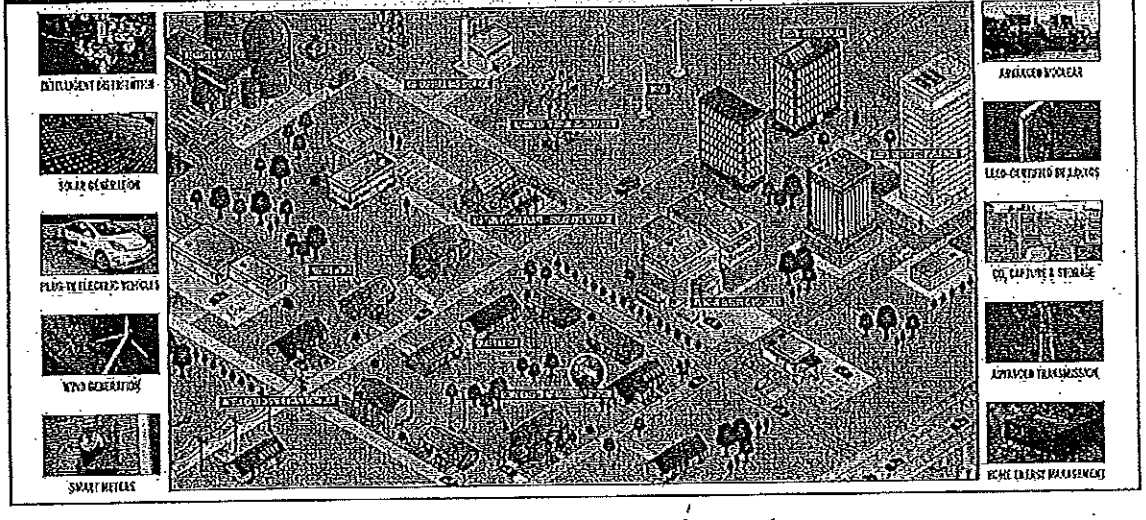
response programs will allow customers to establish price set points for reductions in electricity usage, allowing for effective load management and decreasing the need for generating capacity.

4.4 Plans to Extend Installation and Operations of Qualified Smart Grid Technologies

The Project will expedite the regional deployment of smart grid technologies throughout the service territories of Duke Energy's Franchised Electric and Gas (FE&G) companies. We believe that this initiative is the first effort to implement the large scale modernization of the electric distribution system on an integrated, multi-state basis using common architecture and standards. Federal cost share funding will provide the capital which is critical to accelerate the deployment of smart grid in this region and will serve as a foundation for expanding such deployment in Duke Energy's remaining service territory. Duke Energy will review installation processes and operations areas such as engineering, customer-to-grid interactions, and communication characteristics across geographies, to capture lessons learned. The lessons learned will then be applied in the future as Duke Energy expands its smart grid to its Carolinas service area. Process improvements will be applied in areas such as estimating, resource utilization, and schedule adjustments. Our example and experiences can serve as a benchmark for other utilities -- both regionally and nationally – considering similar upgrades. By leveraging our leadership position in various industry consortia and trade groups, lessons learned can be disseminated to other utilities undertaking smart grid projects without delay.

Originally, Duke Energy planned for a 5-year smart grid deployment project. SGIG funding will accelerate the deployment project such that the majority of the plan will be complete in the first three years. As mentioned above, there are plans to continue deploying smart grid technologies subsequent to the funding period, to eventually deploy smart grid technology across our entire service area. As Duke Energy continues to learn from the applications of smart grid, it will rely on open standards and interoperability to maintain flexibility in expanding future applications. Exhibit 4-2 depicts future conceptual possibilities of the smart grid.

Exhibit 4-2: Future of the Duke Energy Smart Grid



4.5 Metrics for Tracking Project Operations, Progress, and Reporting

Table 8 on the following page illustrates example quantitative metrics identified that Duke Energy will provide to the Department of Energy to track progress and report on results of the project. Data gathered here will be analyzed and used to track deployment progress versus the schedule and budget, improve system operation, and evaluate the most effective smart grid technologies and practices.

Table 8: Project Metrics

Org	Metrics Level	Metrics Category	Performance Type	Identified Metrics – Quantitative	DOE Indicators	Source	Reporting Interval
DOE	Customer	Cyber Security	Operational	Operates resiliently against physical and cyber attacks and natural disasters	• # of alternative paths of supply to any load point on the distribution grid • Adjusting standard metrics currently used (e.g., SAIDI and SAIFI) to capture those incidents initiated by physical and cyber attacks	Power Delivery	Annual
DOE	Customer	Distribution Automation	Operational	Addresses and responds to system disturbances in a self-healing manner	• # of installations completed • # of customers benefiting from installations (customers connected)	Power Delivery	Annual
DOE	Customer	Distributed Generation	Capital	Accommodates all generation and storage options	• # of DG sources integrated with the communications network • # of customers with net metering tariffs	Power Delivery Customer Services	Annual
DOE	Customer	Dynamic Pricing	Capital	Enables new products, services, and markets	• # of new residential products that were not available two years prior • # of customers taking advantage of new products and services	Duke Energy Save-a-watt Program	Annual
DOE	Distribution	Automation Equipment / Advanced Measuring Technologies	Capital	Optimizes asset utilization and operating efficiency Key "Build" implementation metrics	DA: • # of substation communication ties • # substation communication upgrades • # circuit breakers installed • # relay upgrades • # electronic reclosers SCADA ties	Customer Services / Power Delivery	Annual

Table 8: Project Metrics

Org.	Metrics Level	Metrics Category	Performance Type	Identified Metrics – Quantitative	DOE Indicators	Source	Reporting Interval
					• # sectionalization/ reclosers installed • # self healing teams installed • # capacitor controls • # voltage regulator controls • # line sensors Consumer: • # of smart meters • # of customers utilizing real time Pricing • # of MW of dispatchable demand response Communications: • # of Communications Nodes installed		
DOE	Distribution	Automated Load Management / Distribution Automation	Operational	Power Quality	• # of SG devices deployed with power quality measurement capability and benefits (relays, electronic controlled reclosers, intelligent switches, capacitors, voltage regulators, line sensors, AMI meters)	Power Delivery	Annual
Duke	Customer	AMI	Capital	Vehicle Management	• # of meter reading trucks removed from the road (via mileage per year) • Reduced CO_2 emissions (in tons)	Meter Ops.	Annual
Duke	Customer	AMI	Operational	Cost savings from reducing manual meter reading	• # of routine meters read remotely • # of exceptions read remotely	Customer Services	Semi-Annual
Duke	Customer	AMI	Operational	Cost savings from reducing manual	• # of remote disconnects/reconnects performed	Customer Services	Semi-Annual

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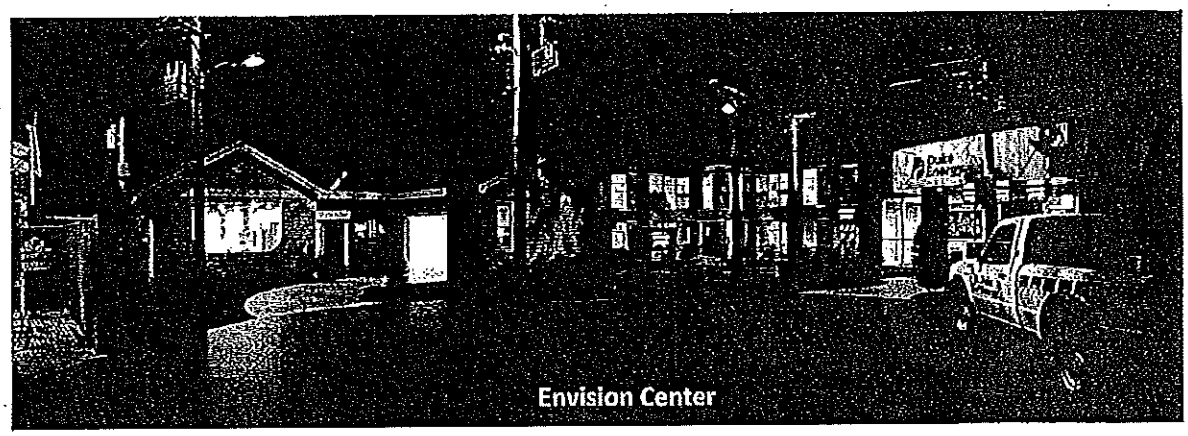
Smart Grid Deployment Project
Stimulus Funding Support Material

Topic: Integrated and/or Crosscutting Systems
Technical and Project Plan



Prepared by: Duke Energy Business Services LLC on behalf of Duke Energy Indiana, Inc., Duke Energy Ohio, Inc., Duke Energy Carolinas, Inc. and Duke Energy Kentucky, Inc. (Duke Energy)

April 28, 2010

Table of Contents

1. Project Abstract

Project Title: Duke Energy Smart Grid Deployment

Topic Area: Integrated and/or Cross-cutting systems

Duke Energy's Smart Grid Deployment Project (the "Project"), is a comprehensive grid modernization undertaking that will transform its five state electric system, and lead to "beyond the meter" products and services which will increase the consumer's role in reducing energy use and carbon emissions. This Project is truly "shovel-ready," having achieved a state regulatory order to proceed in Ohio, while working in our other jurisdictions at various levels of development.

The Project will also create more than 1,200 new jobs.

The Project's key design features and activities include, but are not limited to:

- Installing open, interoperable two-way communications networks
- Installing communications infrastructure for metering
- Installing advanced distribution automation applications
- Developing dynamic pricing programs (e.g., time-of-use, critical peak pricing)
- Introducing home area networking and plug-in electric vehicle support

Verizon Communications, Inc., will participate as a key service supplier, working with Duke Energy to deploy a robust smart grid solution. Participation of industry-leading technology vendors, who share a commitment to open architecture communication solutions, and deployment on a wide scale regional basis, make this project unique. Successful execution will have a major impact on driving the market forward, setting future smart grid industry standards for years to come.

2. Project Foundation, Scope, Schedule and Tasks

Duke Energy has a wealth of experience managing multimillion-dollar projects. Many of these necessitate the participation of multiple vendors, which should give the DOE confidence in our ability to deliver the Project in a schedule efficient, cost effective manner. The Project is well defined and has a clear and logical breakdown of project tasks and activities. The plan includes identification of inter-dependencies, tasks, milestones, deliverables and critical path tasks.

2.1 Project Foundation and Smart Grid Experience

Duke Energy's Smart Grid Approach

The smart grid is not a foreign concept to Duke Energy. The utility has been developing its approach to the smart grid since 2006. The smart grid foundation includes:

- Strategic smart grid vision
- Smart grid solution deployment experience
- Highly qualified and defined management including an experienced PMO
- Intellectual capital including smart grid models
- Significant vendor selection experience over the period of 2 years
- Defined smart grid architectures
- Focus on the smart grid communications network

Duke Energy's Smart Grid Planning & Preparation

Duke Energy is prepared to deploy the evolving, cutting-edge smart grid solutions with the ability to update the tools, technologies, and techniques as appropriate. Duke Energy's smart grid vision is much more than simply the functions it is capable of performing. Duke Energy's smart grid solution is an integration of many

points on the electric distribution system, which will provide capabilities and the platform for emerging technologies, many of which will be beyond the meter.

Duke Energy's Smart Grid Vision

Duke Energy's smart grid vision starts with a secure, interoperable network instead of a meter foundation with proprietary communications. Since 2006, Duke Energy has led the industry in the execution of the smart grid strategy where the network is the foundation. Through extensive initial field deployment experience, Duke Energy has learned to apply open and flexible products to allow for future expansion of potential smart grid capabilities. The following shows some of Duke Energy's smart grid experience through the end of 2009:

- Deployed approximately 55,000 electric AMI endpoints in Ohio
- Deployed approximately [redacted] integrated communication boxes that lays the initial foundation for Duke Energy's network
- Deployed Distribution Automation (DA) pilots for substation communication, breaker automation and self-healing, sectionalizing, and other distribution line enhancements with full automation as a vehicle to prepare for full deployment
- Deployed pilot smart grid solutions in Ohio, North Carolina, South Carolina, and Kentucky
- In Kentucky, deployed an alternative Automated Meter Infrastructure solution
- Assembled an experienced Project Management Organization (PMO), fully capable of delivering the Duke Energy Smart Grid Deployment

Project Scope

The primary scope of the Duke Energy Smart Grid Deployment Project is to implement smart grid technologies that will improve operational efficiencies, empower customer options, and lower carbon emissions through energy efficiency. The project will create a network that will provide two-way communications, linking Duke Energy's electric distribution power lines/grid to intelligent devices such as meters, data aggregators, transformers and devices in substations and customers' homes.

This functionality includes implementation of the smart grid communications network, deployment of automated metering infrastructure (AMI), distribution automation (DA) technologies, dynamic pricing programs including residential and large commercial pricing options, IT systems implementation and enhancements and customer pilot programs that include home area network capabilities and support for integration with plug-in electric vehicle (PEV) charging stations. Verizon Communications will participate as a key service provider, working with Duke Energy to design and deploy a robust smart grid solution. Participation of industry leading technology vendors, who share a commitment to open architecture communication solutions, and deployment on such a wide scale regional basis, make this project unique. Exhibit 2-1 depicts the Project architecture.

Exhibit 2-1: Duke Energy Smart Grid Architecture

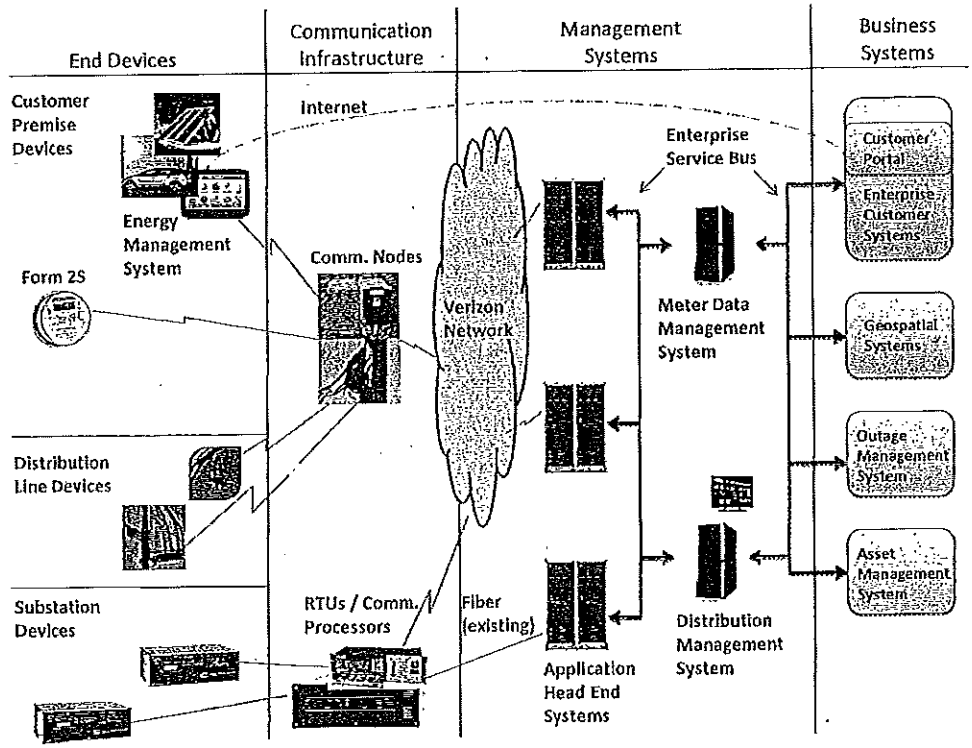
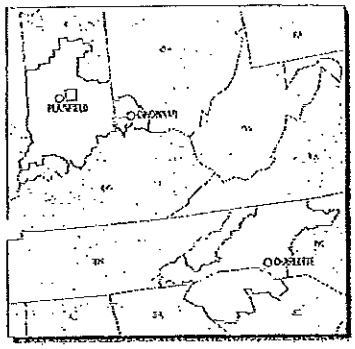


Exhibit 2-2: Smart Grid Deployment Project Service Territory



2.2 Project Impact

Duke Energy proposes to implement this Project over a wide geographic region across five States, namely Ohio, Indiana, North Carolina, South Carolina and Kentucky. The region is depicted in Exhibit 2-2. Duke Energy estimates that the Project will create approximately 1,200 jobs.

The Duke Energy Smart Grid Deployment utilizes a holistic approach to deploy appropriate technology that meets the primary purposes and goals of the DOE Smart Grid Investment Grant. Table 1 summarizes the project benefits, goals, and objectives.

Table 1: Project Benefits Relative to Goals and Objectives			
SGIG Purpose and Goals	Project Objectives	Project Goals	Benefits
Improve Electric Power System Reliability	Improve reliability of service territory distribution power system	Reduce Customer Downtime Improve SAIDI	☒Lower O&M Costs ☒Reduce Costs of Power Interruptions ☒Improve Customer Satisfaction ☒Fewer Outages ☒Improve Power Quality
Optimize Asset Utilization	Extend the life of current transmission, distribution, and generation assets and limit new generation	Enhance distribution equipment performance Improve power quality Reduce number of equipment inspections	☒Lower Electricity Costs ☒Lower O&M Costs ☒Reduce damages by lowering GHG/Carbon
Anticipate and Respond to System Disturbances	Implement the capability to understand system reactions and interactions	Reduce Customer Downtime Improve system diagnostic capabilities	☒Lower T&D Losses ☒Fewer Outages ☒Reduce Costs of Power Interruptions ☒Improve Power Quality ☒Enhance security
Accommodate all types of distributed generation, clean power, and storage options	Provide communication capabilities to support distributed resources	Connect to and monitor distributed resources including PEV and distributed generation assets	☒Lower Electricity Costs ☒Lower Peak Demand ☒Enhance Customer Flexibility ☒Enable New Technologies ☒Reduce Transmission Congestion Costs ☒Reduce Costs of Power Interruptions ☒Increases Energy Independence ☒Reduce damages by lowering GHG/Carbon
Reduce electric power system costs and peak demand	Delay the construction of generation facilities	Realize lowered consumption & peak demand fluctuations Reduce system losses	☒Lower Electricity Costs ☒Lower T&D Losses ☒Reduce Transmission Congestion Costs ☒Reduce damages by lowering GHG/Carbon ☒Avoids new plant construction
Enable informed participation by consumers	Engage customers consumption and demand	Grow customer interaction base with AMI Identify, test, expand dynamic pricing	☒Lower customer aggregate costs ☒Lower Peak Demand ☒Lower O&M Costs ☒Reduce damages by lowering GHG/Carbon

Table 1: Project Benefits Relative to Goals and Objectives			
SGIG Purpose and Goals	Project Objectives	Project Goals	Benefits
Enable clean technology development and reduce greenhouse gas emissions	Meet demand and operate electric system without new fossil fuel generation	Increase efficiency across the entire system	☒Lower Peak Demand ☒Lower O&M Costs ☒Reduce Costs from Better Power Quality ☒Reduce damages by lowering GHG/Carbon ☒Greater security from reduced oil consumption
Operating resiliently to attacks and natural disasters	Provide secure communications from Duke Energy to the customer	Enable secure and distributed generation and storage	☒Enhance cyber security ☒Increases Energy Independence ☒Risk mitigation

2.3 Summary Explanation of Major Project Tasks, Activities and Deliverables

The project has several major tasks and activities as depicted in Table 2. A summary schedule highlighting the milestones and interdependencies is included in Exhibit 2-3.

Table 2: Major Project Activities and Tasks	
Major Project Activities and Tasks	Activity and Deliverables
Customer Offerings and Enterprise Customer Support Systems	• Several programs for various customer levels and locations • Enable customers to interact with and control their energy environment • Dynamic pricing and enterprise customer service daily usage information
Grid Support Systems	• Composed of distribution management systems, outage management systems, head-end application systems, and meter data management systems • Specification, vendor evaluation, selection, engineering and deployment of IT support that support smart grid have begun • Interdependent with customer offerings
Distribution Automation Systems	• Field deployment of the smart grid devices will consist of distribution automation, automated metering infrastructure, and the interconnecting communication systems • Deployment will include installation of line sensors, capacitance control, sectionalizers, intelligent electronic devices and monitoring equipment on circuits and within substations
Automated Metering Infrastructure	• Install new, two-way meters in Ohio and Indiana

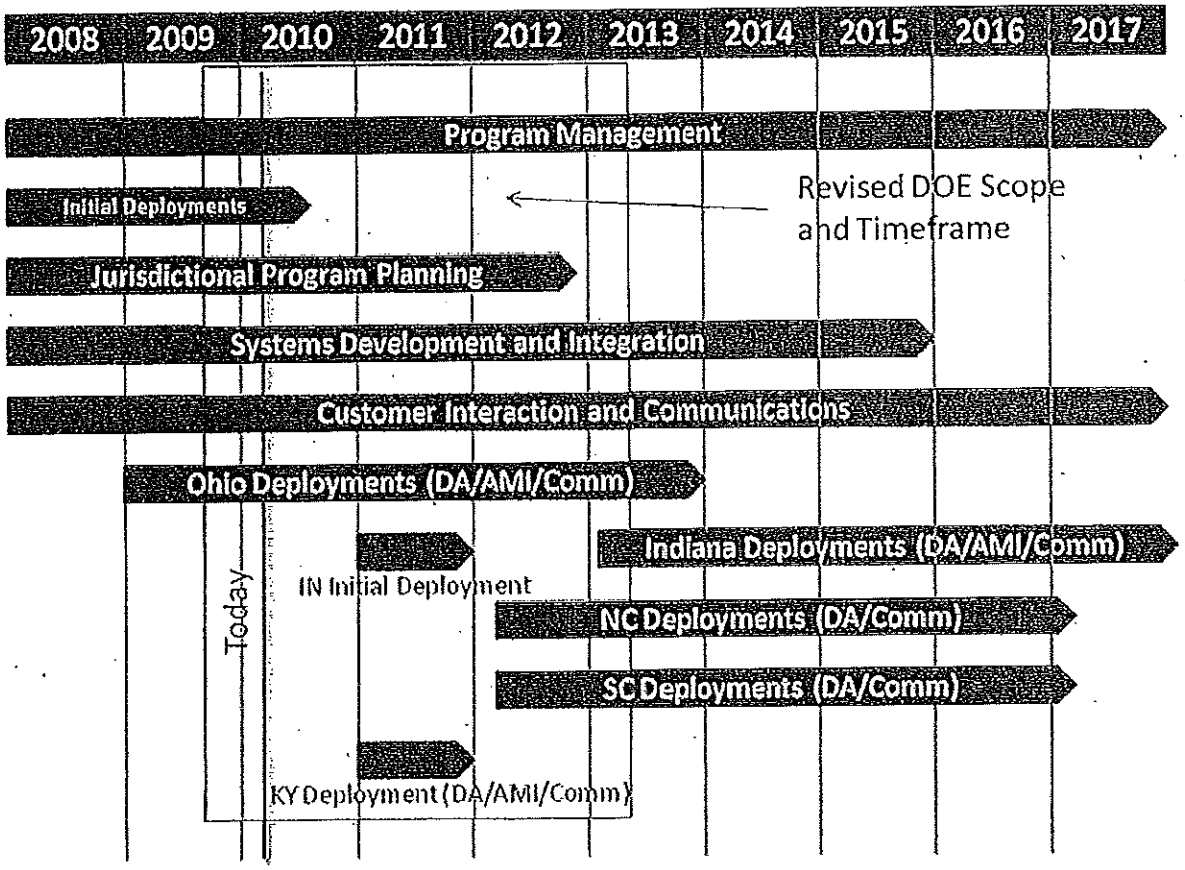
Table 2: Major Project Activities and Tasks	
Major Project Activities and Tasks	Activity and Deliverables
Communications Network	• Engineered and deployed starting in early 2010 • Comprised of communication data collectors, wired and wireless modules for the meters, and distribution automation equipment • Deliver performance and control data to and from the devices through wide area network nodes • Engineering and deployment take place in advance of the distribution automation and automated metering infrastructure deployments • IT and field equipment dependent on communication network

Additional detail is provided in Table 3 on the quantities and types of equipment that will be installed.

Table 3: Smart Grid Deployment Project Field Devices	
Scope of Field Equipment Installation (2010-2013)	Quantity
AMI Endpoint - electric meters	774,839
AMI Endpoint - integrated communication boxes	158,911
Distribution Automation - Substations (circuit breakers and regulator automation equipment)	272
Distribution Automation - Line Sensors, Aggregators, Modems	37,431
Distribution Automation - Capacitor Controls Upgraded	4,207
Distribution Automation - Sectionalizers	949
Distribution Automation - Self-Healing Technology / Switches	39

2.4 Project Schedule with Key Milestones

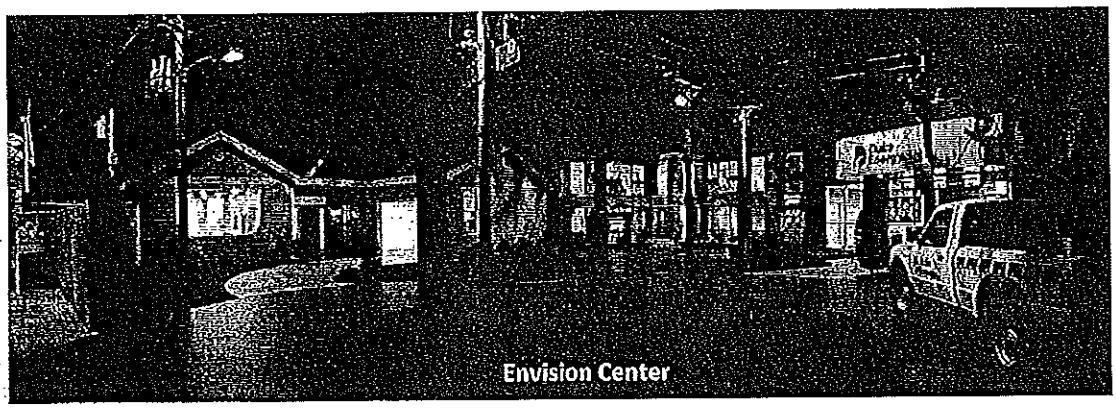
The Project is scheduled and implemented by the Duke Energy Program Management Office (PMO). This PMO has structured its project management plan such that it is in a position to continuously adjust the engineering and installation of all systems including: automated metering infrastructure, distribution automation, dynamic pricing programs, the communications network, IT systems and customer systems.



Duke Energy®

Smart Grid Deployment Project
Stimulus Funding Support Material

Topic: Integrated and/or Crosscutting Systems
Technical and Project Plan



"Smart grid is really about digital two-way communication – between the customer and Duke Energy, and Duke Energy and the power grid. The customer's meter and devices on the grid will provide real-time information, and help us improve how we deliver energy and how customers consume energy. ...[it] will transform how we operate our system – improving customer service, power reliability, and the efficiency of our transmission and distribution system."

– Todd Arnold, Senior Vice President, Smart Grid and Customer Systems

Prepared by: Duke Energy Business Services LLC on behalf of Duke Energy Indiana, Inc., Duke Energy Ohio, Inc., and Duke Energy Kentucky, Inc. (Duke Energy)

6 August 2009

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Table 8: Project Metrics

Org.	Metrics Level	Metrics Category	Performance Type	Identified Metrics – Quantitative	DOE Indicators	Source	Reporting Interval
				reconnects/ disconnects			
Duke	Customer	Distribution Automation	Operational	Reduce # of customers experiencing an outage	• Reduced # of customer outages • SAIFI	Power Delivery	Annual
Duke	Customer	Distribution Automation	Operational	Outage Detection/ Verification: Assessment time reduction & crew time reduction	• SAIDI: Routine • SAIDI: Major events (e.g., storms)	Power Delivery	Annual
Duke	Customer	IT Systems	Capital	Cross-cutting metrics	• smart grid IT systems installed	Smart Energy Systems	Annual
Duke	Distribution	Maintenance	Operational	Reduce costs associated with capacitor inspections	• # of physical capacitor inspections reduced	Power Delivery	Annual
Duke	Distribution	Safety	Operational	Increased safety	• % of on-premise meter reading risk exposures reduced	Meter Ops.	Semi-Annual

Table 9 provides examples of qualitative metrics that will result from the projects that Duke Energy will provide to track progress and report results to the Department of Energy.

Table 9: Examples of Qualitative Metrics

Org	Metrics Level	Metrics Category	Identified Metrics - Qualitative	Source
DOE	Customer	Dynamic Pricing Programs	Total load reduced due to dynamic pricing programs	Marketing & Energy Efficiency
DOE	Customer	Load Control Appliances & Management	Enables active participation by consumers	Marketing & Energy Efficiency
DOE	Customer	Load Control Appliances & Management	Total load reduced: load management programs & load appliance equipment	Marketing & Energy Efficiency
Duke	Customer	Load Control Appliances & Management	Avoided generation as a result of reduced demand	Marketing & Energy Efficiency
Duke	Customer	Plug-in Electric Vehicle	Greenhouse gas reduction	Marketing & Energy Efficiency
Duke	Customer	Enabled Customer Interaction/ Demand Response	Customer feedback - base case customer savings	Marketing & Energy Efficiency
Duke	Distribution	Automated Load Management	Power quality customer survey results	Marketing & Energy Efficiency

Many of the benefits that Duke Energy will be providing and measuring will be the result of Duke Energy's save-a-watt program. Duke Energy's save-a-watt program defines a revenue recovery mechanism for energy efficiency programs based on the costs customers avoid instead of the costs incurred by the programs. Save-a-watt is different than the industry's traditional (e.g., shared savings) cost of service approach and is divided into two main components, including:

- Demand Response: Load shaving programs where customers temporarily reduce consumption, which produces kW (capacity) reductions but no kWh (energy) savings and creates no lost margins. Example: PowerShare®, where an industrial customer temporarily shuts off plant at peak time
- Conservation: Improves the efficiency of customer equipment through programs that mainly produce kWh savings, but also have kW savings. Examples include CFLs and HVAC replacements

Additional information on Duke Energy's save-a-watt program can be found in Attachment E.

4.6 Operational Performance Assessment for SGIG Purpose and Goals

The operational information will be used for the continual management review process for the Duke Energy Smart Grid Deployment enabled tools, technologies, and techniques. The operational performance metrics are included in Table 8. Operational measurements, alerts and alarms are incorporated into the design of smart grid components and equipment. Project performance measures, monitored by the Project Management Office (PMO), will be assessed during implementation, testing and deployment. This project plan allows for opportunities to improve or modify project approaches, evaluate equipment specifications and review installation methodologies. Back-office and enterprise systems will be impacted by the operational changes including information technology, supply chain, work management, asset management, outage management, meter management and customer management.

4.7 AMI and Dynamic Pricing Applications

Automated Metering Infrastructure and Dynamic Pricing Programs

Duke Energy's goal is to work with collaborative groups in Ohio and Indiana to produce pricing options that better promote conservation and demand response, customer satisfaction, customer convenience, comfort and usability. Duke Energy's intent is to test within randomized control trials and ultimately deploy time-differentiated pricing options in conjunction with its smart grid initiative. Duke Energy agrees that utilizing time-differentiated pricing options is necessary and appropriate, and has been proceeding down the path of developing scalable technologies to enable this functionality.

Dynamic Pricing Pilot Program Plan

Duke Energy will design experimental time-differentiated/dynamic pricing options to be used in conjunction with its Automated Metering Infrastructure, smart meters, communications network and Home Area Networks (HAN) for specific service areas. Duke Energy will work with Cisco Systems, Verizon Communications, and GridPoint to deploy commercially available technologies in support of the HAN pilots. These will include the testing of pricing options, along with a full range of appliances in association with residential energy management systems. The key equipment vendors shall provide integration with EV charging stations and distributed generation resources. Duke Energy will work with collaborative groups to develop measurement methods necessary for analyzing pilot program data and results.

Pilot Pricing Offers

Duke Energy and other interested parties will work in a "Pilots Collaborative" to develop pilot pricing programs. Additionally, the Pilots Collaborative will address the development of time-differentiated pricing and billing information offers for residential and commercial customers. This collaborative group will develop

detailed pricing offerings, including number of pilots, number of participating customers, marketing pilot offers, development of rates and length of pilots. These pilot pricing programs will include:

Residential Customers – Pilot testing for small groups of residential customers (100 homes) may include Dynamic pricing programs (tiered/time-of-use pricing options, fixed critical peak pricing rates, variable critical peak pricing rates), peak-time reduction incentives, flat kWh rate structures and residential energy management systems. Customers will be provided with information regarding hourly usage and a testing rate for the provision of "smart charging" for plug-in electric vehicles.

Small to Medium-sized Business Customers – This program will similarly test several combinations of variables that may encompass the following: dynamic pricing programs (tiered/time-of-use pricing options, fixed and/or critical peak pricing rates), peak time reduction incentives, energy management systems, and hourly usage information offers for five small to medium-sized business customers.

Large Business Customers (over 500 kW) – This program will consider dynamic pricing programs (real-time pricing or critical peak pricing as a complement to Duke Energy's existing time-of-use offers). A large business customer collaborative will help develop the time-differentiated pricing options, detailed pricing offerings, number of pilots, number of participants, the marketing of pilot offers, and the development of rates, length of pilots and cost recovery issues.

In all cases, randomized control trials using DOE best practices will be used to assess the impacts of dynamic pricing programs and the impacts of behavior changes through increased consumption and pricing information available to customers. Best practices will include consideration of appropriate sample sizes, stratification, sample planning, data quality assessment, confidence and precision specification, and analytical tools to determine impacts.

5. Technical Approach: Interoperability/Cyber Security

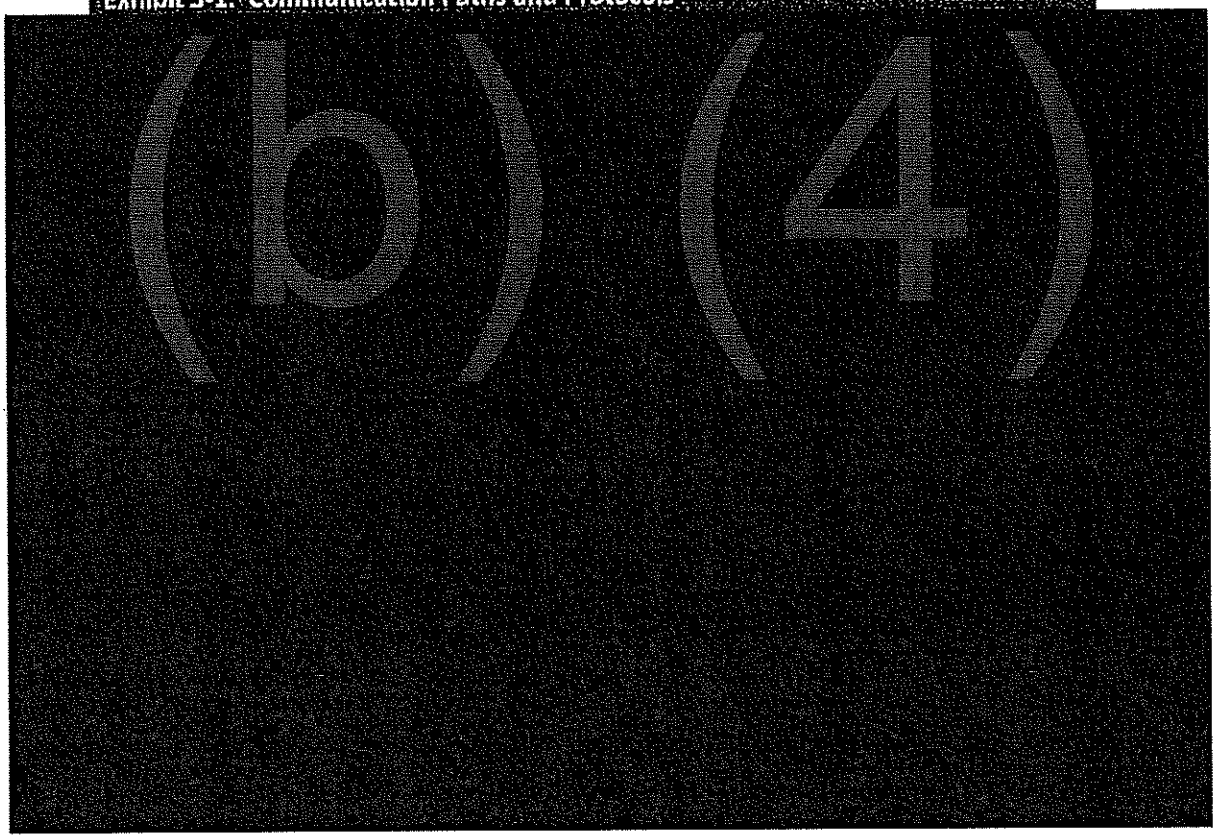
The Duke Energy Smart Grid Deployment Project utilizes a forward looking strategy, addressing all communications paths, protocols and security provisions. Interoperability standards are supported and identified at each interface and protocol. The design optimizes interoperability between systems while accommodating legacy systems with adapters as a short-term solution. Duke Energy is committed to open standards and provides thought leadership in numerous industry standards organizations.

A listing of the most relevant industry standards and protocols includes the following, which are directly referenced and shown in the legend in Exhibit 5-1:

1. Data Packets from devices (meters, sensors, etc.): XML
2. Web Services - integration between customer systems and web portal: HTTP, HTTPS
3. Delivery option for metering data or device data: SOAP
4. Published web format for sending secure data: WSDL, WS-Security
5. Communication between Java-enabled web applications: JMS
6. Common Information Model: CIM
7. Distribution Automation devices: DNP3
8. Network Transport Protocol: TCP/IP
9. Residential electronic devices: ZigBee®/HomePlug™ Smart Energy Profile 2.0
10. Residential energy management systems to the Internet: OpenHAN
11. GIS systems: Open Geospatial Consortium Standards
12. Communications with Distributed Energy Resources: IEEE 1547
13. Communication between PEVs and EVSE for DC energy: SAE J2293
14. Electric meter to communications node: LonWorks

15. Smart grid Interoperability of Energy Technology and Information Technology Operation with the Electric Power System (EPS), and End-Use Applications and Loads: IEEE P2030
16. Electric Vehicle Communications: SAE J2836

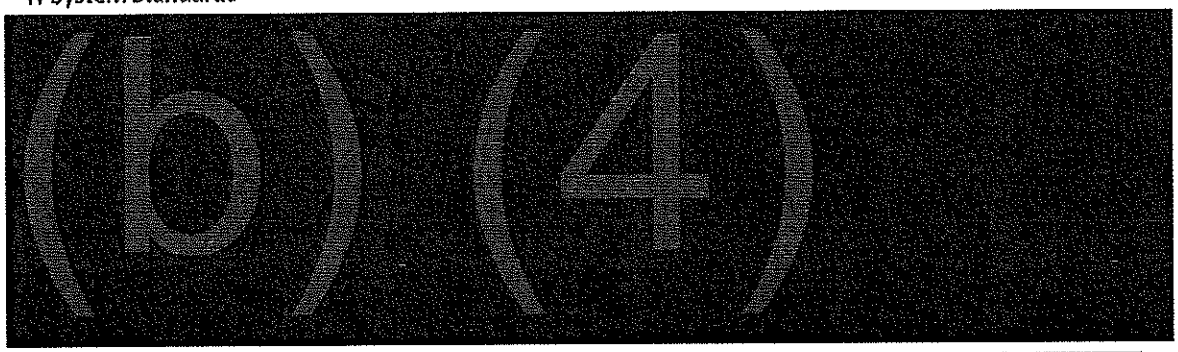
Exhibit 5-1: Communication Paths and Protocols



5.1 Interoperability Criterion

This section addresses the high-level merit review criteria for interoperability listed in Part 5 Section C, Page 41, of the FOA.

IT System Standards



Open Standards and Vendor Independence

Duke Energy has been an industry leader in pushing for open architecture and standards for smart grid development, and is actively involved in developing the NIST standards, as noted below. As such, it requires all elements of the project architecture to be developed using open standards as a risk mitigation strategy. Leveraging open standards successfully mitigates the risk of dependence on a single technology vendor. Integration of vendor technologies will be implemented and tested by Duke Energy at factory tests and during commissioning process.

Integrating Legacy Devices

Duke Energy has adhered to open standards when implementing solutions in the past. This adherence will allow a high level of integration. In a few instances, legacy systems will interface with devices using a shell applications to facilitate the conversion of the legacy system to a standards-based solution.

Business Continuity and Disaster Recovery

Communication failures between the intelligent electronic devices (IEDs) and the power delivery control center would not damage the circuit protection characteristics of the IEDs. The IEDs would continue to perform as programmed. (b) (4)

(b) (4)

Strategies to Accommodate Upgrades

Duke Energy has accounted for system upgrades by strategically implementing a rigorous test plan for all hardware and software technology components prior to release. This approach is complemented by a phased rollout strategy that allows environmental inconsistencies to be accommodated.

Vendor Support for Interoperability with Duke Energy's Devices

Duke Energy requires vendors to provide solutions that use industry standards. The vendor must document the product specifications to an acceptable standard before Duke Energy will consider adopting a particular product. This documentation consists of engineering data, interoperability test reports with other vendors and industry standards bodies, and detailed engineering test plan results. To ensure reliability, Duke Energy's standard practice is to conduct field trials to ensure interoperability and cyber security.

Compatibility with National Institute of Standards and Technology's (NIST) Emerging Smart Grid Framework

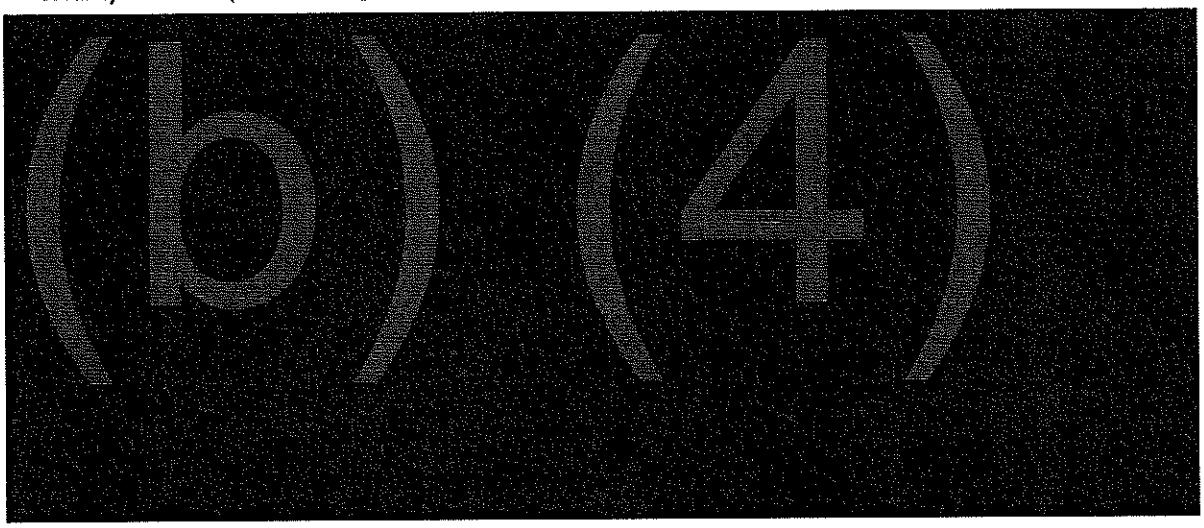
Duke Energy is an active participant in the NIST process and contributes thought leadership on national standards. Duke Energy's intent is to align, wherever possible, with the applicable NIST standards. By aligning the Duke Energy project with the NIST guidelines, it hopes to leverage economies of scale passed on by the vendors of systems and equipment, resulting from adherence to standards. This alignment ultimately benefits customers by allowing competition from a greater pool of vendors, systems and equipment in terms of features, functionality and potentially cost control, as well as reducing the risk of stranded assets as future enhancements are developed and deployed, as these should be compatible with standards-based systems deployed today.

5.2 Cyber Security

This section addresses the high level merit review criteria for cyber security listed in the FOA.

Cyber Security Strategies

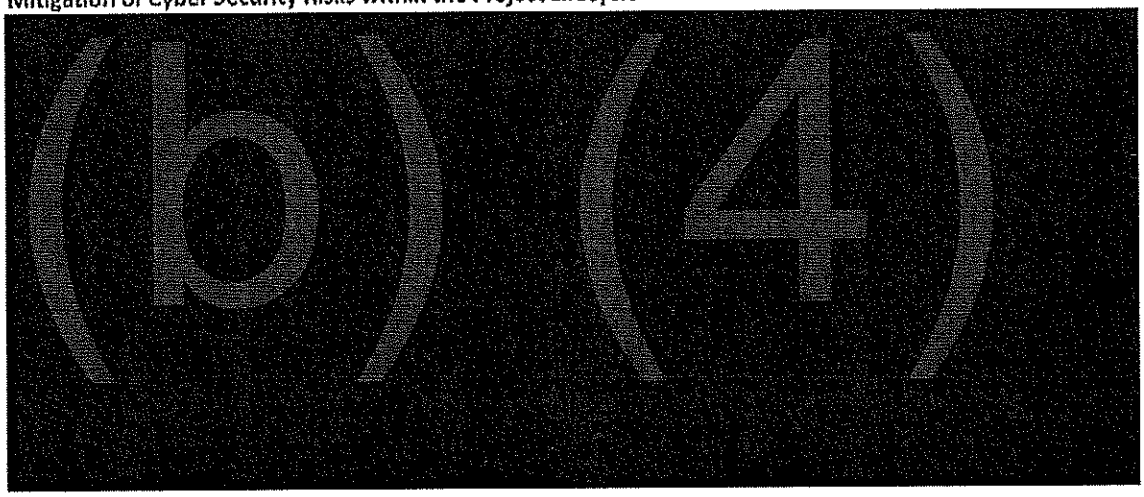
Duke Energy is committed to implementing and operating a secure smart grid infrastructure. In this regard, Duke Energy recognizes that operating a geographically dispersed network presents heretofore unseen challenges. As a result, Duke Energy has proactively worked with smart grid vendors to ensure security features are implemented at the outset. Duke Energy has established cyber security standards for its corporate and Energy Management infrastructures. These standards will be extended to address cyber security issues unique to smart grid.

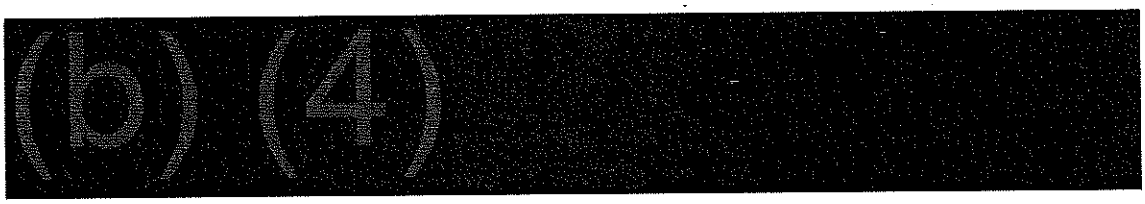


Best Practices

Duke Energy's cyber security standards are aligned with the industry best practices, such as North American Electrical Reliability Corporation (NERC) Critical Infrastructure Protection (CIP). Other best practices such as the NIST Special Publication 800 series – Security, ISO/IEC 27002 IT – Security Techniques, and AMI Security Task Force - Security Requirements will be reviewed for applicability. Cyber security professionals at Duke Energy hold industry recognized professional certifications such as CISSP, CISA and CISM and undertake annual training to retain certifications.

Mitigation of Cyber Security Risks within the Project Lifecycle

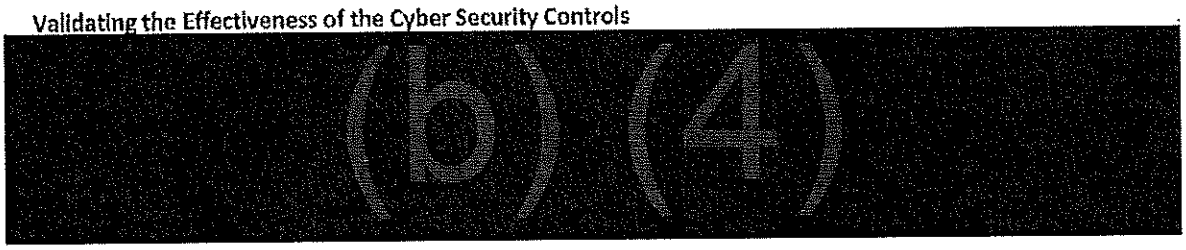




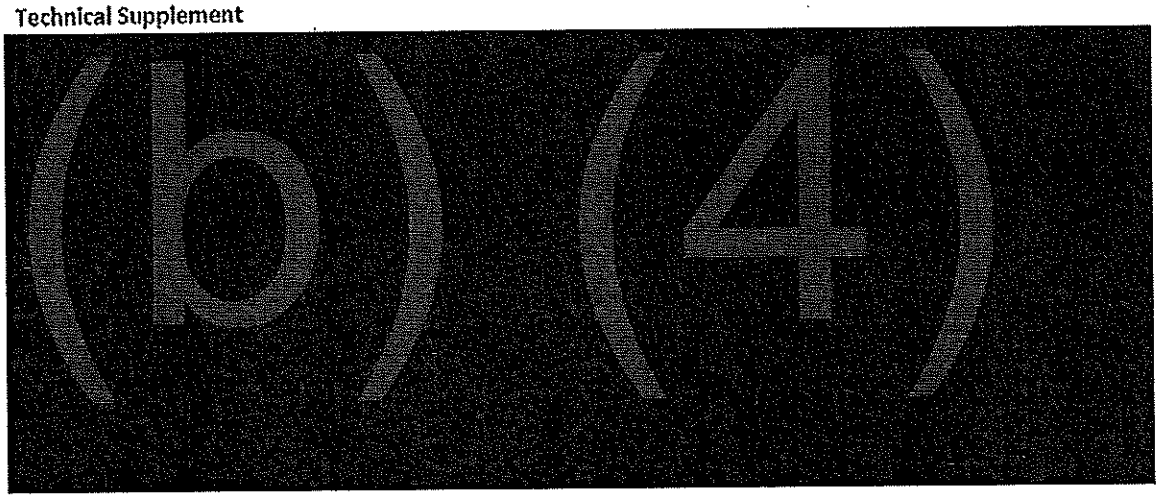
Upgrading Cyber Security across the smart grid

Duke Energy requires vendors to integrate security technology into smart grid components or systems before consideration. Vendors are requested to embed security standards in their firmware and provide the ability to upgrade their firmware remotely. This approach allows for flexibility in addressing unanticipated threats and upgrading firmware to support future security standards and enhancements.

Validating the Effectiveness of the Cyber Security Controls



Technical Supplement



6. Project Costs and Benefits: Data Collection and Determination

In support of its stakeholder and State regulator acceptance for smart grid system deployment in both Indiana and Ohio, Duke Energy has developed significant financial analyses and supporting models. These models are being utilized to project the accelerated program implementation costs and benefits as outlined in this Project Plan.

6.1 Data Collection, Data Quality, and Data Requirements Management Plan

Duke Energy will conduct a thorough data requirements analysis and introduce a revised data quality management plan in conjunction with quality assurance needs. This methodology shall provide that appropriate data are collected at the highest level of data accuracy.

Duke Energy will work with the Department of Energy to ensure that data collection procedures, data analysis, and data quality are sufficient. Duke Energy continuously reviews its measurement, verification, and validation procedures which mitigate against data integrity and data accuracy issues.

Duke Energy's Data Quality Management Plan will include:

- Compliance with the data accuracy and data integrity requirements (e.g. minimal "hand" entry)
- Random audits assessments and reviews
- Upholding of current data quality management processes, standards and policies
- Utilization of standardized forms
- Clear chain of custody for data
- Data standards and defined attributes
- Archiving policies to ensure frequent back-up and minimizing losses from potentially corrupt data

6.2 Plan for Determination and Analysis of Project Costs and Benefits

Plan for Determination and Analysis of Project Costs

Project costs will be derived from existing business case models in the following categories: Capital Expenditures (CapEx) and Operations and Maintenance Expenditures (OpEx) at the Endpoint and Distribution levels.

The captured quantifiable costs include:

- CapEx per asset (e.g., assets including endpoint, communications infrastructure and IT systems)
- OpEx per operating asset (e.g., operating and maintenance costs for AMI meters)

These costs categories shall be calculated via:

- Data from existing programs and historical information from previous, similar projects
- Internal calculations based on budgets and specific costs experienced
- Forecasted costs
- The project oversight process, where all costs are monitored and compared to estimates on an ongoing basis.

Plan for Determination and Analysis of Project Benefits

The project data collection efforts focus on the determination of the following benefits:

- Company/Operational Benefits:
  - Increasing Revenue
  - Expense Reductions
  - Load Reduction
  - Consumer Savings
- Economic/Societal Benefits
  - Jobs Creation
  - CO_2 and other Greenhouse Gas Reduction
- Benefits derived from Avoided Costs
  - Increased safety
  - Improved quality of consumption data

The benefits in these categories shall be calculated from:

- Budget numbers
- Internal data derived from comparison of budgets with experiential results
- Forecasts of avoided costs

- Application of third party reporting methodologies to internally observed reductions

Examples of potential project benefits and the data that Duke Energy may be able to provide are demonstrated in Table 10.

Plan for Determination of Project Baseline

Duke Energy's plan for estimating costs and benefits begins with the establishment of a solid baseline from which incremental project costs and project benefits can be reported to the Department of Energy. Central to Duke Energy's baseline estimation plan will be sample development for measurement and verification (M&V), such as randomized sampling procedures—for blind pre-post and benchmark comparison—that consider best practices in measurement & verification (e.g., IPMVP or an established regional M&V protocol), clear standards for confidence and precision, and appropriate analyses and methods. Duke Energy will comply fully with the DOE's requirements for data quality, randomized control trials, analytical methods, and standards for statistical comparison when measuring the impact of its programs over the established baseline.

6.3 Discussion of Data Collection and Benefit Types

Duke Energy has constructed an extensive financial model for the smart grid initiatives that captures the economics of the costs and benefits of the project through incremental financial analysis. The high-level metrics measure the beneficial impacts of the project. Table 9 provides examples of benefits and the potential data used to measure them.

Data Collection

In addition to the Funding Opportunity Announcement (FOA 58)-provided examples from the Department of Energy, Duke Energy has added benefits metrics as shown in Section 4.5.

Data Sources

The financial analysis models Capital expenditures, Operational and Maintenance expenditures and associated benefits for 2010-2012. Duke Energy will provide accurate data that depicts the on-going costs and benefits for the investment during specified time intervals that is in compliance with the Department of Energy's requirements for data collection.

Department of Energy and Duke Energy Provided Benefits

Duke Energy has formulated a collection of project benefits complementary to those defined by the DOE. Section 4.5 specifies the Department of Energy and Duke Energy identified metrics.

People and Processes

As previously discussed in Section 3, Duke Energy has dedicated substantial resources to collect and report the costs and benefits of the project to the Department of Energy.

Table 10: Example Benefits and Associated Data Requirements

Benefit Category	Potential Benefits	Benefits Description	Potential Data
Customer	Dynamic Pricing Programs (TOU)	Reduced energy usage in response to price signals	• Number of customers using dynamic pricing programs • Average customer usage
	Home Area Network	Reduced customer energy costs due to in-home network and utility supply signals	• Number of customers using the HAN • Average customer usage
Economic	Asset Management	Reduction in overall capital due to enhanced information on distribution equipment	• Deferred capital projects
	Meter Operations	Reduction in electro-mechanical meter requirements	• Reduced expenditure on electro-mechanical meters
	Off Cycle / Off Season	Reduction in manual off cycle reads	• Reduced off cycle / off season meter reading budget
	Power Theft Recovery	Reduction in power theft	• Power theft cases identified and corrected
	Regular Meter Reads (Monthly)	Reduction in manual regularly scheduled meter reads	• Reduced meter reading budget
	Remote Diagnostics	Reduction in number of single-site field visits	• Current and future number of single-site field visits
	Salvage Value	Increased revenue applicable during deployment; salvage value of removed electro-mechanical meters	• Revenue associated with salvaging meters
Environmental	Vehicle Management	Reduction in number of vehicles	• Number of vehicles • Annual cost of vehicle operation
	System Fine-tuning	Reduction in distribution line losses	• Improved power factor
	System Voltage Control	Reduced costs associated with 24x7 voltage reduction	• Current and future average system voltage levels
Reliability	VAR Management	Avoided costs associated with maintaining capacitors online	• Increased up-time of capacitor banks
	Assessment / Crew Time (Reduced SAIDI)	Reduction in assessor and crew time in identifying outages and verifying remaining outages (SAIDI)	• Improvement in average SAIDI

6.4 Quantitative Estimates: Expected Impact of the Project on Benefit Areas

Project Benefits

Over its 20-year expected asset life, the Project will yield expected benefits of [redacted] for a total initial investment of [redacted] Table 11 depicts examples of the high-level quantitative impact estimates over the project lifecycle.

Table 11: Estimated Benefits Over Project Lifecycle

Benefit Category	Benefit	Estimated Amount
Economic	Operational Benefits	(b) (4)
Reliability	Customer Outage Reduction	
Customer/Societal	Enabled Customer Interaction/ Demand Response	
Customer/Societal	Plug-in Electric Vehicle	

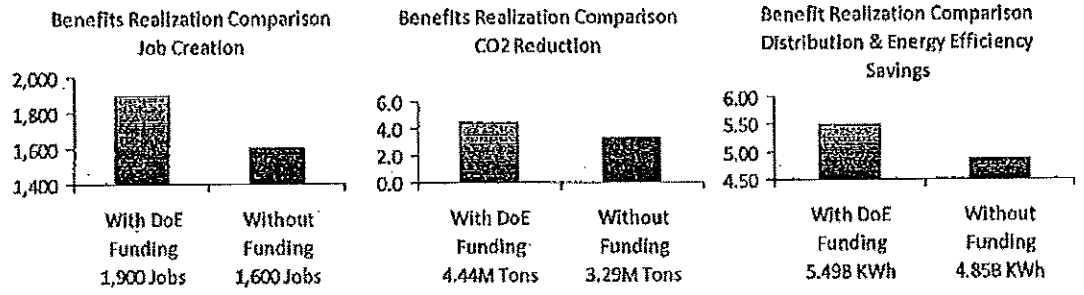
Quantitative Estimate Data Quality

The plan for data collection is to develop a data quality management plan and to provide the Department of Energy the cost and benefit data with appropriate time intervals in full compliance with the Department of Energy's requirements for collection procedures, data analysis, and data quality.

Benefits Realization Comparison

The following depicts the benefits realization differential of the Project with and without SGIG funding. It demonstrates the SGIG potential impact to job creation, CO_2 Reduction, and energy savings in the distribution system and energy efficiency initiatives.

Exhibit 6-1: Benefits Realization Comparison



Attachment A: Resumes

- Todd Arnold – SVP Smart Grid and Customer Service
- Mark Claeys – Director of Accounting for Smart Grid
- Don Denton – GM - Implementation Strategy and Planning and PMO Project Manager
- Mark Wyatt – VP Smart Energy Systems
- Ted Schultz – VP Marketing and Energy Efficiency / Customer and Energy Efficiency
- Tony Adcock – Manager Distribution Automation Deployment
- David Masters – Manager BPL Projects / PLC Engineering and Network Design
- Retha Hunsicker – Director Enterprise Customer Service / Business Standards and Integration
- Casey Mather – Director Mass Market Strategy & Market Plans / R&B Strategy & Market Plans
- Steve Hinkel – Director Advanced Customer Applications / Advanced Customer Technology
- Donald Schneider - General Manager, Smart Grid Field Deployment
- Terrell Garren – IT Managing Director, IT Client & Security Services
- Chris Kiergan – Executive Consultant (KEMA Inc.)

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SUMMARY OF QUALIFICATIONS

Transforming Energy Delivery and the Customer Experience through Smart Grid

Responsible for Duke Energy's smart grid deployment to transform its electric and gas distribution systems into an integrated, digital network to transform our energy delivery and customer experience model.

EXPERIENCES

Duke Energy

Senior Vice-President, Smart Grid and Customer Systems 2008 - Present
Responsible for the Smart Grid strategy, deployment planning and implementation, as well as the customer and meter data management systems.

Senior Vice-President, Customer Service 2006 - 2008
Responsible for customer contact centers, billing, credit & collection, payment processing and meter data management for Duke Energy's franchised electric & gas unit's 3.8 million electric and 0.5 million gas customers. Included $200 million operating budget and 1,000 employees.

Cinergy

Vice-President, Customer Care 1998 - 2006
Responsible for Cinergy's business account management, call centers, field customer service centers, product management, voice-of-the customer, and customer service programs.

Vice-President, Sales 1997
Transitioned utility service group into competitive sales team.

Transformation Now Reengineering Team – Energy Delivery Business Unit 1996
Responsible for leading team's effort to transform how the transmission and distribution system is designed, built, operated, maintained and repaired.

General Manager, Distribution Services 1995

Responsible for consolidating PSI Energy's and CG&E's billing, line clearing, metering and transportation functions.

PSI Energy 1976 - 1995

Various positions including operations, field customer services, financial, strategic planning, systems implementation, merger integration planning and marketing experience.

EDUCATION

M.B.A., University of Indianapolis, 1986
B. S. Marketing, Indiana State University - *cum laude*, 1976
Call Center Industry Advisory Council (CIAC) – Certified Strategic Leader

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SUMMARY OF QUALIFICATIONS

Transforming Energy Delivery and the Customer Experience through Smart Grid

Responsible for Duke Energy's smart grid accounting and financial support.

EXPERIENCES

Duke Energy

Director, SmartGrid Support 2008 - Present
Responsible for Duke Energy's smart grid accounting and financial support.

Director, Accounting 2006 - 2008
Designed the corporate reporting architecture and designed and implemented financial management and operational reporting.

Senior Accounting Manager 2003 - 2006
Member of Day 1 Merger Integration Team designed and implemented the internal financial reports. Coordination of SOX internal control, helped to direct the establishment of major financial improvement initiative.

Manager, Accounting and Financial Support 1996 - 2003
Managed financial staff in budgeting, accounting and reporting of Business Unit financial results of regulated and non-regulated businesses.

Manager, Business Management Information 1991 - 1996
Responsible for prioritizing and overseeing the implementation of financial system enhancements., part of the reengineering core team and lead corporate project direction .

Staff Accountant / Supervisor of Accounting 1979 - 1991
Various accounting and internal audit positions including installing a new Corporate Accounts Payable system .

EDUCATION

M.B.A., University of Indianapolis, 1990
B. S., Business, University of Indianapolis, 1979
CPA, 1983

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SUMMARY OF QUALIFICATIONS

Transforming Energy Delivery and the Customer Experience through Smart Grid

Responsible for Duke Energy's smart grid implementation strategy and planning to transform its electric and gas distribution systems into an integrated, digital network to transform our energy delivery and customer experience model.

EXPERIENCES

Duke Energy

General Manager, Smart Grid Implementation Strategy and Planning 2009 - Present
Responsible for the Smart Grid implantation strategy and planning, including overall PMO oversight, design coordination and stakeholder management.

Director, Franchised Electric and Gas, Strategic Initiative 2008 - 2009
Responsible for leading a continuous improvement initiative across Duke Energy's Franchised Electric and Gas business.

Director, Structuring & Valuation 2007 - 2008
Accountable for managing a team that developed deal and commercial structure that contributed value through industrial, commercial and institutional customer offerings and wholesale opportunities.

Project Director, Procurement, Construction, Management & EHS 2005 - 2007
Charged with lead of multiple projects including the design and construction of the Lee Combustion Turbine Facility.

Director, Strategic Planning 2002 - 2005
Responsible for leading the development of Duke Power's ten-year integrated strategic plan.

Senior Marketing Director 2001 - 2002

Involved in opportunities to diversify Duke's asset portfolio and leverage internal resources from multiple Energy Business Units

Duke Engineering and Services, Inc.

Assistant Engineer to Senior Engineer / Director, Business Development 1992 - 2001

Involved in many engineering and project management roles including development of an IGCC power plant, design and construction of a greenfield industrial steam complex, and managing numerous industrial energy audits.

EDUCATION

M.B.A., Queens University, NC, 2007
B. S. Aerospace Engineering, Georgia Institute of Technology, 1992
Professional Engineer NC + SC, 1995
NC General Contractor, 2008
Community School of the Arts, Board of Directors, 2007 - Present

Mark D. Wyatt
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SUMMARY OF QUALIFICATIONS

Transforming Energy Delivery and the Customer Experience through Smart Grid

Responsible for the development and implementation of Duke Energy's smart grid information technology platform that will enable transformation of its electric and gas distribution systems into an integrated, digital network to transform our energy delivery and customer experience model

EXPERIENCES

Duke Energy

Vice-President, Smart Energy Systems 2008 - Present
Responsible for deployment of the information technology and data delivery platform that will enable Duke Energy's Smart Grid strategy.

Vice-President, IT Operations Applications 2007 - 2008
Responsible for the IT systems portfolio supporting Duke Energy's Customer Services, Power Delivery, Energy Efficiency, and Energy Mgmt/Process Control business operations.

Vice-President, IT Business Applications 2006 - 2007
Responsible for the IT systems portfolio supporting Duke Energy's corporate, regulated and unregulated business operations

Vice-President, Duke Power Information Technology
2003 – 2006
Responsible for the IT systems portfolio supporting Duke Power's regulated business operations (Customer Services, Power Generation and Power Delivery).

Vice-President, Energy Services Information Technology
1998 – 2003

Responsible for the IT systems portfolio supporting Duke Energy's domestic and international unregulated business operations (Power Generation, Power Plant Construction, Power Engineering Services, and Energy Trading & Marketing)

Information Technology Delivery and Support
1980 – 1998
Various individual contributor and middle management positions including IT application delivery & support, IT strategy & planning, IT infrastructure delivery and support, IT customer service delivery & support, and IT telecommunications delivery & support

EDUCATION

B. S. Computer Science, North Carolina State University, 1980

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SUMMARY OF QUALIFICATIONS

Visionary leader with a consistent track record of delivering the future. I have earned a reputation for an ability to anticipate market opportunities, to bridge the gap between business and technology, to complete complex engagements as planned, to effectively apply new technology, and to drive organizational change.

EXPERIENCES

Duke Energy, Charlotte, NC

Vice-President, Marketing and Energy Efficiency 2006 - Present
Responsible for the retail energy services business line, customer satisfaction and all products and services. Continued to grow incremental energy services business and achieve strong customer satisfaction rankings while developing an innovative new energy efficiency business line. The new business line featured our save a watt business model and a portfolio of programs projected to add over $100 MM to earnings annually..

Vice-President, Large Business Customer Sales, Service and Marketing 2004 - 2006
Responsible for customer sales, service and marketing of all assigned commercial and industrial customers who represent 40% of revenue. Applied disciplined energy services business strategy to improve customer satisfaction and incremental earnings. Achieved highest Key Account National Benchmark customer satisfaction score in Duke Power history at 88.8% very satisfied, improving ranking from #8 to #3 in the nation, while delivering double digit growth in earnings each year. .

Vice-President/General Manager, Marketing 2002 - 2004
Successfully implemented a new regulated services business strategy to produce additional value for customers and shareholders. Segmented markets and developed specific plans to increase customer satisfaction and earnings.

Director, eBusiness 1999-2002

Small team charged to accelerate the incubation of opportunities that leverage the Internet to create sustainable value. The value realized exceeded $50 MM in year 1 and $200 MM in year 2. My strategy work resulted in equity investments in InterContinentalExchange(ICE) and Pantellos. I also created My Duke Energy, a customer-focused private web site.

Senior Consultant, Strategic Planning 1997-1999

Led the development of new strategies and opportunities including long-range scenarios, enterprise and business unit IT strategies, customer service strategies in a competitive environment and the European entry strategy. .

Energy East/New York State Electric & Gas, Binghamton, NY 1983 - 1997

Left as Director, Advanced Technologies where I was responsible for all information technology applications and distributed computing. Various prior positions included transformation to deregulation, end-user computing, and strategic financial planning systems.

EDUCATION

Executive Development, University of Idaho, ID, 1996

M.B.A., Syracuse University, NY, 1987

B. S. Business Administration, Albany University, NY - *cum laude*, 1982

Tony R. Adcock
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SUMMARY OF QUALIFICATIONS

Transforming Energy Delivery and the Customer Experience through Smart Grid

Responsible for Duke Energy's Smart Grid Distribution Automation Deployment

EXPERIENCES

Duke Energy

Manager, Distribution Automation Deployment 2009 - Present
Responsible for successful execution and delivery of Smart Grid Distribution Automation plan. Work with multiple departments as well as outside vendors. Lead teams to evaluate, refine, and deploy new technologies.

Manager, Special Projects 2008 - 2009
Lead role for Power Delivery in Smart Grid project and business case development. Defined scope and vision for deployment needs. Prepared written testimony for Ohio and Indiana commission filings.

Manager, Special Projects 2007 - 2008
Lead Power Delivery Workforce team to review retirement and other attrition rates, project future workforce needs, and develop PD strategy and long term plan.

Manager, Special Projects 2006 - 2007
Lead post merger Materials Standards and Procurement team.

Project Manager 2004 - 2005
Power Delivery-Distribution Engineering process review. Object was to improve customer service, simplify internal engineering process and lower operational cost where possible.

Student to Engineer to Present 1987 - 2005

Worked in customer project engineering, system planning, power quality, down town underground network system, supervisor for 15 field crews and engineers, Subject Matter Expert for equipment inspection and maintenance programs, ED/ET Right of Way Manager.

EDUCATION

B. S. Engineering, North Carolina State University, 1987
Profession Engineer-NC + SC, 1992

David L. Masters
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SUMMARY OF QUALIFICATIONS

Transforming Energy Delivery and the Customer Experience through Smart Grid

Responsible for Duke Energy's smart grid Telecommunications Architecture and Strategy. Testing and evaluation of new technologies to support Duke Energy's smart grid and energy efficiency programs. Work with vendors/suppliers to develop technologies to support monitoring and maintenance of distribution circuits and in-home equipment that will support a smart grid deployment. Support of external standards bodies to push for more rapid adoption of smart grid standards across the industry.

EXPERIENCES

Duke Energy

Manager, BPL Projects 2006-Present
Responsible for Duke Energy's smart grid Telecommunications Architecture and Strategy. Testing of evaluation of new technologies to support Duke Energy's smart grid and energy efficiency programs. Evaluation of Duke Energy's BPL Deployments both for commercial and internal use.

Manager, PLC Eng & Network Design 2004 - 2006
Responsible for Technical evaluation of the BPL trials and network design for commercial and internal applications utilizing PLC/BPL

DN-Operations Director 2001 - 2004
Responsible for the circuit design of DukeNet's fiber network both for internal and commercial use. Primary design of network topology and customer circuit request.

Senior IM Telecomm Analyst 1994 - 2001
Responsible for circuit design and digital cross connect architecture for Duke Energy's transport network supporting both internal and commercial circuits for DukeNet communications.

Communication Supervisor 1987 - 1994
Responsible for Data Communications Maintenance and support for Duke Energy's Northern Region consisting of data circuits, modems, computers in support of customer service, transmission and power delivery applications. Lead R&D effort surrounding Duke's mobile data implementation and testing.

Communication Technician 1983 – 1987
Responsible for maintenance of Duke's communications infrastructure consisting of fiber optics, microwave, radio and telephone and data equipment

United States Air Force Radio Communication Technician 1978 – 1983
Responsible for maintenance of Air Traffic Control equipment, inter-base radio, high frequency long haul equipment

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SUMMARY OF QUALIFICATIONS

Transforming Energy Delivery and the Customer Experience through Smart Grid

As Director, Enterprise Customer Systems, I am responsible for the management of multiple tactical and strategic plans for Duke Energy. Lead the strategic planning for the enterprise to integrate Customer process, data, and technology to enable the vision of Smart Energy. Responsible for strategy, projects, business architecture, and data flow of the customer systems. This includes the integrity of data, data governance, controls and integration.

EXPERIENCES

Duke Energy

Director, Enterprise Customer Systems 2007 - Present

Director, Business Standards & Integration 2006 - 2007
Drive the standardization of business processes and technology for Customer Service, ensuring simplicity and adherence to model integrity while achieving top tier customer satisfaction at an industry leading low cost. Serves as the single point of contact for cross functional issues and requests. Prioritizes and coordinates requested enhancements to Customer Service technologies.

Manager, Contact Services Support 2003 - 2006
Managed multiple support facets of the Cinergy Call Center. These areas included hiring, training, workforce development, process improvement, system optimization, IT initiatives, self-service applications, quality assurance and benchmarking. Also responsible for customer satisfaction, surveys and complaints for all of Customer Service.

Business Manager, CMS 2000 - 2003
Responsible for ensuring consistent business practices, regulatory compliance, and enhancements that deliver the necessary tools to enabled our employees to provide exceptional

service to our customers. Balanced the business needs with the project scope while weighing current and future business transitions and process improvements. Managed all phases of the CMS development from design, documentation, conversion, quality assurance and testing, through the implementation and support system strategies.

Team Lead, CMSS Project 1999 - 2000
Responsible for managing employees who were developing the design and testing functions for CMSS project. Project moved 6 billing systems into one.

Manager, Customer Service/District 1995 - 1999
Managed variety of Union, Exempt and non-Exempt employees, community relations, meter reading, customer service.

Various Positions - Billing to Customer Services Supervisor III 1987 - 1995

EDUCATION

B. S. Business Administration, Indiana Wesleyan, 1995
Call Center Industry Advisory Council (CIAC) – Certified Strategic Leader

Casey Mather
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SUMMARY OF QUALIFICATIONS

Responsible for developing relationships with customers and partners to change energy consumption behavior and create new, incremental value.

EXPERIENCES

Duke Energy

Director, Mass Market Strategy and Market Plans 2000 - Present
Responsible for the development of market plans to drive customer behaviors and deliver positive customer experience for over 3 million residential and small/medium business customers. Responsible for product development including billing/payment, energy efficiency, renewable and smart grid enabled products.

Market Segment Manager 1997 - 2000
Responsible for customer research, offer development, channel deployment, communication and go-to-market strategies for the small and medium business market.

Coordinator, Power Market Specialists 1992 - 1997
Responsible for business plans for large commercial customers. Managed team of specialists focused on national chain customers, commercial developers and engineering and architectural firms. Served as EPRI advisor.

Load Analysis Engineer 1990 - 1992
Responsible for identification, evaluation and development of demand side management offers for the commercial customer market.

Power Engineer 1982 - 1990
Responsible for account management for large commercial and industrial customers.

Distribution Engineer 1980 - 1982

Responsible for project engineering of power delivery projects.

EDUCATION

B. S. Mechanical Engineering, North Carolina State University, 1980

Steven P. Hinkel
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SUMMARY OF QUALIFICATIONS

Transforming Energy Delivery and the Customer Experience through Smart Grid

Responsible for Duke Energy's smart grid in-premise technical design solutions. This includes focusing on the user experience – including home/premise energy efficiency automation, portal design, contributing to offer development, distributed renewable generation and all aspects of the electric vehicle.

EXPERIENCES

Duke Energy

1999 - Present

Director Advanced Customer Applications

Responsible for deployment of solutions into the home/business as a logical extension of our digital-grid initiative. Responsibilities include defining business models / opportunities, lead renewable energy opportunities, electric vehicle adoption / integration, demand-side management solutions, leading our Midwest Envision/Innovation Center and home automation solutions.

Integration Lead

Responsible for integration of Cinergy's Information Technology function during merger/acquisition with Duke Energy. Scope of management responsibilities includes 1200 FTEs, 2400 applications, $300MM budget including a mix of employees, contractors and near-shore and offshore sourcing partners

Director Strategy & Architecture

Responsible for establishing, guiding and enforcing IT Business Plan, standard products, standard practices and architectures within our North American operation. Also responsible for managing architectural exceptions, solution interdependencies, business case analysis and providing research services.

General Manager, IT Delivery

Responsible for service delivery of IT division that includes all projects, applications and infrastructure within multiple sites in North America. Scope of management responsibilities includes an organization of 400+ FTEs and an annual budget of $92 million supporting a firm with revenue of $2 billion. Service delivery contains a mix of employees, near-shore and offshore sourcing partners.

General Manager, Technology Solutions

Responsible for Security, Help Desk, Deskside Support, Service Relationship Coordination, Architecture, Strategy, Research and Development, and Design and Engineering. Other duties include full due diligence of complete outsourcing deal with near and offshore components, as well as, the management of partners.

Manager Web Strategy and Business Intelligence

Responsibilities include leading strategic planning for department and authoring plans for both the Web Strategy and Business Intelligence teams; process engineering; design and staff newly created teams; budget forecasting and tracking actual dollars to budget.

EDUCATION

Masters Business Administration, Thomas More College, Crestview Hills KY. 1999.
Bachelor of Science, Information Technology, Northern Ky University, Highland Heights, KY. 1993.
Associate Applied Science, Business Process, Northern Ky University, Highland Heights, KY. 1990.
Northern KY University, Academic Advisory Board – 2003 - Present

Donald L. Schneider, Jr.
Duke Energy
139 East Fourth Street
Cincinnati, Ohio 45202
(513) 287-3702 don.schneider@duke-energy.com

SUMMARY OF QUALIFICATIONS

Utilizing Past Engineering and Operations Experience to Deploy Duke Energy's Smart Grid Vision

Responsible for managing the field deployment of Duke Energy's smart grid components that will help carry out Duke Energy's Smart Grid vision. Deployment of advanced metering infrastructure (AMI), distribution automation equipment (DA), and communications network for Duke Energy.

EXPERIENCES

Duke Energy

General Manager, Smart Grid Field Deployment 2008 - Present
Responsible for the field deployment of Duke Energy's smart grid components including; advanced metering infrastructure (AMI), distribution automation equipment (DA), and communications network for Duke Energy enterprise-wide (Ohio, Kentucky, Indiana, South Carolina, North Carolina).

General Manager, Midwest Premise Services 2006 - 2008
Responsible for management of meter reading and premise services for Duke Energy Midwest (Indiana, Ohio, and Kentucky). Managed staff of over 500 manager, supervisor, professional, technical, administrative, union craft, and contractor craft employees. Work included both gas and electric in Ohio and Kentucky.

Cinergy

General Field Supervisor 2005 - 2006
Responsible for general supervision of field transmission and distribution construction, operations, and maintenance for four district locations in Indiana (Kokomo, Rochester, Wabash, Huntington). Managed staff of over 40 supervisor, professional, administrative, technical, union craft, and contractor craft employees.

Area Engineer 2000 - 2005
Responsible for general supervision of field distribution design engineering for south half of the state of Indiana. Managed staff of over 40 supervisor, professional, administrative, and technical employees.

Senior Engineer 1995 - 2000
Worked in area of capital project budgeting for Energy Delivery business unit. Worked on setting up new Activity Based Management accounting system for the business unit along with unit data reporting.

PSI Energy 1986 - 1995

Various positions including distribution system planning, distribution design engineering, storeroom management, and field operations throughout locations in the Indiana service territory.

EDUCATION

Registered Professional Engineer (Indiana) – 1995
ABB Advanced Power System Engineering – 1991
B. S. Electrical Engineering, University of Evansville - 1986

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SUMMARY OF QUALIFICATIONS

EXPERIENCES

Duke Energy

IT Managing Director, IT Client & Security Services 2008 - Present
Led enterprise IT Security, Help Desk and Local IT functions. Consolidated Southeast and Midwest Local IT into one organization. Transitioned Midwest Local IT from external provider to in-house service. Led project to establish new 3-year enterprise agreement with Microsoft. Consolidated IT Security Consulting function with IT Compliance function.

IT Director, Sourcing and Governance Contracts 2006 - 2008
Completed analysis and recommendations for externally sourcing significant components of IT infrastructure operations and applications maintenance functions. Provided leadership in contract negotiation and subsequent transition of applications maintenance services to IBM and Accenture. Formed initial IT Vendor Management Office. Developed master agreements with IBM, Accenture, Cognizant, and Infosys. Led analysis and transition of cellular support services to third party supplier.

IT Director, IT Project Management Office 2006 - 2006
Developed and managed the IT Project Management Office. This included initial staffing, work processes, roles and responsibilities to analyze, approve, and track projects across the IT function. Additionally, planned and managed the implementation of IT changes required for legal "Day 1" of the merger of Duke Energy and Cinergy Corp.

IT Division Manager I, IM Operations Project Services & Controls 2003 - 2004
Management responsibility for team of highly skilled project managers and enterprise architects. Project management function is responsible for leading complex, non-routine, high impact projects with scope frequently including multiple business units. Architecture function involves understanding business direction, negotiating and setting strategic direction for the IT function across the enterprise. Direct responsibilities include budget management, staffing, project analysis and requirements negotiations, issues management, project status tracking, IT architecture planning.

Project Director, IT Operations 2003 - 2003
Enterprise IT Architect, IT Strategies & Consulting 2000 – 2002
IT Manager II, Operating Systems Support 1998 – 1999
IT Manager II, Telecom & Network Services 1994 - 1998
IT Manager I, Engineering 1991 – 1994
Senior Systems Analyst, Technology Architecture 1988 – 1991
Systems Programmer, Information Systems 1985 – 1988
Applications Programmer, Computer Services 1983 – 1985

U.S. Army

Army National Guard **1980 - 2007**

Lt. Colonel, Deputy Brigade Commander

Deployed to Iraq for 12 months as part of Operation Iraqi Freedom **(Oct 2004 – Jan 2006)**. Served in northern Iraq as deputy Brigade Commander, 30th Engineer Brigade. Responsibilities included managing personnel and logistics for 3,000+ soldiers, airmen and Marines spread across 15 bases in northern Iraq. Awarded Bronze Star for service.

EDUCATION

Graduate of U.S. Army War College, 1999
M.S., North Carolina State University, Computer Engineering, 1997
B. S., Computer Science, Appalachian State University, 1982

Christopher D. Kiergan

Profession:	Operational Excellence Business Consultant
Years of Experience:	12
Education:	MBA/1995/Management & Strategy, Organizational Behavior, and Marketing/J.L. Kellogg Graduate School of Management, Northwestern University
	Diploma/1992/National Security and Strategic Studies/Naval War College
	B.S./1983/Mechanical Engineering/United States Naval Academy
Years with KEMA:	4

Key Qualifications:

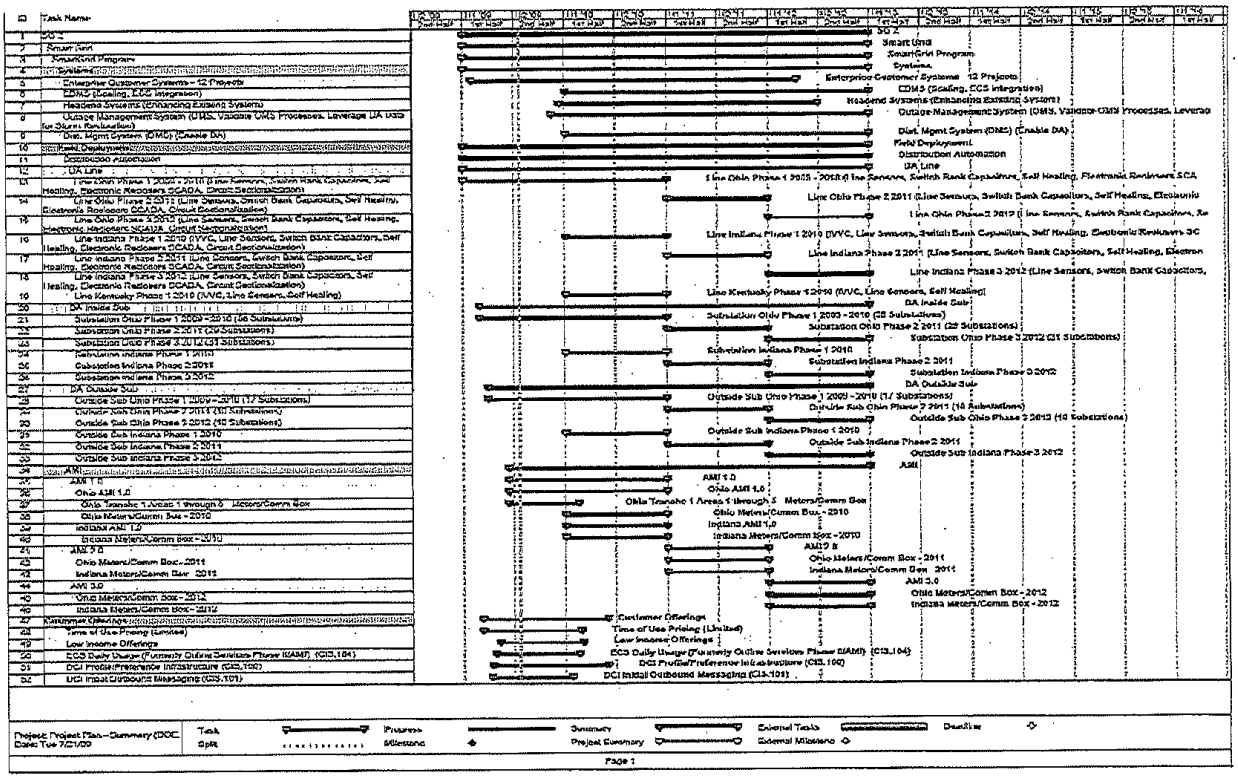
Chris Kiergan is an Executive Consultant with KEMA. He has over 12 years of management consulting expertise, primarily serving utility clients. Mr. Kiergan brings deep experience in utility operations and has helped numerous electric and gas utilities reengineer current processes, optimize and implement new process designs, redesign organizations and consolidate functions into new operating models, reduce costs, develop performance measures and performance management systems, develop business and marketing strategies, and prepare for and implement Industry Restructuring. His experience extends across the utility value chain, having assisted in functional areas including metering, billing, field service, maintenance, finance and accounting, supply chain, contracting, customer service, customer sign-up, regulatory affairs, distribution, transmission, generation, credit and collections, settlements (trading), information technology (IT), and new product development. From a project perspective, Mr. Kiergan has advanced project management skills, having planned and led projects of both long and short durations and projects employing up to fifteen consultants and fifty client personnel, and has considerable experience in benchmarking and conducting complicated analyses.

Selected Professional Experience:

- Led a major process improvement effort for the Supply Chain function of a large federal utility. Analyzed current-state processes and policies, assessed current levels of performance, defined the vision (processes, policies, and organization) for the future-state Supply Chain, identified the gaps between the current state and the future state, developed a set of recommendations to achieve the future-state vision, and developed performance measures to measure both performance and the benefits of process improvement. Currently in the process of leading six teams in implementing the 84 separate recommendations. Leading process improvement efforts across the entire Supply Chain value chain, including planning and material forecasting, contracting (both contracting skills development and contracting process improvements), inventory management (including optimizing current inventory levels that exceed $80 million), logistics and warehousing, and spend management (implementing strategic sourcing to save an estimated 10% of $400+ million in annual spend). Additionally, improved process support areas through designing a more effective organizational structure, determining skills needed to execute the future-state process, developing technology solutions for many of the improvement areas, and implementing a broader set of performance metrics to measure overall Supply Chain performance as well as new process compliance and benefit attainment.

- Co-led a major process improvement effort for the Operations & Maintenance (O&M) functions of a large federal utility. Analyzed current-state processes and policies, identified issues and areas of improvement, and developed future-state designs for maintaining field inventory, installing wireless and fiber optic for both internal and customer use, addressing the issue of an aging workforce, improving the organizational configuration and staffing philosophy, addressing unplanned / unscheduled work, developing a more cost-effective vegetation management program, and utilizing advanced performance metrics to measure efforts.
- Reengineered a cost allocation process for a major, multi-utility Midwestern energy company. For a process that stretched across the entire organization, including Fuels, Generation, Trading, Settlements, Rates and Regulatory, Accounting, and the allocation organization itself, mapped current processes, identified and resolved areas of issue, and designed and implemented a new end-to-end process to meet increased requirements in timing, accuracy, scalability, and flexibility, while also addressing the need for simplification. Subsequently, reengineered the cost allocation process in order to meet the requirements of a MISO Day 2 market environment.
- Co-led western energy company's transition team for the phased-in transition from a regulated monopoly to a participant in a competitive environment. Determined strategic direction and operating policies for multiple business units. Reviewed and mapped current processes in all functional areas of the two operating utilities. Designed detailed end-to-end processes, for each step of the phase in, in the areas of transmission and settlement, metering and data collection, billing, customer service, field services, market participant certification, and customer sign-up. Designed new functional organizations for the new operating environment.
- Formulated a post-merger strategy (merger integration) for the energy distribution department of a Midwestern energy company looking to both achieve operational excellence and develop a growth platform. Addressed the macro issues, current situation, strategic initiatives, strategic direction implications, and key questions for a department encompassing 6700 employees and six business units, including both regulated core businesses (Distribution, Customer Care, Regulated Marketing, and Transmission) and unregulated growth businesses.
- Developed the strategy and business plans for the newly created energy delivery and customer care business unit of a Midwestern electric/gas utility. Conducted in-depth financial and customer analyses. Developed primary strategic thrust initiatives encompassing employee development, safety improvement, work process improvement, supply chain improvement, performance reporting, new business initiatives, and transmission strategy. Led decision-making meetings of senior leadership. Generated consensus and buy-in among disparate senior leadership team.
- Designed and managed the implementation of a Retail Open Access initiative for a major Western utility. Analyzed regulatory and market environments and formulated strategic alternatives. Created and managed Customer Choice organization and Program Management Office. Managed ten teams (50 people) spanning the scope of the utilities' operations, including billing, metering, customer service, transmission, field services, and alternative seller interactions. Directly led service request (DASR) team. Analyzed current processes relative to new operating rules. Designed new processes and integrated designs/policies across two operating utilities. Acted as primary liaison with team tasked with parallel evaluation, modification, and implementation of new, off-the-shelf Customer Service System (CIS/CSS).

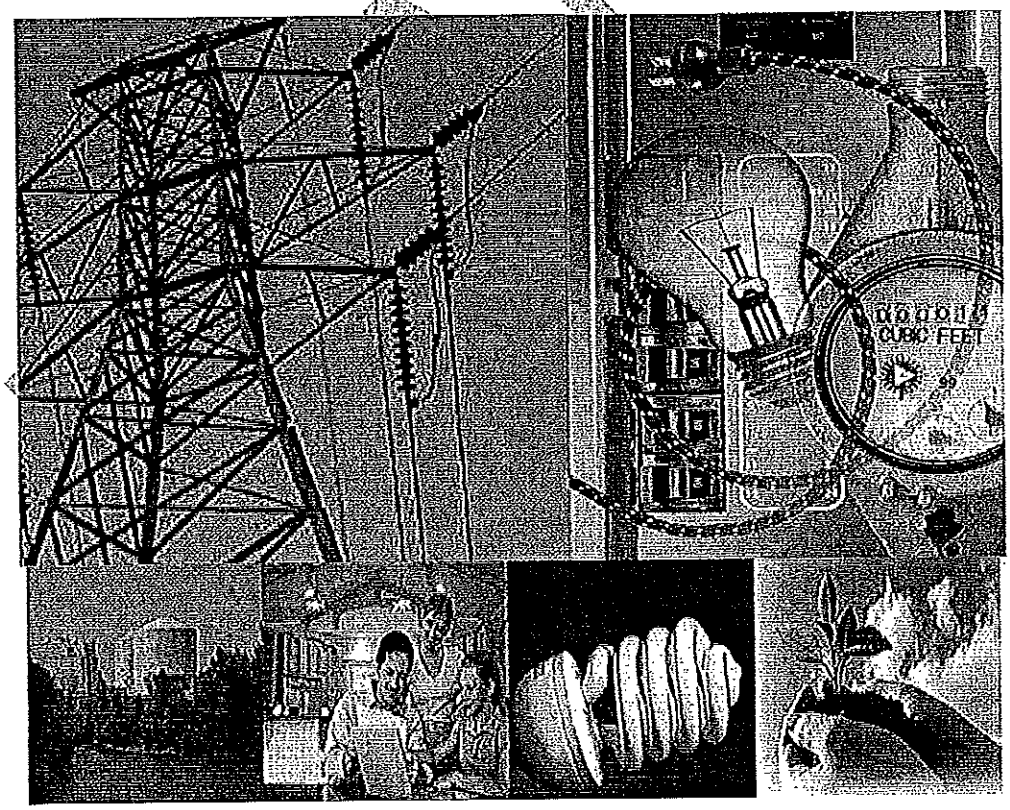
Attachment B: Integrated Summary Schedule



Duke Energy®

Attachment C: Smart Grid PMO Playbook (Table of Contents)

SMART GRID PMO PLAYBOOK



Duke Energy

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Duke Energy

Attachment E: Save-a-watt Program

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INNOVATIVE PRODUCTS AND SERVICES

CHALLENGES
- Keep rates affordable in a rising cost environment
- Obtain regulatory approval for models that promote energy efficiency

OPPORTUNITIES
- Develop innovative and economical energy efficient products and services
- Build a smarter utility system
- Accelerate deployment of energy efficiency and the smart grid in light of provisions in the federal stimulus package (the American Recovery and Reinvestment Act of 2009)

2008 HIGHLIGHTS
- Gained approval for save-a-watt model in Ohio
- Conducted smart grid research and initial deployment to test the best combination of technologies
- Opened smart utility labs in the Midwest and Carolinas to showcase smart energy technologies
- Partnered with automakers and other utilities to prepare for broader market interest in plug-in electric vehicles

ENERGY EFFICIENCY UPDATE

Energy efficiency is an integral part of our transition to a low-carbon future. We believe the regulatory model must change to encourage utilities to sell less – not more – electricity.

Most utilities earn returns on capital only when they build new power plants. Under our save-a-watt model for energy efficiency, Duke Energy earns a return on the savings that are realized by not having to build and operate a plant. This is called "avoided cost." If our energy efficiency investments don't save energy – which will be verified by an independent third-party every year – we don't get paid. Save-a-watt creates the incentives we need to aggressively pursue energy efficiency as an alternative to investing in new plants.

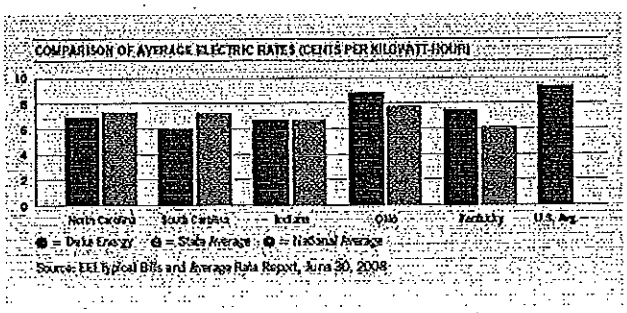
The Public Utilities Commission of Ohio approved save-a-watt in December 2008. In early 2009, South Carolina regulators rejected our save-a-watt proposal but expressed a willingness to expedite their review of a revised energy efficiency plan. North Carolina regulators requested additional information on our save-a-watt filing, but they also approved our proposed energy efficiency programs. Regulatory decisions in Indiana and Kentucky are currently pending.

We believe regulatory approaches like save-a-watt that treat investments in energy efficiency like investments in power plants are a winning model for a low-carbon economy. They help customers conserve electricity, save money and improve the environment – without sacrificing convenience, comfort or reliability.

KEEPING RATES COMPETITIVE

Average retail electric rates in each of the five states we serve were below national averages in 2008. In Indiana and the Carolinas, our rates were below state averages.

We had a number of rate actions – or rate actions take effect – in 2008. In North Carolina, we reduced rates by 5.4 percent in 2008 and an additional 2.1 percent in 2009, based on a 2007 order from the North Carolina Utilities Commission.



Source: EEI Typical Bills and Average Rate Report, June 30, 2008

Duke Energy®

"Save-a-watt represents a true winning regulatory approach. Utility shareholders win with returns earned on investments in energy efficiency. Customers win with lower energy costs. The environment wins with reduced greenhouse gas and other emissions. And our nation wins with a stronger economy and enhanced energy security."

– Kateri Callahan, President, Alliance to Save Energy*

In late 2008, Ohio regulators approved the Electric Security Plan for 2009 through 2011. As a result, customer rates will increase 2 percent per year in 2009 and 2010, and 1 percent in 2011.

We are currently in a rising cost environment, and the frequency of rate cases over the next five years will be higher than in prior years. Electric base-rate increases are forecasted for 2010, 2011 and 2012 in the Carolinas; 2009 and 2012 in Ohio; 2011 in Kentucky; and 2013 in Indiana. We will continue to aggressively manage our costs and propose regulatory approaches that help smooth out the effects of rate increases on our customers.

HELPING CUSTOMERS MANAGE THEIR BILLS

Duke Energy provides a number of tools and programs to help customers manage their energy use. These services are especially important in the current economic downturn.

We provide incentives for residential and small business customers to become more energy efficient. For example, our Smart Saver™ program in Ohio provides cash incentives to customers who buy high-efficiency equipment, such as lighting and heating and cooling systems.

We continue to see good results from our collaboration with energy-intensive commercial and industrial customers. For example, under our PowerShare® program, large business customers agree to reduce their electric consumption during peak demand times in exchange for a monthly credit. Our Smart Saver program provides cash incentives on more than 150 pieces of equipment and includes a custom option to help customers achieve efficiencies through process improvements.

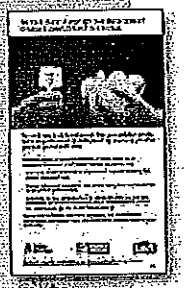
We provide billing plans with predictable monthly payments to residential and small business customers to help them manage their cash flows. Customers can enroll in a plan that lets them make equal payments 11 months of the year, followed by a "settle-up" in the 12th month. Our Midwest customers also have an option of a plan which avoids a settle-up month through quarterly adjustments to the bill.

We recognize that people sometimes do not pay their monthly electric bill for various reasons, including travel or illness. Sometimes our customers simply forget. We offer a Third-Party Notification program to serve as a safety net to help prevent electric service interruptions for nonpayment. Under this program, Duke Energy sends a copy of the monthly bill to a designated third party of the customer's choosing. While the third party is not responsible for paying the bill, he or she will be notified if the account becomes past due and may be able to help arrange for payment.

Information on state-specific programs to help our customers manage their bills is available on www.duke-energy.com.

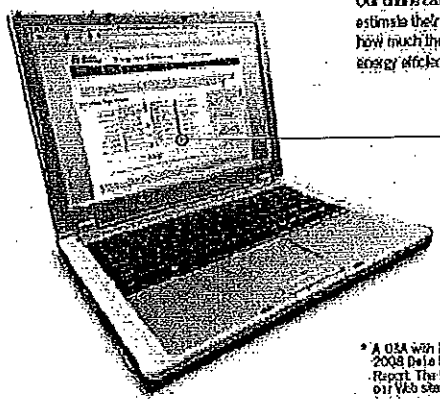
DUKE ENERGY JOINS WITH RETAILERS ON ENERGY EFFICIENT LIGHTING

We've joined with ENERGY STAR® and retailers Wal-Mart, Sam's Club, Lowe's, Home Depot, Ace Hardware and Kroger to offer Duke Energy customers discounts on energy efficient lighting products. Our retail partners sold nearly 240,000 compact fluorescent light bulbs (CFLs) to customers who took advantage of the program in Kentucky and Ohio in 2008. Participating stores reported 200 to 500 percent increases in CFL sales as a result of the promotion. The CFLs purchased during the campaign have the collective potential to save $4.3 million in electricity costs each year.



ONLINE ENERGY CALCULATORS

Our online calculators help customers estimate their energy usage and how much they can save by making energy efficiency investments.



* A Q&A with Kateri Callahan appears in the 2008 Duke Energy Summary Annual Report. The full interview is available on our Web site at www.duke-energy.com/ar.

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"Smart grid, with its digital, two-way communication capabilities, will transform how we operate our system – improving customer service, power reliability, and the efficiency of our transmission and distribution system."

– Todd Arnold, Senior Vice President, Smart Grid and Customer Systems

BUILDING A SMARTER GRID

TODD ARNOLD
SENIOR VICE PRESIDENT, SMART GRID AND CUSTOMER SYSTEMS

The "smart grid" is making headlines a lot these days. The American Recovery and Reinvestment Act of 2009 – also known as the federal economic stimulus package – includes $11 billion for the development of a smart power grid which could accelerate this new technology. In the following Q&A, Todd Arnold, senior vice president of smart grid and customer systems, explains what the smart grid is and what it means to customers.

Q. What do we mean by the term "smart grid?"

A. Smart grid is really about digital two-way communication – between the customer and Duke Energy, and Duke Energy and the power grid. The customer's meter and devices on the grid will provide real-time information, and help us improve how we deliver energy and how customers consume energy.

Duke Energy's smart grid initiative is part of a much larger effort. Building out a nationwide smart grid is an industrywide, multibillion-dollar vision for the digital modernization of energy delivery in this country. You could say, in effect, we're building out an "energy Internet."

Q. How does this differ from the existing power grid we have today?

A. The existing power grid is an engineering marvel, but its design is more than a century old. It's an analog-based system designed to deliver power – that's all – with little communication between the utility, the power grid, the meters and our customers.

Smart grid, with its digital, two-way communication capabilities, will transform how we operate our system – improving customer service, power reliability, and the efficiency of our transmission and distribution system.

Q. What will smart grid allow us to do that we can't do today?

A. We'll be able to give customers information on their daily electric and gas usage, which opens the door for new energy efficiency programs that help customers conserve power, save money and help the environment.

Another big benefit is that we will know when the power is out at a home or business without the customer having to call us. Smart grid will also help us provide new flexible billing and payment options. And, we'll be able to handle meter reading as well as service connections and disconnections remotely.

Q. What is the cost and timeline for Duke Energy's smart grid deployment?

A. We currently have initial deployments under way in North Carolina, South Carolina and the Greater Cincinnati, Ohio, area comprising approximately 70,000 smart electric meters and 40,000 digital gas meters.

Pending regulatory approvals, we plan to invest about $1 billion over the next five years in smart grid equipment for homes and businesses in our service territories. We've received approval to begin deploying smart grid technology in Ohio, where we will install 700,000 smart meters over the next five years. We're seeking approval to install up to 800,000 smart meters in Indiana. We're also making plans to bring the smart grid to the Carolinas and Kentucky.

PLUG-IN ELECTRIC VEHICLES: THE ULTIMATE "SMART" APPLIANCE

Because the transportation sector is the second-largest contributor of greenhouse gases, we think plug-in electric vehicles (PEV) will play an important role in transitioning to a low-carbon future. Widespread adoption of PEVs can reduce vehicle greenhouse emissions by more than 450 million metric tons annually by 2050 – the equivalent to removing 82.5 million passenger cars from the road – according to an Electric Power Research Institute and Natural Resources Defense Council study. Other benefits include reducing dependence on foreign oil and improved fuel costs.

PEVs are the ultimate smart appliance. They can be charged during off-peak times when energy is cheapest. They also have the capability to store power that could in the future be supplied back to the home or power grid as needed.

We are partnering with other electric utilities and automakers to define requirements for the widespread adoption of PEVs. This work includes engineering the technical infrastructure, developing a pricing structure and designing a new customer service model for PEV drivers.

To better understand PEV technology and its application to everyday life, we converted five of the standard hybrid-electric vehicles in our fleet to include plug-in capability. These automobiles are powered by a gasoline engine and a rechargeable battery that plugs into a standard 110-volt outlet.

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THE NEXT FRONTIER: ENERGY STORAGE

Breakthroughs in large-scale energy storage technologies continue to present intriguing new opportunities. We are testing power storage solutions that will enable us to:

- Better harness intermittent renewable energy, like solar and wind
- Use large-scale portable storage devices to provide reliable backup power during service disruptions
- Use smaller storage devices in customers' homes to help meet demand during peak usage periods
- Support our efforts to maintain the stability of the power grid
- Further contribute to a smart energy grid in the U.S.

We are conducting two pilots to test battery technology in Charlotte, N.C. In one pilot, while we are upgrading a substation, we are using a zinc bromide battery – roughly the size of a cargo container – to store energy. The battery will discharge power as needed to meet customer demand. And, because this storage device is portable, it can be moved to another Duke Energy site once the substation has been upgraded.

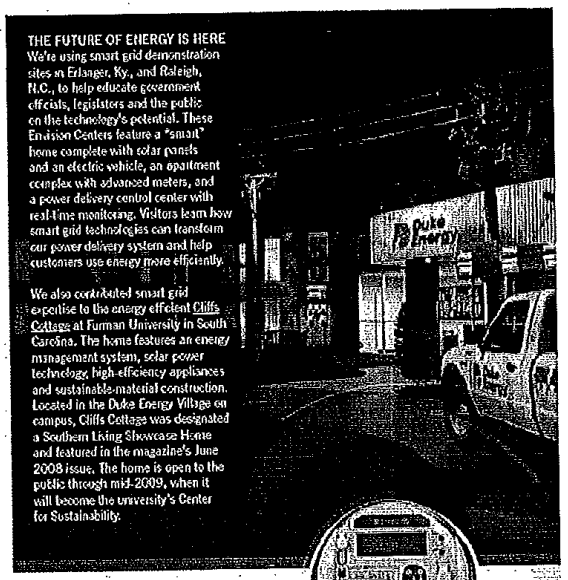
We are also testing battery storage in combination with solar energy at another substation site. A large zinc bromide battery will store energy from solar power arrays or the grid and release it to area customers during periods of peak demand. Energy management systems installed in the homes of 50 to 100 customers will use real-time data to automatically manage power consumption.

We may also use this project to test "distributed generation," which is electricity produced close to customers, rather than at large, centralized power plants. Distributed generation – using solar energy in this case – holds the potential to create reliable "micro" power grids in communities and neighborhoods. These micro grids could change the way utilities plan to meet future load growth.

THE FUTURE OF ENERGY IS HERE

We're using smart grid demonstration sites in Erlanger, Ky., and Raleigh, N.C., to help educate government officials, legislators and the public on the technology's potential. These Envision Centers feature a "smart" home complete with solar panels and an electric vehicle, an apartment complex with advanced meters, and a power delivery control center with real-time monitoring. Visitors learn how smart grid technologies can transform our power delivery system and help customers use energy more efficiently.

We also contributed smart grid expertise to the energy efficient Cliffs Cottage at Furman University in South Carolina. The home features an energy management system, solar power technology, high-efficiency appliances and sustainable-material construction. Located in the Duke Energy Village on campus, Cliffs Cottage was designated a Southern Living Showcase Home and featured in the magazine's June 2008 issue. The home is open to the public through mid-2009, when it will become the university's Center for Sustainability.



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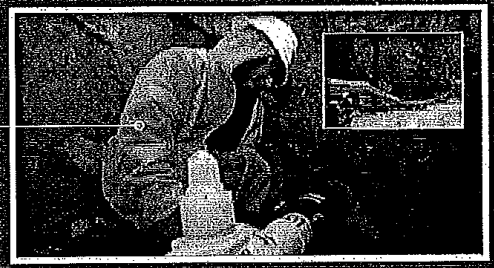
KEEPING THE NATURAL GAS FLOWING
Trey Brown, a mechanic operator I in Glendale, Ohio, installs and repairs natural gas pipelines.



ENHANCING GAS SAFETY AND RELIABILITY

To improve the safety and reliability of the natural gas system in Ohio and Kentucky, Duke Energy implemented the Accelerated Main Replacement Program (AMRP) in 2000. The program's purpose is to replace cast iron and bare steel pipelines (and associated services) with plastic or coated steel pipe. In 2008 alone, the AMRP reduced the number of leaks repaired by 6 percent compared to the previous year. The AMRP, which is 60 percent complete, is on target to be finished by the end of 2010 in Kentucky and 2016 in Ohio.

GIVING CUSTOMERS GREEN POWER OPTIONS

Duke Energy provides options to customers who want to support the development of renewable energy or offset their carbon footprints.

Customers in the Carolinas, Indiana and Ohio can purchase blocks of green power each month. A green power program is planned for Kentucky in 2009. Green power is electricity generated using low or no-carbon renewable resources such as solar, wind, biomass and water. Purchases of green power help advance the development of environmentally friendly energy sources and avoid the release of carbon dioxide (CO_2) into the atmosphere. By the end of 2008, approximately 10,000 Duke Energy customers, less than 1 percent, were enrolled in these programs, representing 1.7 gigawatt-hours of green energy purchases per month.

Also in 2008, we introduced a program for customers in the Carolinas to purchase offsets that reduce or prevent the release of CO_2 emissions. As an incentive, Duke Energy offered to match the first $4 carbon offset each customer buys – up to $1 million through 2009. We plan to launch carbon offset programs in Indiana and Ohio in 2009.

GREEN POWER AND CARBON OFFSET PROGRAMS – CUSTOMER PARTICIPATION

State Programs		12/07	12/08
IN GoGreen	Customers	1,155	1,492
	Blocks*/Month	3,520	4,432
NC GreenPower	Customers	7,190	7,775
	Blocks*/Month	11,684	11,503
OH GoGreen (launched 7/07)	Customers	255	384
	Blocks*/Month	855	1,379
SC Palmetto Clean Energy (launched 2/08)	Customers	n/a	39
	Blocks*/Month	n/a	45
NC Carbon Offsets (launched 7/08)	Customers	n/a	125
	Blocks**/Month	n/a	189
SC Carbon Offsets (launched 8/08)	Customers	n/a	3
	Blocks**/Month	n/a	5

* One block equals 100 kilowatt-hours of green energy.
**One block equals 500 pounds of carbon reduction.

POWERING A HISTORIC LANDMARK WITH RENEWABLE ENERGY

Findlay Market, a 19th century Cincinnati, Ohio, landmark and the state's oldest continuously operating public market, is now powered by 21st century renewable energy. In 2008, Duke Energy and the Ohio Department of Development installed 114 photovoltaic solar panels on the roof of the market. By relying on solar power instead of conventional sources, Findlay Market prevents more than 26 tons of CO_2 from being released each year.

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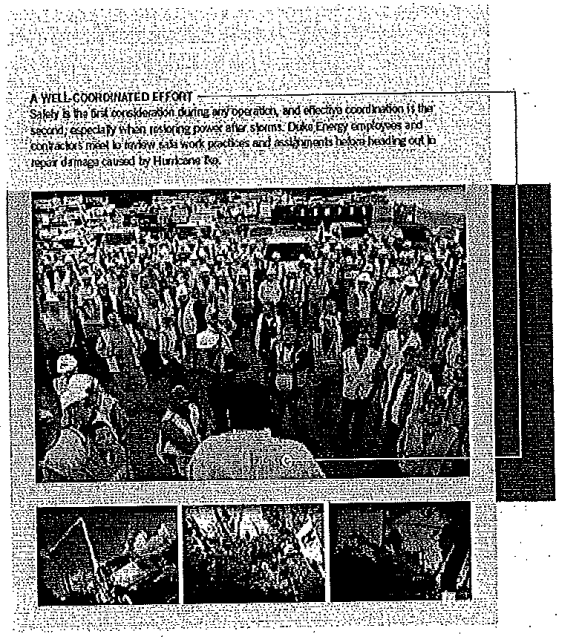

A WELL-COORDINATED EFFORT
Safety is the first consideration during any operation, and effective coordination is the second, especially when restoring power after storms. Duke Energy employees and contractors meet to review safe work practices and assignments before heading out to repair damage caused by Hurricane Ike.

HELPING THE MIDWEST REBOUND FROM HURRICANE IKE

When the remnants of Hurricane Ike hit our Midwest service areas – including parts of Ohio, Indiana and Kentucky – in September 2008, approximately 1.1 million Duke Energy customers lost power. Historians called the wind storm the most damaging Cincinnati had seen in a century. The around-the-clock power restoration effort, which lasted just over a week, involved more than 3,000 workers at its peak. Call center representatives fielded nearly half-a-million telephone calls during this period. In all, our crews replaced more than 1,300 broken poles, 100 miles of power lines and nearly 1,200 transformers.

In addition to rebuilding the electric system, Duke Energy leaders partnered with government and emergency management agencies to provide emergency information, distribute bottled water, clean up damage from the storm and direct families in need to shelters. Our efforts earned us the Emergency Recovery Award from the Edison Electric Institute in March 2009.

We learned several important lessons from Hurricane Ike that have helped us respond to subsequent storms:

- We created a new Major Storm Event Organization to speed our ability to handle surges in customer inquiries resulting from severe weather.
- We increased the number of storm restoration staging areas – where personnel and equipment assemble to begin repairs – to better distribute resources as quickly as possible during major weather events.
- We began using Twitter – a "micro-blogging" and social networking Web service – to communicate power restoration updates to customers via their cell phones and computers.

POWER RELIABILITY

We set goals each year to improve power reliability, aiming for fewer outages per customer and shorter outages when they do occur. While we met our 2008 goals, severe weather hampered our results compared to 2007. However, we remained in the top quartile among peer electric utilities in 2008, based on 2007 Southeastern Electric Exchange data (the most recent available). We continue to replace equipment and upgrade our aging transmission and distribution systems to improve reliability.

OUTAGE STATISTICS				
Per Customer	2006	2007	2008	2008 Goal
Average number of outages* (occurrences)	1.30	1.13	1.19	1.30
Average time without power* (minutes)	164	133	163	155

* Longer than 5 minutes

WORKING WITH INDUSTRIAL CUSTOMERS: CUMMINS

We are partnering with one of our largest customers, Cummins Inc., to help it fulfill its commitment to the EPA Climate Leaders program to significantly reduce its greenhouse gas (GHG) emissions. Cummins, a manufacturer of diesel engines and related components, recently pledged to cut its total GHG emissions by 25 percent (adjusted for sales) by 2010. Recognizing that such a reduction would require aggressive energy efficiency measures, Cummins asked Duke Energy to help assess its facilities, justify capital expenditures on energy-saving initiatives and help implement new projects. More than 100 energy efficiency upgrades have yielded substantial energy savings in the past year.

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JIM ROGERS
CHAIRMAN, PRESIDENT AND CEO

Dear Stakeholders:

In tough economic times, when every aspect of our business is under scrutiny, some might ask whether we can afford to focus on sustainability. To that I respond: Can we afford not to?

Sustainability – operating our business in a way that is good for people, the planet and profits – is, in my opinion, no longer optional. It is the strategic and decision-making approach we are following at Duke Energy to create long-term value.

Clearly, the current economic crisis colors every aspect of our business. We see several parallels from these economic problems that inform our approach to sustainability, including:

- The importance of living within our resources – whether financial or environmental;
- The need to address complex issues and opportunities simultaneously – not sequentially;
- The value of balanced decisions that consider economic, social and environmental consequences; and
- The imperative of financial strength to remain a viable, vital corporation.

At Duke Energy, sustainability describes the way we work; it is a competency that leads to improved risk management, efficiency and innovation for today's complex, resource-constrained and connected world.

REDEFINING OUR BOUNDARIES

History tells us there are moments in time when conventional wisdom becomes unwise and "the way we've always done it" blinds us to new possibilities. With fundamental change happening everywhere – politically, economically, environmentally and socially – I think we are in the midst of one of those historic moments now.

Our experience with sustainability strengthens my belief that our nation's energy, economic and environmental challenges can and must be solved together. With energy as a cornerstone of economic recovery, we can provide solutions that do double- or triple-duty – investing in innovations and infrastructure that address not just one issue, but several. In this report, we share some examples of this approach – including the smart grid and other advanced energy technologies.

Duke Energy

History tells us there are moments in time when conventional wisdom becomes unwise and "the way we've always done it" blinds us to new possibilities.

Our 2008 Summary Annual Report and 2008|2009 Sustainability Report again share a common theme: *Redefining our Boundaries*. The theme captures our efforts to fundamentally rethink our business, explore new technologies and help solve some of the world's most pressing problems.

DUKE ENERGY'S SUSTAINABILITY PLAN

Seeing the world through the lens of sustainability helps redefine our boundaries. Conversations with you – our valued stakeholders – have identified the most material sustainability risks and opportunities we face. Our plan has five focus areas:

- Provide innovative products and services for a carbon-constrained, competitive world
- Reduce our environmental footprint
- Attract and retain a diverse, high-quality workforce
- Help build strong communities
- Be profitable and demonstrate strong governance and transparency

On the following pages, we provide an update on our progress and challenges.

YEAR IN REVIEW

Global climate change continues to be a defining issue for our company and our world. As one of the largest emitters of carbon dioxide (CO_2) in the U.S., we take the challenge of reducing greenhouse gases very seriously.

In last year's report, *Building Bridges to a Low-Carbon Future*, we reviewed our actions to address climate change by:

- Helping our customers and communities become the most energy efficient in the world;
- Decarbonizing our fleet; and
- Advocating fair and effective climate legislation.

We also shared our aspiration to cut our 2006 U.S. CO_2 emissions in half by 2030 and the scenarios that emerged from that work. We've continued to refine that analysis based on stakeholder input and the signposts we see in this very volatile economy. What's clear is that reducing CO_2 won't be cheap or easy, and progress may not be linear year-to-year. On page 24, Doug Esamann, senior vice president of strategy and planning, provides an update on the 2030 analysis.

Improving Energy Efficiency

We view energy efficiency as the "fifth fuel" to power a low-carbon future, but it should be the "first fuel" we invest in. That's why we consider the save-a-watt energy efficiency plan a foundation of our business and regulatory model for the 21st century.

Most utilities still operate under rules created decades ago, when our primary task was to build generating plants and distribution systems to electrify the U.S. economy. Utilities were rewarded for investing in new power plants and related equipment – a regulatory approach that worked remarkably well. Of course, the world has changed a lot since then and so, too, must our regulatory model.

Under our proposed save-a-watt model, the bias to invest in power plants over energy efficiency is removed by allowing utilities to earn a return on their investments in energy efficiency based on their "avoided costs."

I am pleased to report that in December 2008, the Public Utilities Commission of Ohio was the first of our five state commissions to approve save-a-watt, helping to create a level playing field for energy efficiency and investing in new plants. Regulatory review of save-a-watt in Indiana and Kentucky is pending as I write this letter. We've got more work to do in the Carolinas. In early 2009, South Carolina regulators rejected our initial save-a-watt proposal but asked us to return quickly with an alternative program. North Carolina regulators approved our proposed efficiency programs but asked for additional detail on the avoided cost model. We intend to respond quickly to gain approval of save-a-watt in these states as soon as possible.

I feel a sense of urgency in implementing save-a-watt for two reasons:

- Energy efficiency savings are "perishable." Buildings under construction today will stand for a half a century or more and should be built to the highest efficiency standards. The same applies to existing structures: Less-efficient design and equipment results in wasted electricity and related CO_2 emissions, as well as higher cost. Delays in implementing energy-saving programs like save-a-watt translate to lost opportunities to harvest efficiency improvements.
- Our industry is facing a period of rising costs as we build more efficient power plants. Programs like save-a-watt put more control in the hands of our customers to better manage and reduce their bills.

Smart Grid

To fully realize the potential of energy efficiency, we are planning to invest nearly $1 billion over the next five years in smart grid technology, subject to regulatory approvals. By replacing analog switches, meters and controls with new digital, two-way devices, we bring intelligence and interactivity to electricity. In the near-term, that means our customers will have more information and control over their energy use. And, Duke Energy will have more precise, real-time data to help optimize our system.

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Another legislative issue with far-reaching implications for our company and customers is climate change. I believe we need to regulate CO_2 and other greenhouse gases, and we need to do it now.

Smart grid technology represents the most significant upgrade to our distribution system since electricity was first harnessed, and we think it will lead to capabilities and functions that are unimaginable today. By mid-2009, we will have installed more than 70,000 smart electric meters in three states and about 40,000 digital gas meters in the Midwest. While we're excited about the pace of our smart grid deployment, the federal stimulus plan may give us opportunities to accelerate that deployment. We're working hard to make that happen so that our customers can be among the first in the nation to use smart grid technology.

We recently opened Envision Centers in Kentucky and North Carolina to demonstrate the potential and promise of smart grid technology to our regulators, legislators and other stakeholders. We are also field-testing some of these new technologies at a subdivision in Charlotte, N.C.

Decarbonizing our Fleet

To meet existing and anticipated renewable portfolio standards (RPS), we took aggressive actions in 2008 to build that aspect of our business.

Our utilities issued requests for proposals for renewable energy, announced several contracts, and saw some projects from earlier contracts begin generating power. For example, a 20-year contract with a new wind farm in northern Indiana began supplying up to 100 megawatts (MW) of electricity to our customers in 2008. We signed a long-term agreement to buy all of the output from a photovoltaic solar energy farm in North Carolina that will be among the largest in the country. And, we have agreed to purchase power from two projects in the Carolinas that convert landfill methane gas to electricity. We also developed an innovative plan to install photovoltaic solar panels on the rooftops and land of up to 400 Duke Energy residential and business customers in North Carolina. This proposal, currently being discussed with state utility regulators, would create a solar distributed generation network capable of supplying about 1,300 homes.

Our commercial business acquired wind-developer Catamount Energy in September 2008 and completed wind farms in Wyoming and Texas. We are also a co-owner of the Sweetwater project in Texas – one of the largest wind farms in the world. Wal-Mart agreed to purchase electricity from our Notrees wind farm in Texas to power some of its facilities in the state. At year-end 2008, we had close to 400 MW of wind power in operation and a wind development pipeline of more than 5,000 MW in 14 states.

Part of the challenge with renewables is getting the power from the source to the customer. We announced a joint venture with American Electric Power in mid-2008 to build and operate a 240-mile high voltage transmission line in Indiana that will link new and existing generation with customers and help reduce transmission congestion in the Midwest.

In September 2008, we formed ADAGE, a joint venture between Duke Energy and AREVA. ADAGE will build biomass power plants in the U.S. that generate electricity from wood waste. ADAGE plans to start construction on its first biopower plant in 2010.

In last year's report, we showed the pros and cons of different generating sources to illustrate the importance of fuel diversity. Renewable energy will play a growing part in our supply portfolio. But, because solar power and wind generation operate only when the sun shines and the wind blows – they are considered "intermittent" sources of electricity. Baseload plants fueled by coal and nuclear power are typically the lowest-cost power plants that operate around the clock.

I have acknowledged in past reports the apparent paradox of advocating climate change legislation while building new coal plants. About 70 percent of our U.S. customers' electricity was generated with coal in 2008, compared to approximately 50 percent nationally. We simply cannot meet our obligation to serve customers with affordable, reliable and increasingly clean electricity without coal in our fuel mix. As a bridge to new technologies and a lower-carbon future, we are investing approximately $5 billion in two such plants – Edwardsport and Cliffside – that will replace older, less efficient coal units.

In Indiana, the 630-MW Edwardsport integrated gasification combined cycle (IGCC) plant was approximately 20 percent complete at the end of 2008. The plant is designed to convert coal into a synthetic gas that produces power. When Edwardsport begins operating in 2012, it will emit less sulfur dioxide (SO_2), nitrogen oxides (NOx) and particulates than the standard coal-fired plant it replaces – while providing more than 10 times the power. And, with the favorable geology in the region, we are working to demonstrate carbon capture and sequestration at Edwardsport – what could be a breakthrough technology for a low-carbon future.

Our Cliffside modernization project in North Carolina – including the construction of a new 825-MW advanced coal unit – was about 30 percent complete at the end of 2008. Construction began following receipt of all applicable state permits.

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While the plant's air permit was subsequently challenged, construction remains on schedule as we address the legal issues. In March 2009, the North Carolina Division of Air Quality (DAQ) determined that the new unit is a "minor source" of hazardous air pollutants, confirming that the plant will have among the strictest, most effective air-emission controls available. Once Cliffside Unit 6 is completed in 2012, the plant will eventually replace approximately 1,000 MW of older, higher-emitting coal units. We will take additional actions to make Cliffside Unit 6 "carbon neutral" by 2018.

We are also adding fuel diversity by building two lower-emitting 620-MW combined cycle natural gas plants at existing sites in North Carolina. Once in service, the new plants will displace about 250 MW of older coal-fired units, as part of the 1,000 MW of higher-emitting coal units we agreed to retire with the Cliffside modernization.

I've often said if you're serious about climate change, you need to be serious about nuclear power. Duke Energy has a track record of safe and efficient nuclear operations at our Oconee, McGuire and Catawba stations. We continue to preserve our options to develop a new 2,234-MW nuclear power plant, the William States Lee III Nuclear Station, in Cherokee County, S.C. While a decision to build a new nuclear station is still in the future, we have submitted an application to the U.S. Nuclear Regulatory Commission for a combined construction and operating license.

Beyond the plants and programs that are key to a low-carbon future – energy efficiency, gas, nuclear and cleaner coal – we are also working hard to improve the efficiency of our existing fleet. Today, we are the third largest generator of electricity among the top 20 U.S. investor-owned utilities. Not surprisingly, we are also the third largest emitter of tons of CO_2 in this group. Another important measure is carbon intensity – the amount of CO_2 by weight emitted per unit of energy. Based on the latest available 2007 data, eight other companies had carbon intensities higher than Duke Energy. As we add cleaner, more efficient power plants in the years ahead, carbon intensity will be a good way to judge our progress in decarbonizing our generation fleet.

We have also focused on reducing air emissions and other waste streams from our plants. We are nearing completion of a 10-year, approximately $5 billion investment in scrubbers and selective catalytic reduction units at our coal plants to lower NOx, SO_2 and mercury emissions. Comparing 2008 emissions at the plants we operate to 2006, we reduced the NOx emissions rate by approximately 18 percent and the SO_2 emissions rate by approximately 50 percent.

Legislative Issues

Later in this report, we mention a number of legislative and regulatory issues that could affect our use of coal. Future regulations for coal ash ponds. Tighter sulfur dioxide and nitrogen oxides limits. New requirements to reduce mercury emissions. The long-pending New Source Review case. Concerns about mountaintop removal of coal. All of these issues are important, and represent what I call "stroke of the pen" risks.

Another legislative issue with far-reaching implications for our company and customers is climate change. I believe we need to regulate CO_2 and other greenhouse gases, and we need to do it now. We support a cap-and-trade system that applies to all segments of the economy. By putting a price on carbon, companies and consumers alike will be able to make more informed investment decisions. We also believe we need to act with urgency – not panic – and develop a policy approach that first slows the growth of emissions, then stops the growth and transitions to a declining emissions cap. We are advocating legislation that is fair to consumers in all states, that provides funding for investments in technologies that will help solve the problem of climate change, and that includes adequate cost-containment measures to protect our economy.

Duke Energy is one of the founding members of the U.S. Climate Action Partnership (USCAP) – a group of corporations and non-government organizations committed to legislative action on climate change. USCAP worked for two years to create its "Blueprint for Legislative Action," a plan that I believe is both workable and fair. It protects consumers by smoothing out the energy price increases that will result from capping carbon emissions. In January 2009, I joined some of my USCAP peers in testifying before Congress on these priorities for climate change legislation.

Water and Energy

The discipline of sustainability trains us to look upstream, downstream and around corners. It also helps us see the connections between issues. As part of my work with the World Economic Forum this year, we published a report on the nexus of energy and water. We've included some key points from that report on page 9.

Unlike climate change – a global issue that demands global solutions – water issues are inherently local. Planning energy and water use in tandem will

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become the standard as companies and communities manage increasing demands on limited water supplies.

Employee Safety and Development
We share a number of measures of employee engagement and satisfaction later in this report, but none is more personal or meaningful than safety.

I am pleased to report that our safety performance in 2008 was our best ever. Despite the record-setting storms that hit our service area last year, despite the special challenges of large construction projects, and despite the distractions of this unsettling economy, we completed 2008 with fewer serious injuries than 2007 and no work-related employee or contractor fatalities. On page 30, you'll read about some of the ways we made safety personal within our company in 2008.

Talent is often the key differentiator between companies, and this is never more true than in turbulent times. In 2008, we continued to develop our employees with customized training, cross-functional assignments and job rotations. Since January 2008, approximately 40 percent of our top 55 leaders have moved to new or expanded roles.

Helping our Customers and Communities
The aftershocks from the economic crisis are being felt by our customers, our communities and our states. We continued to support nonprofits in the communities we serve with contributions, volunteerism and creative partnerships. Total contributions from the company, The Duke Energy Foundation, our employees and retirees exceeded $30 million in 2008. Additionally, in January 2009, our Foundation made an emergency grant of $800,000 to energy assistance funds that serve low-income residents in our service areas.

We are also partnering with state and local agencies and economic development officials to support economic recovery. If history is any indication, recessions are typically followed by a rebound in demand for electricity. We are convinced that investing in energy infrastructure can help rebuild our economy – achieving the triple goals of putting people to work, reducing environmental impacts and increasing energy security.

Financial Performance
In 2008, we reported adjusted diluted earnings of $1.21 per share, below our employee incentive target of $1.27 per share. Our total shareholder return was down 21.7 percent for the year, but we still outperformed the overall markets – the S&P 500 declined 37.0 percent and the Philadelphia Utility Index declined 27.2 percent. 2008 was also the 82nd consecutive year that we've paid a quarterly cash dividend on Duke Energy common stock.

We took a number of actions to control costs, including reducing capital spending. And, as we made tough choices, we drew on sustainability principles. For example, for 2009, we reduced labor costs not through layoffs but by freezing base pay for our professional workforce.

Electric utilities are among the most capital-intensive of all industries. At Duke Energy, we have the potential to invest nearly $25 billion over the next five years to modernize and grow our businesses. Even in this "frozen" credit market, the strength of our balance sheet gave us access to capital. From Jan. 1, 2008, to Jan. 31, 2009, we issued approximately $4.5 billion in fixed-rate debt at a weighted-average rate of 6.05 percent.

The Grandchildren's Test
Over the past year, we've seen increased interest in sustainability as more and more stakeholders view it as a proxy for quality management.

For the third consecutive year, we were recognized on the Dow Jones Sustainability Index for North America. We were also pleased to be named one of Fortune's Most Admired Companies, among the 100 Best Corporate Citizens and one of the World's Most Ethical Companies. While these distinctions are nice, they don't compare to the tough criteria I call "the grandchildren's test." Quite simply, what type of world do I leave for my grandchildren and for yours? How will future generations judge the actions we take today?

Times like these – of unprecedented change and uncharted waters – test our leadership and our creativity. They also test our courage and our conscience.

Sustainability lies at the heart of the grandchildren's test and underpins our corporate values.

I invite your feedback on our sustainability plans and progress. Your comments help us improve our business and redefine our boundaries.

Sincerely,

Jim Rogers
Chairman, President and
Chief Executive Officer
March 31, 2009

Attachment F: List of Other Applications for Recovery Act Funds

Project Title	FOA
PHEV Infrastructure (General Motors is Prime Applicant) **Strategy to Accelerate U.S. Transition to Electric Vehicles**	28
PHEV Infrastructure (Chrysler is Prime Applicant) **Advancing Transportation through Vehicle Electrification**	28
PHEV Infrastructure (Energy Systems Network is Prime Applicant) **Project Plug-IN**	28
PHEV Vehicle Demonstration (EPRI is Prime Applicant) **Medium Duty Commercial Fleet Demonstration and Evaluation**	28
Midwest Smart Grid Deployment **Duke Energy Smart Grid Deployment**	58
Carolinas Transmission **Communication System Modernization to IP with PMU Deployment in the Carolinas**	58
Midwest Transmission - Secure IP Communications and PMU Infrastructure (MISO is Prime Applicant) **Synchrophasor Deployment Proposal for the Midwest ISO**	58
Markland Hydro Expansion – Existing Capacity Upgrade **Markland Hydro Modernization**	120
Clean Coal Power Initiative Round 3 – Edwardsport CCS **The Edwardsport IGCC Plant Carbon Capture and Sequestration Project**	42
Energy Internet Demonstration (McAlpine) **Energy Internet Demonstration**	36

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Attachment G: Section 1605 of American Recovery and Reinvestment Act – Determination of Inapplicability

Section 1605 of the Recovery Act prohibits the use of funds appropriated or otherwise made available by the Act for a project for the construction, alteration, maintenance, or repair of a public building or public work unless "all of the iron, steel, and manufactured goods used in the project are produced in the United States." The OMB guidance and FOA 58 have defined "public building" and "public work" as "a public building of, and a public work of, a governmental entity (the United States; the District of Columbia; commonwealths, territories, and minor outlying islands of the United States; State and local governments; and multi-State, regional, or interstate entities which have governmental functions)."

Duke Energy's project will be owned by the individual Duke Energy utility companies in the Midwest – each one a private for-profit corporation. Because neither the materials to be purchased nor the work to be performed by Duke Energy as proposed in this application constitute a "public building" or a "public work," and because the proposed project materials and work will become a part of the privately-owned and non-governmental Duke Energy distribution system, Duke Energy believes that its proposed project is not a "public building or public work," and thus Section 1605's requirements are not applicable to this project.

On August 3, 2009, DOE posted and first made publicly available an answer to a "frequently asked question" (FAQ) concerning FOA-58:

> 17. Question: Does installation of a utility-owned meter on a public building constitute "construction, alteration, maintenance, or repair" of a public building for purposes of determining applicability of "Buy American" requirements under section 1605 of ARRA? Answer: Yes.

This FAQ creates some ambiguity regarding whether the installation of meters on a relatively small number of public buildings as part of a much larger project would subject the entire project to Section 1605's requirements.

Duke Energy's application proposes expanding smart grid meters to a wide range of commercial and residential buildings within the service territories of its Midwest states. If selected by DOE for an award, Duke Energy will discuss with DOE, in the course of negotiating and finalizing the grant agreement, the precise scope and type of buildings and facilities that ultimately will be included within the approved project scope, and on which or in which equipment would be

installed. Duke Energy anticipates doing so in a manner that Section 1605's requirements would not be applicable. Should DOE determine, at some point during those negotiations, that it is not possible to structure the scope of the grant agreement in that manner, and should DOE determine that Section 1605's requirements are applicable to Duke Energy's proposed project, Duke Energy will work with DOE either to request and obtain a determination that: (1) one of the exceptions to Section 1605's requirements (set forth in Section 1605(b) of the Recovery Act) applies; or (2) to structure the scope of the grant agreement and the purchases and other uses of funds pursuant to the grant agreement so that they are fully compliant with any applicable Buy American requirements, including as necessary to ensure that manufactured goods made a part of the project are produced in the United States or designated nations pursuant to trade agreements.

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Attachment H: Vendor Commitment Letters

AMBIENT
It's Time to Teach an Old Grid New Tricks®

August 6, 2009

Mr. Todd Arnold
Senior Vice President Smart Grid and Customer Systems
Duke Energy
139 East Fourth Street
Cincinnati, Ohio 45202

Subject: Letter of Commitment in support of Duke Energy Business Services LLC's application to U.S. Department of Energy Smart Grid Investment Grant Funding Opportunity Announcement DE-FOA-0000058

Dear Mr. Arnold:

Ambient Corporation is pleased to provide this letter of strong support for Duke Energy Business Services LLC, on behalf of Duke Energy Indiana, Inc., Duke Energy Kentucky, Inc. and Duke Energy Ohio, Inc. ("Duke Energy") in the above-cited Department of Energy funding opportunity. Duke Energy's planned Smart Grid Deployment is an end-to-end Energy Internet powered by two-way digital technology. Duke Energy will deploy "Smart Grid" functionality throughout its Midwest service areas that includes implementation of two-way communication networks on the distribution grid, automated metering infrastructure ("AMI") including installation of more than one million smart meters, advanced distribution automation, supporting IT infrastructure, Home Area Networks including technologies that enable new energy efficiency programs, new customer pricing options and support for plug-in hybrid electric vehicles/ electric vehicles.

Ambient Corporation has provided Duke Energy with a detailed proposal to provide a Smart Grid communications platform and technologies to support this deployment and is pleased to collaborate with Duke Energy on this funding proposal.

We strongly believe this project supports the job creation, economic stimulus, and energy infrastructure objectives of the Recovery Act and the Smart Grid Investment Grant Program, and we urge the Department of Energy to fund Duke Energy's Smart Grid Deployment project.

Sincerely,

John J. Joyce
CEO
Ambient Corporation

AMBIENT CORPORATION
79 CHAPEL STREET NEWTON, MA 02458 TELEPHONE (617) 332-0004 FAX: (617) 332-7260

Summary: Testimony Barbara R. Alexander Exhibit 1 of 2 electronically filed by Ms. Jamie Williams on behalf of Michael, William Mr.