

Exhibit No.:
Issue: EPRI Dues
Witness: Charles A. Caisley
Type of Exhibit: Surrebuttal Testimony
Sponsoring Party: Kansas City Power & Light Company
Case No.: ER-2016-0285
Date Testimony Prepared: January 27, 2017

MISSOURI PUBLIC SERVICE COMMISSION

CASE NO.: ER-2016-0285

SURREBUTTAL TESTIMONY

OF

CHARLES A. CAISLEY

ON BEHALF OF

KANSAS CITY POWER & LIGHT COMPANY

**Kansas City, Missouri
January 2017**

**Certain Schedules Attached To This Testimony Designated “(HC)”
Contain Highly Confidential Information.
All Such Information Should Be Treated Confidentially
Pursuant To 4 CSR 240-2.135.**

SURREBUTTAL TESTIMONY

OF

CHARLES A. CAISLEY

Case No. ER-2016-0285

1 **Q: Please state your name and business address.**

2 A: My name is Charles A. Caisley. My business address is 1200 Main, Kansas City,
3 Missouri 64105.

4 **Q: By whom and in what capacity are you employed?**

5 A: I am employed by Kansas City Power & Light Company (“KCP&L” or “Company”) as
6 Vice President – Marketing and Public Affairs.

7 **Q: On whose behalf are you testifying?**

8 A: I am testifying on behalf of KCP&L.

9 **Q: Are you the same Charles A. Caisley who filed Direct Testimony in this proceeding?**

10 A: Yes, I am.

11 **Q: Are you adopting the Rebuttal Testimony of KCP&L witness Ms. Elizabeth**
12 **Danforth in this case filed on December 30, 2016?**

13 A: Yes, I am adopting Ms. Danforth’s Rebuttal Testimony as if it were my own testimony.

14 **PURPOSE AND REASON FOR THIS FILING**

15 **Q: What is the purpose of your testimony?**

16 A: The purpose of my testimony is to respond to rebuttal testimony regarding:

17 I. Electric Power Research Institute (“EPRI”) Dues and Donations by Office of Public
18 Council (“OPC”) witness Geoff Marke

19 II. Customer experience issues raised by Dr. Marke and OPC witness Hyneman

1 **Q: Should the fact that you do not address a particular issue in this surrebuttal**
2 **testimony be interpreted as approval or agreement with any of the rebuttal**
3 **testimony, comments, exhibits or positions provided by Dr. Marke or OPC witness**
4 **Hyneman?**

5 A: No, it should not.

6 **I. EPRI Dues and Donations**

7 **Q: What is EPRI?**

8 A: EPRI is an independent, nonprofit, member based, organization that conducts research
9 and development relating to the generation, delivery and use of electricity for the benefit
10 of the public. EPRI brings together scientists and engineers as well as experts from
11 academia and the industry to help address challenges in electricity, including reliability,
12 efficiency, affordability, health, safety, and the environment. EPRI also provides
13 technology, policy, and economic analyses to drive long-range research and development
14 planning, and supports research in emerging technologies.

15 **Q: Does KCP&L participate in all EPRI research programs?**

16 A: No, KCP&L only participates in selected programs in the EPRI research portfolio.
17 Annually, the Company's EPRI Coordinating Committee evaluates and recommends the
18 EPRI research programs in which the Company should participate. The Coordinating
19 Committee includes team members from generation, delivery, environmental services,
20 products and services, and information technology. The programs are selected based on
21 the prospective need and potential future value for the Company operations and
22 customers. In 2016 KCP&L participated in 22 of EPRI's 53 non-nuclear research
23 portfolio programs and 12 supplemental research projects. Each program in the EPRI

1 research portfolio is funded collaboratively by the multiple utilities participating in the
2 program and other sources, such as the U.S. Department of Energy. Through EPRI's
3 collaborative research model, KCP&L receives the complete findings of the research
4 programs in which it participates.

5 **Q: What is OPC's position regarding the EPRI related costs?**

6 A: OPC believes that all EPRI related costs should be disallowed based on the criteria that
7 the expenses represent the cost of other activities that provide no benefit or increased
8 service quality to the ratepayer.¹ In his rebuttal testimony, Mr. Marke states, "As it
9 stands, OPC has not been unable to verify that EPRI expenses are providing any benefits
10 or increased service quality to ratepayer and recommends that the Commission disallow
11 EPRI related expenses²...

12 **Q: What is the basis of OPC's recommendation?**

13 A: The sole rationale provided by Dr. Marke is the fact that OPC, at the time of the filing of
14 rebuttal testimony in this case, had not yet been able to obtain copies of five (5) EPRI
15 reports requested in data requests ("DR")³ in the KCP&L-Greater Missouri Operations
16 ("GMO") rate case proceeding ER-2016-0156.

17 **Q: Did the Company provide these EPRI reports to OPC?**

18 A: Yes, in the Company's initial responses⁴ to OPC DR 2102, 2103, 2104, 2105, and 2107,
19 the Company offered to make the reports available for review in our offices and informed
20 OPC that if an actual copy of the report was needed, OPC would have to request the
21 document directly from EPRI.

¹ ER-2016-0285 Rebuttal Testimony of Geoff Marke p.29, 24- p.30, 2

² ER-2016-0285 Rebuttal Testimony of Geoff Marke p.33, 4-6

³ ER-2016-0285 Rebuttal Testimony of Geoff Marke GM-8

⁴ ER-2016-0285 Rebuttal Testimony of Geoff Marke GM-6

1 **Q: Did OPC contact KCP&L to review these documents?**

2 A: Yes, on August 11, 2016 James Owen, Acting Public Counsel, and another member of
3 the OPC staff met with KCP&L staff in our Kansas City office and the reports were made
4 available for their review.

5 **Q: Since this on-site report review have digital copies of the reports been provided to**
6 **OPC?**

7 A: Yes. GMO provided amended data request responses on January 17, 2017.

8 **Q: Explain why KCP&L did not initially provide physical or digital copies of the EPRI**
9 **reports to OPC.**

10 A: EPRI reports often contain EPRI or third party intellectual property and confidential or
11 proprietary information from vendors and other utilities. KCP&L/GMO is contractually
12 obligated to protect this information. The Company outlined these obligations in
13 response to OPC DR 2109⁵,

14 *“In the Master Agreement for EPRI Participation (MA) provided in response to OPC*
15 *DR 2108, EPRI grants Great Plains Energy Services (GPES) an Internal Use License*
16 *(MA par 5.1) to use EPRI Materials produced under Programs or Supplemental*
17 *Projects funded by GPES. The license restrictions (MA par 5.2) preclude GPES from*
18 *distributing this licensed material to 3rd parties unless specifically allowed under*
19 *other provisions of the agreement. MA par 5.11(B), Protection of Confidential*
20 *Information, reads in part:*

21 *“Disclosure of EPRI Materials shall be strictly limited to Member’s employees,*
22 *consultants, contractors, and governmental agencies for regulatory compliance*
23 *purposes, on a need to know basis only and subject to a written agreement*
24 *which protects EPRI Materials at least as well as the Master Agreement.”*

⁵ ER-2016-0285 Rebuttal Testimony of Geoff Marke GM-7

1 *EPRI provides courtesy reports to the PSC, or other governmental agencies, when at*
2 *least one utility under the agency’s jurisdiction already has access to the report. The*
3 *agency must request any non-public report from EPRI in writing and explain the*
4 *purpose of the order. If the report is licensed, contains third party intellectual*
5 *property or has other confidentiality restrictions, **the agency must sign an EPRI***
6 *license prior to shipping.* (emphasis added)

7 *EPRI allows utilities or other entities to purchase EPRI Materials produced by EPRI*
8 *Programs or Supplemental Project they have not funded at the published price.*
9 *Purchasers are required to sign a license with terms similar to those contained in the*
10 *MA.”*

11 **Q: Has OPC previously been provided information of benefits of EPRI research to**
12 **ratepayers?**

13 **A:** Yes, in response to OPC data request 1025.8⁶, GMO provided the following description
14 of both near-term and long-term benefits to our customers receive from the Company’s
15 participation in EPRI research.

16 *“Yes, GMO believes its participation in EPRI research programs provides both near-*
17 *term and long-term benefits to our customers.*

18 *EPRI conducts research and development relating to the generation, delivery and use*
19 *of electricity for the benefit of the public. An independent, nonprofit organization, we*
20 *bring together scientists and engineers as well as experts from academia and the*
21 *industry to help address challenges in electricity, including reliability, efficiency,*
22 *affordability, health, safety, and the environment. EPRI also provides technology,*
23 *policy, and economic analyses to drive long-range research and development*
24 *planning, and supports research in emerging technologies.*

25 *EPRI’s research provides both short- and long-term solutions that enable the*
26 *transformation of power systems to be more flexible, resilient and connected. EPRI’s*

⁶ See CAC-2

1 *ultimate goal is to help utilities provide society with safe, reliable, affordable and*
2 *environmentally responsible electricity.*

- 3 • *Thought Leadership—A critical part of EPRI's mission is thinking ahead to*
4 *identify issues, technology gaps, and broader needs that can be addressed by*
5 *effective research, development, and demonstration programs.*

6 *EPRI's Technology Innovation program maintains a pipeline of emerging*
7 *knowledge and technology to support power system transformation. By*
8 *exploring early-stage, advanced R&D concepts the program looks across the*
9 *energy landscape of what will be valuable to EPRI members 5-10 years down*
10 *the road.*

- 11 • *Industry Expertise—EPRI research is instrumental in operating utility assets*
12 *and systems reliably, safely, and economically, while improving efficiency and*
13 *asset life. The EPRI research portfolio provides expertise across all major*
14 *technical disciplines and from every stage of electricity generation,*
15 *transmission, distribution, and end use.*

16 *The GPES' Coordinating Committee annually evaluates the EPRI research*
17 *portfolio annually and recommends participation in programs addressing the*
18 *greatest need for GPES and our customers. In 2016 KCP&L is participating*
19 *in 22 of EPRI's 53 non-nuclear research portfolio programs and 9*
20 *supplemental research projects.*

- 21 • *Collaborative Value—EPRI brings together its members and diverse scientific*
22 *and technical communities to shape and drive its research, development, and*
23 *demonstration projects. Membership and participation in EPRI programs*
24 *provide utility staff opportunities to participate in leadership and advisory*
25 *forums that drive the research and development in the electricity sector.*

26 *Through EPRI's collaborative research model, for each research portfolio*
27 *program in which GPES participates, it receives the program findings and*
28 *benefit of the complete program that is funded by multiple participants.”*

1 **Q: Did GMO provide OPC additional evidence of the benefits of EPRI research?**

2 A: Yes, in response to OPC data request 1025⁷, GMO provided a listing of the 634 EPRI
3 technical documents produced from the beginning of 2015 to the date of filing in 2016
4 and are available to KCP&L/GMO⁸. GMO also provided a listing of the 606 EPRI
5 technical documents downloaded by KCPL/GMO staff from the beginning of 2015 to
6 date of filing in 2016⁹. These statistics illustrate both the significant amount of research
7 and information made available to KCP&L by EPRI and the level to which KCP&L staff
8 is availing itself of the information available.

9 **Q: Can you provide additional information that describes the role of EPRI research in**
10 **providing benefits to or increased service reliability to ratepayers?**

11 A: Yes, the “2015 Report: EPRI’S Contribution to the Public Benefit”¹⁰ provides additional
12 documentation of role EPRI research plays in provide benefits to our customers and the
13 public in general along with the following summary of how EPRI fulfills its public
14 benefit mission

15 *“EPRI’s Articles of Incorporation establish how EPRI fulfills its public benefit*
16 *mission to conduct and sponsor industry research and development relating to*
17 *electricity generation, transmission, distribution, and utilization for the benefit of the*
18 *public.*

19 *They require the institute to sponsor scientific R&D with a goal of providing*
20 *economical, reliable electric service to the public with minimal adverse*
21 *environmental effects, and to seek solutions to environmental challenges confronting*
22 *the industry.*

⁷ See CAC-2

⁸ See CAC-3

⁹ See CAC-4

¹⁰ See CAC-5

1 *Through scientific study, EPRI is to discover and develop ways to protect, conserve,*
2 *and maximize the efficient utilization of finite natural resources used by the industry,*
3 *and to share those findings with organizations, people and stakeholders both public*
4 *and private.*

5 *Finally, EPRI should provide forums for coordination and cooperation and for the*
6 *exchange of information related to electric power scientific R&D, and to publicly*
7 *disseminate information and data about its research activities.”¹¹ (emphasis added)*

8 **Q: What additional issues does OPC raise regarding previously identified EPRI**
9 **reports?**

10 A: OPC highlights the “*Kansas City Power & Light Residential Time-of-Use Impact Study:*
11 *EPRI Smart Grid Demonstration*” report published October, 2015 and states that further
12 clarification is needed to show what additional work is needed to comply with the
13 Commissions previous order¹² that requires KCP&L to complete a study regarding the
14 residential time-of-day (TOD) and the commercial two-part TOU and real-time-pricing
15 (RTP) rates by September 15, 2017¹³.

16 **Q: Please describe the nature of the study in question and how it relates to the Time-of-**
17 **Use (TOU) rate study ordered by the commission?**

18 A: The report entitled “*Kansas City Power & Light Residential Time-of-Use Impact Study:*
19 *EPRI Smart Grid Demonstration*” provides the results of EPRI’s analysis of SmartGrid
20 TOU pilot that was conducted as part of the KCP&L SmartGrid Demonstration Project
21 funded in part by the US DOE.

22 The SmartGrid TOU pilot was designed to evaluate the suitability of a short
23 duration (4 hr), high cost differential (6x) TOU rate on residential customer energy

¹¹ <http://www.epri.com/abstracts/Pages/ProductAbstract.aspx?ProductId=000000003002008770> , p 2-3

¹² ER-2016-0285 Rebuttal Testimony of Geoff Marke p.32, 19-22

¹³ ER-2014-0370. Report and Order p. 91-92

1 efficiency and demand management. Due to limitations of KCP&L's customer
2 information system ("CIS"), the SmartGrid TOU rate was limited to the construct of the
3 existing KCP&L TOD rate which had two time periods applied only during the summer
4 season. Availability of the SmartGrid TOU rate was also limited geographically to
5 residential customers in the SmartGrid Demonstration area with the new AMI meters.

6 KCP&L is using the results of the SmartGrid TOU pilot in several follow-on
7 analysis and studies. First, the findings were used to inform the development of
8 candidate time-variant (both residential and commercial) rates currently being evaluated
9 in the system-wide DSM Potential Study. Secondly, the findings of this study, along
10 with other Company and industry analysis, are being used to inform the Commission
11 ordered TOU rate study which is currently underway.

12 **Q: Have the results of the SmartGrid TOU Pilot been provided to the Commission and**
13 **other interested parties?**

14 A: Yes, the results of the SmartGrid TOU pilot were published in the KCP&L SmartGrid
15 Demonstration Project Final Technical Report¹⁴ to the DOE and is publically available.
16 The KCP&L SmartGrid Demonstration Project Final Technical Report was also provided
17 to the Commission as part of KCP&L/GMO's Integrated Resource Plan 2016 Annual
18 Update filings in dockets EO-2016-0232 & EO-2016-0233.

¹⁴ https://www.smartgrid.gov/files/OE0000221_KCPL_FinalRep_2015_04.pdf, p.558-568

1 **II. Customer Experience Issues**

2 **Q: Please summarize your surrebuttal of Dr. Marke’s rebuttal testimony.**

3 A: There are a few areas of Dr. Marke’s rebuttal testimony that I would like to address:

- 4 • KCP&L’s brand name and its use for J.D. Power and Associates (JD Power) and how
- 5 our customers do business with KCP&L;
- 6 • Clarify my testimony regarding outages and outage notification;
- 7 • Clarify my testimony regarding KCP&L’s JD Power opportunity index and how we
- 8 use it; and
- 9 • Address Dr. Marke’s rebuttal testimony regarding KCP&L’s Moments of Truth.

10 **Q: Does the fact that JD Power does not make a distinction between the KCP&L**
11 **Greater Missouri Operations Company and Kansas City Power & Light Company**
12 **service territories cause concern for you or invalidate the JD Power scores.**

13 A: No. First, all of KCP&L’s service jurisdictions do business under the brand name
14 KCP&L. While we have multiple utilities and service territory, they all do business as
15 KCP&L. When people call for customer service, they call KCP&L. When customers
16 pay their bill, they pay KCP&L. The only time distinctions in service territory are used
17 with customers is to identify different programs, tariffs or rate changes. Otherwise,
18 KCP&L operates as one company to the public. This is consistent with how most utilities
19 do business. This is also consistent with how JD Power approaches utilities that do
20 business under one brand name.

1 **Q: In your testimony you discuss outage restoration and communication during an**
2 **outage. Did you mean to convey that knowledge about restoration or**
3 **communication during an outage is more important to customers than actual**
4 **restoration?**

5 A: My testimony may not have been clear on this point. This is an important notion, so I
6 will clarify our position here. Of course, the top priority of customers in an outage is
7 power restoration. However, KCP&L already receives top scores from customers on our
8 ability to restore service during an outage, particularly during a storm. In fact, KCP&L
9 has one of the top scores in this area in the United States. Therefore, the opportunity to
10 improve customer perception in this area is not significant. In addition, customers
11 believe that quick restoration in an outage is a basic expectation. Therefore, when
12 customers articulate the most important areas to improve in an outage, if a utility has
13 solid restoration times already, that is not the most frequent or most often area articulated
14 by customers. It doesn't mean it is not important, it means it is already assumed. By
15 contrast, KCP&L gets much lower scores on communication during an outage. In this
16 area, KCP&L is ranked on the lower end of the spectrum for utilities. Therefore, it is the
17 best place to improve customer experience during an outage. It is the least costly and
18 greatest opportunity. In addition, JD Power research supports that one of the best
19 strategies, if not best strategy, utilities can use to improve customer perceptions about
20 outage restoration is to improve customer communication during an outage. Better
21 communication during a storm, more contact during a storm, according to JD Power will
22 raise customer perception more than the same level of improvement in the time it takes to
23 restore power. In addition, communication improvement is much more cost effective. Of

1 course, all this assumes that the utility is already at least proficient at actually restoring
2 power during an outage.

3 **Q: Dr. Marke points out the similarity between OPower's Moments that Matter**
4 **infographic and KCP&L's Moments of Truth infographic and further suggests that**
5 **since KCP&L is not listed as a utility that OPower based their customer strategy on,**
6 **KCP&L must be in the infancy of its customer experience efforts. What is your**
7 **response to this position?**

8 A: KCP&L has been working on improving customer experience for many years. Our
9 strategy is based on understanding what is important to customers, rather than simply
10 relying on objective customer service metrics that the utility industry has historically
11 considered important. This approach was based on studying non-utility companies who
12 are well known for customer experience, discussions and information sharing with
13 utilities who scored well in this area, reading volumes of information available on
14 customer service and customer experience, involvement with several industry initiatives
15 involved related to customer experience and our own customer research. As a result, we
16 began more heavily using JD Power by creating the opportunity index to look at discreet
17 issues that customers care about and started doing more research into areas of customer
18 perception. This yielded a set of customer interactions or moments that mattered most to
19 customers. In these areas, we want to improve customer experience. One example is our
20 customer welcome program. We saw that several utilities did an exceptional job
21 welcoming customers to their service territory. Further research demonstrated that this
22 not only improved customer experience but was an excellent opportunity to market
23 customer programs like online portals and energy efficiency programs. So we developed

1 a strategy to improve in this area. This is just one example. And these efforts had
2 nothing to do with OPower.

3 The similarity between OPower's infographic and KCP&L's is not an accident.
4 OPower is a company that KCP&L partners with on energy usage reports and other
5 projects. In our interaction with OPower, we thought that their infographic was a
6 powerful and effective way to communicate the customer experience vision and strategy.
7 So, we adapted it for our use in talking about customer experience with employees. And
8 while there is, not surprisingly, a high degree of overlap between the interactions that are
9 important to customers in each infographic, it is not a complete overlap. That is because
10 while many moments are ubiquitous to utility customers around the country, it is not 100
11 percent. Our customers are not as concerned about smart meters as customers around the
12 rest of the country. This has been shown to be the case by the relatively small number of
13 complaints received regarding the installation of smart meters in our service territories.
14 And, they tend to be more interested in programs, especially energy efficiency, and in
15 billing.

16 The fact that we adapted an infographic is irrelevant to whether or not our
17 customer strategy is well-developed or not. In addition, the fact that a non-utility
18 company well known for solid customer experience strategy and KCP&L have a similar
19 approach to customer experience and an overlapping set of customer interactions is
20 validating of KCP&L's efforts.

1 **Q: Dr. Marke goes into a considerable analysis of the JD Power opportunity index.**

2 **What is your response to his conclusions?**

3 A: Mr. Marke misunderstands how we use the opportunity index. Just because an
4 opportunity has a significant weighting does not mean we should make it a top
5 priority. Other considerations, such as cost, technological feasibility, ability to influence
6 as well as the time and ease to implement all factor into our consideration. Further, the
7 weighting is significantly influenced from by JD Power survey weighting. While
8 instructive, we consider the interactions and moments which research have shown matter
9 more to our specific customers to be more instructive. As such, it is not surprising that
10 our top scoring areas in the index, as Mr. Marke points out, are in areas that are reflective
11 of our specific customers' priorities for customer experience as well as areas that we can
12 influence significantly in a cost-effective manner. Whereas, the areas that we score least
13 well on the opportunity index are areas that we are not able to be impact as easily.

14 **Q: Please summarize your surrebuttal of Mr. Hyneman's rebuttal testimony.**

15 A: Mr. Hyneman's testimony is some of the most vitriolic hyperbole I have read during my
16 career as an employee of a regulated investor-owned utility. On its face, it is highly
17 biased; and, most of it is either an unprofessional personal attack with little to no
18 evidentiary justification or is an attempt to re-litigate issues already decided by the
19 Commission.

1 **Q: Mr. Hyneman claims in his rebuttal testimony that KCP&L is in ongoing violation**
2 **of the Commission’s Order with respect to AllConnect. What is your response to**
3 **that allegation?**

4 A: That is factually inaccurate and untrue. KCP&L will respond to these allegations as part
5 of the complaint case initiated by the OPC.

6 **Q: With respect to Mr. Hyneman’s testimony regarding JD Power, and its use by**
7 **KCP&L could you please summarize your response.**

8 A: JD Power is one of many instruments that KCP&L uses to gauge our performance in the
9 areas of customer service, customer experience and customer satisfaction. Unlike Mr.
10 Hyneman’s contention, it is not now, nor has it ever been KCP&L’s position that JD
11 Power is the definitive measurement of customer service, customer experience or
12 customer satisfaction. In fact, we believe the opposite—that it is one of many metrics to
13 consider and one of many tools to use in gauging performance and working to improve in
14 those areas. There are objective metrics that measure absolute performance in customer
15 service and reliability, as my testimony clearly states KCP&L uses many of those. There
16 are other metrics that measure relative performance and customer perception, which we
17 believe are also important. Understanding not only how you actually perform in the area
18 of customer experience but also knowing how customers perceive you perform is both an
19 industry standard for customer service and important. In addition, KCP&L uses JD
20 Power to create an actionable list of areas to improve customer service.

1 **Q: Mr. Hyneman contends in his rebuttal testimony that KCP&L wants to take credit**
2 **for high JD Power rankings and shift the blame when KCP&L falls in JD Power**
3 **rankings. In addition, Mr. Hyneman asserts that KCP&L only uses JD Power**
4 **scores to “promote itself and seek higher utility rates from ratepayers.” Do you**
5 **have a response to those assertions?**

6 A: First, it should be pointed out that Mr. Hyneman acknowledges that over the time period
7 he describes KCP&L’s JD Power metrics have steadily improved. There is no slippage
8 in our absolute performance, only in our rank when compared to peer utilities within the
9 Midwest. Second, we are not seeking to shift blame. We do believe that if, in the eyes of
10 our customers, we provide higher quality customer service relative to peer utilities, that is
11 proper to consider as part of setting the appropriate return on equity in a rate case. Even
12 when it is considered in that context, the fact that many of the items which impact JD
13 Power perceptions and rankings are outside of the utility’s control, like how hot it is and
14 storms, should be taken into consideration. Given that our current ranking has only
15 declined relative to our peers over the last three years, it should not be a consideration as
16 an enhancement to return on equity in this case. If KCP&L’s customer satisfaction or
17 reliability were to suffer consistent a prolonged actual decline, that could also be a
18 consideration in setting return on equity as a potential reduction, but that is not the case in
19 this situation either.

1 **Q: Mr. Hyneman contends in his rebuttal testimony that most of the research that**
2 **KCP&L does is aimed at marketing and branding and not at improving customer**
3 **service and satisfaction. Do you have a response to that assertion?**

4 A: First, we are pleased to agree with Mr. Hyneman that KCP&L does in fact provide “solid
5 residential customer experience.” Second, his statement is factually inaccurate. There
6 are elements of multiple research instruments that we use which are designed for more of
7 a marketing purpose. However, more than a majority of the research we conduct and
8 data we collect and analyze is aimed at the provision service and the improvement of
9 customer satisfaction. In many cases, the “marketing” research we do conduct is an
10 appropriate regulated utility purpose and is used to successfully enroll customers in
11 energy efficiency programs and other customer service programs like online
12 authenticated customer portals or paperless billing. Other research is aimed at
13 understanding how customers use our online platforms and portals to improve navigation,
14 access and usage. Very little research is done for purely branding and image related
15 reasons.

16 **Q: Mr. Hyneman asserts that the collection of political party affiliation is inappropriate**
17 **information for a regulated utility to collect. Do you have a response to that**
18 **assertion?**

19 A: Yes, I think it is very important to address this issue. First as part of our WPA surveys
20 and other research conducted by KCP&L, we have asked political affiliation as well as
21 other policy and political questions dating back to 2006. Many, if not all of those surveys
22 have been previously disclosed to both Commission Staff and OPC. To my knowledge,
23 this has only recently become an issue and has not been raised by any party as a concern

1 in nearly ten years. Second, WPA surveys are conducted anonymously. This means
2 KCP&L does not ever see any of the information collected at an individual customer
3 level, nor is that information collected or maintained by WPA. The survey data is
4 presented at an aggregate level and not tracked back to an individual name, address or
5 even telephone number. In addition, there is no guarantee that the respondents to the
6 surveys are record customers of KCP&L. In order to conduct the survey, KCP&L
7 provides the boundaries of its service territory and WPA conducts the survey using
8 publicly available information. This means that while KCP&L knows that the premises
9 surveyed are located within our service territories, the respondent to a survey may not be
10 a KCP&L record customer but rather a member of that customer's household.

11 With respect to why KCP&L surveys party affiliation, political questions and
12 policy issues, there are several important points. First, political affiliation is a
13 demographic and segmentation sort used in the significant majority of customer
14 segmentation and opinion research. The fact that other regional utilities may not use it,
15 has no bearing on whether it is a standard question asked in opinion and segmentation
16 instruments employed across the United States. In addition, we serve all customers
17 within our service territory. As a result, KCP&L believes it is important to understand
18 their positions on policy issues and ballot initiatives as it can impact our planning for
19 their service, the cost of energy generally and a host of other items. We also use this
20 information to help inform local civic and governmental organizations, as well as elected
21 officials regarding how customers in our service territory view different policies that
22 could impact our industry, the local economy, the environment or the cost of electricity.
23 Finally, political affiliation information is publicly available in Missouri for anyone who

1 votes in primaries. As a matter of public policy, Missouri does not consider this
2 information private.

3 **Q: Does that conclude your testimony?**

4 A: Yes, it does.

SCHEDULE CAC-2

**THIS DOCUMENT CONTAINS
HIGHLY CONFIDENTIAL
INFORMATION NOT AVAILABLE
TO THE PUBLIC
ORIGINAL FILED UNDER SEAL**

EPRI Sector	Program Id	Product Type	Product Id	Product Description	Product Date
Generation	176	Technical Results	3002004368	Alstom/Dow Advanced Amine Process CO2 Capture Performance at EDF's Le Havre Station	1/5/2015
Power Delivery & Utilization	183	Technical Results	3002003328	Cyber Security and Privacy Newsletter, January 2015	1/12/2015
Environment	55	Technical Results	3002004924	Federally-listed Threatened and Endangered Species and the Clean Water Act §316(b) Rule for Existing Facilities: A Summary of the U.S. Fish and Wildlife Service Biological Opinion and U.S. Environmental Protection Agency Requirements	1/21/2015
Environment	178	Technical Results	3002003946	Decreasing Returns to Renewable Energy	1/26/2015
Power Delivery & Utilization	94	Technical Results	3002003359	CAES Demonstration Newsletter, January 2015	1/26/2015
Nuclear	41.05.01	Technical Results	3002004944	Interim Report: EPRI Open-Phase Detection Method (Japanese)	1/29/2015
Power Delivery & Utilization	161	Technical Results	3002005094	Smart Grid Communications Intelligencer, Issue 11, Winter 2015	1/30/2015
Generation	63	Technical Results	3002004091	Damage Tolerance Analyses of Grade 91 Steel Welds	2/9/2015
Technology Innovation		Technical Results	3002004091	Damage Tolerance Analyses of Grade 91 Steel Welds	2/9/2015
Power Delivery & Utilization	174	Technical Results	3002004878	The Integrated Grid: A Benefit-Cost Framework	2/12/2015
Generation	68	Software	3002005032	Cyber Security Solutions for I&C Systems - Topic 1, Interactive Remote Access Computer Based Training Modules	2/13/2015
Power Delivery & Utilization	170	Technical Results	3002005085	Network Implementation Options for Plug-in Electric Vehicle Charging Infrastructure—A Utility Perspective	2/20/2015
Generation	64	Technical Results	3002003482	Assessment of Amines with Condensate Polishing/Filtration: Filming Amine Impact on Powdered Ion Exchange Resins and Long-Term/Low-Concentration Application on Bead Resins	2/23/2015
Environment		Technical Results	3002005008	Program on Technology Innovation: Literature Review of the Potential Air Quality Impacts of Fossil-Based Distributed Generation	2/23/2015
Technology Innovation		Technical Results	3002005008	Program on Technology Innovation: Literature Review of the Potential Air Quality Impacts of Fossil-Based Distributed Generation	2/23/2015
Environment	50	Technical Results	3002005216	In-Situ Solidification of Contaminated Sediments: A Technology Demonstration Project	2/26/2015
Generation		Technical Results	3002005107	Program on Technology Innovation: Development of a Corrosion-Fatigue Prediction Methodology for Steam Turbine Blades: AISI 403/410 (12%Cr) and 17-4PH Blade Steels	2/26/2015
Generation	87	Technical Results	3002005188	Creep Constitutive Model for Grade 92 Steel and Simulation of Notched Bar Specimen Performance	2/26/2015
Generation	87	Technical Results	3002005189	Creep Rupture Behavior of Plain and Notched Bar Specimens of Grade 92 Steel (2014 Update)	2/26/2015
Generation	87	Technical Results	3002005191	Microstructural Characterization of Long-Term Creep Tested P92 Cross Welds for Steam Pipe Applications	2/26/2015
Power Delivery & Utilization	40	Technical Results	3002004444	Categorizing Line Transient Overvoltage (TOV) Values for Determining Minimum Approach Distances: Technical Basis for Characterizing T-Values for Live-Line Work	2/26/2015
Power Delivery & Utilization	D_SG	Technical Results	3002004930	Analysis of Sacramento Municipal Utility District Conservation Voltage Reduction (CVR) Tests: June 2013 – June 2014	2/26/2015

EPRI Sector	Program Id	Product Type	Product Id	Product Description	Product Date
Power Delivery & Utilization	D_SG	Technical Results	3002004965	Analysis of Sacramento Municipal Utility District Conservation Voltage Reduction (CVR) Tests: June 2013 – June 2014	2/26/2015
Technology Innovation		Technical Results	3002005107	Program on Technology Innovation: Development of a Corrosion-Fatigue Prediction Methodology for Steam Turbine Blades: AISI 403/410 (12%Cr) and 17-4PH Blade Steels	2/26/2015
Generation	87	Technical Results	3002005089	Service Experience with Creep Strength Enhanced Ferritic Steels in Power Plants in the Asia-Pacific Region	2/27/2015
Generation	73	Technical Results	3002005087	SCR Catalyst Mercury Oxidation Laboratory Testing Guideline – Industry Version	3/3/2015
Power Delivery & Utilization	174	Technical Results	3002003291	Are Current Unintentional Islanding Prevention Practices Sufficient for Future Needs?	3/3/2015
Environment	91	Technical Results	3002004874	Program on Technology Innovation: The Evolving Emissions Profile of Distributed Energy Resource Technologies	3/5/2015
Technology Innovation		Technical Results	3002004874	Program on Technology Innovation: The Evolving Emissions Profile of Distributed Energy Resource Technologies	3/5/2015
Environment		Technical Results	3002005167	Program on Technology Innovation: Continuous, Low-Temperature, Membrane-Free Water Desalination Using Directional Solvent Extraction and Waste Heat from Power Plants	3/6/2015
Technology Innovation		Technical Results	3002005167	Program on Technology Innovation: Continuous, Low-Temperature, Membrane-Free Water Desalination Using Directional Solvent Extraction and Waste Heat from Power Plants	3/6/2015
Technology Innovation		Technical Results	3002005104	Program on Technology Innovation: Proceedings of the 25th Conference on Impacts of Fuel Quality on Power Production	3/10/2015
Generation	71	Technical Results	3002003969	2015 Heat Rate Improvement Conference	3/16/2015
Environment	59	Technical Results	3002003376	State of Knowledge of Condensable Particulate Matter Methods	3/18/2015
Power Delivery & Utilization	94	Technical Results	3002004715	Operational Performance and Benefits Assessment of a 3-MW Fuel Cell at a Utility Substation: Case Study: Delmarva Power/Bloom Energy Solid Oxide Fuel Cell	3/19/2015
Generation	87	Technical Results	3002005268	Microstructural Characterization of Creep-Fatigue Damage	3/19/2015
Power Delivery & Utilization	18	Technical Results	3002004906	PEPCO Demand Management: Plug-in Electric Vehicle (PEV) Charging Pilot	3/24/2015
Generation	63	Technical Results	3002005193	Electromagnetic Evaluation of the Microstructure of Power Plant Components	3/25/2015
Nuclear		Technical Results	3002004439	Program on Technology Innovation: Benchmarking of Ultrasonic Simulation Software	3/25/2015
Power Delivery & Utilization		Technical Results	3002005588	Air-Conditioning, Heating, and Refrigerating (AHR) Expo: Chicago, Illinois, January 2015	3/25/2015
Power Delivery & Utilization	D_SG	Technical Results	3002004934	Evaluation of the T13X Smart Grid Panel: Autonomous Distributed Technology to Mitigate Adverse Impacts of Intermittent Resources and Transient Events	3/25/2015
Technology Innovation		Technical Results	3002004439	Program on Technology Innovation: Benchmarking of Ultrasonic Simulation Software	3/25/2015
Technology Innovation		Technical Results	3002005588	Air-Conditioning, Heating, and Refrigerating (AHR) Expo: Chicago, Illinois, January 2015	3/25/2015
Power Delivery & Utilization	170	Technical Results	3002005339	Airflow and Energy Management in Data Centers: With Variable Airflow Direct Expansion Computer Room Air Conditioning (DX-CRAC) Units	3/30/2015

EPRI Sector	Program Id	Product Type	Product Id	Product Description	Product Date
Generation	64	Technical Results	3002005262	Aluminum Aqueous Chemistry and Liquid-Vapor Partitioning in Power Plant Steam Generator Systems	3/30/2015
Environment	102	Technical Results	3002004748	US-REGEN Unit Commitment Model Documentation	3/31/2015
Power Delivery & Utilization	D_SG	Technical Results	3002005036	A Case Study on Delmarva Power's Fuel Cell Demonstration	3/31/2015
Environment	91	Technical Results	3002005240	Long-Term Emissions and Air Quality Trends in the United States	4/1/2015
Nuclear	41.04.01	Technical Results	3002005254	Program on Technology Innovation: Optical Coherence Tomography Inspection of Surface Cracks, Nonmetallic Materials, and Simulated Fuel Rod Crud	4/1/2015
Technology Innovation		Technical Results	3002005254	Program on Technology Innovation: Optical Coherence Tomography Inspection of Surface Cracks, Nonmetallic Materials, and Simulated Fuel Rod Crud	4/1/2015
Power Delivery & Utilization		Technical Results	3002005680	Program on Technology Innovation: 2015 International Consumer Electronics Show (CES) Summary Report	4/3/2015
Technology Innovation		Technical Results	3002005680	Program on Technology Innovation: 2015 International Consumer Electronics Show (CES) Summary Report	4/3/2015
Nuclear	41.05.02	Technical Results	3002005487	2014 State-of-the-Fleet Assessment of Flow Accelerated Corrosion Program Effectiveness	4/7/2015
Environment		Peer Literature	3002006067	The near source impacts of diesel backup generators in urban environments	4/7/2015
Technology Innovation		Peer Literature	3002006067	The near source impacts of diesel backup generators in urban environments	4/7/2015
Generation		Technical Results	3002005464	United States-Japan Bilateral Enhanced Geothermal Systems Project: Phase II Review of Seismic, Monitoring Practices at The Geysers Geothermal Field, CA and the Hijiori and Ogachi Fields, Japan	4/9/2015
Power Delivery & Utilization	180	Technical Results	3002005598	Medium-Voltage Arc Flash: Switchgear and Live-Front Transformers	4/9/2015
Nuclear	41.04.01	Technical Results	3002005256	Microwave and Millimeter Wave Evaluation of Rubber Expansion Joints and Metallic Materials	4/10/2015
Technology Innovation		Technical Results	3002005256	Microwave and Millimeter Wave Evaluation of Rubber Expansion Joints and Metallic Materials	4/10/2015
Environment	55	Technical Results	3002005242	Petitioned, Candidate, and Proposed Species Distribution: Under the U.S. Endangered Species Act Across the Coterminous United States	4/14/2015
Environment	55	Technical Results	3002006007	Potential Endangered and Protected Species Conflicts With Electric Power Operations	4/14/2015
Power Delivery & Utilization	174	Technical Results	3002004777	Distribution Feeder Hosting Capacity: What Matters When Planning for DER?	4/15/2015
Power Delivery & Utilization	183	Technical Results	3002006271	Cyber Security and Privacy Newsletter, April 2015	4/15/2015
Nuclear	41.04.01	Technical Results	3002005255	Program on Technology Innovation: Muon Imaging for Nondestructive Evaluation	4/15/2015
Power Delivery & Utilization	174	Technical Results	3002006278	Smart Grid Inverters to Support Photovoltaic in New York Distribution Systems	4/15/2015
Power Delivery & Utilization	D_SG	Technical Results	3002004613	A Case Study on Southern California Edison Substation Automation: Irvine Smart Grid Demonstration	4/15/2015

EPRI Sector	Program Id	Product Type	Product Id	Product Description	Product Date
Technology Innovation		Technical Results	3002005255	Program on Technology Innovation: Muon Imaging for Nondestructive Evaluation	4/15/2015
Power Delivery & Utilization	199	Technical Results	3002004609	Energy Savings in the Process of Galvanizing Steel	4/16/2015
Power Delivery & Utilization	37	Technical Results	3002006354	Assessing and Enhancing the Security of Transmission Assets From Intentional Physical Attack	4/21/2015
Generation	68	Software	3002005034	Cyber Security Solutions for I&C Systems - Topic 2 - Interactive Remote Access Computer Based Training Module Rev15	4/23/2015
Power Delivery & Utilization	161	Technical Results	3002005851	Assessment of Licensed Communication Spectrum for Electric Utility Applications	4/27/2015
Nuclear	41.07.01	Technical Results	3002003116	An Approach to Risk Aggregation for Risk-Informed Decision-Making	4/29/2015
Power Delivery & Utilization	199	Technical Results	3002004608	Proper Energy Management: A Day-to-Day Activity	4/29/2015
Generation	64	Technical Results	3002006355	Heat Recovery Steam Generator Oxygen Injection: Case Study for Corrosion Reduction	4/29/2015
Power Delivery & Utilization	174	Technical Results	3002005812	Alternatives to the 15% Rule: Modeling and Hosting Capacity Analysis of 16 Feeders	4/29/2015
Power Delivery & Utilization	35	Technical Results	3002006078	Testing to Confirm or Refine Gap Factor Utilized in Calculation of Minimum Vegetation Clearance Distances (MVCD): Test Results and Analysis	4/30/2015
Power Delivery & Utilization	161	Technical Results	3002005801	Automated Demand Response and Ancillary Services Demonstration Project Newsletter, April 2015	4/30/2015
Nuclear	41.07.01	Technical Results	3002003301	Technical Basis for Severe Accident Mitigating Strategies: Volume 1	4/30/2015
Power Delivery & Utilization	170	Technical Results	3002005495	Heat Pump Water Heater Demonstration at Delaware County Electric Cooperative, Inc. in Delhi, NY	4/30/2015
Power Delivery & Utilization	170	Technical Results	3002005496	Commercial Heat Pump Water Heaters: Evaluation of Field Performance for San Diego Gas & Electric (SDG&E)	4/30/2015
Power Delivery & Utilization	D_SG	Technical Results	3002004612	Distribution Volt/Var Control to Optimize Customer Voltage Profiles at Southern California Edison: Irvine Smart Grid Demonstration	5/5/2015
Power Delivery & Utilization		Technical Results	3002002243	Assessing the Energy Consumption and Energy Intensity of Additive Manufacturing: Industrial Center of Excellence Application Guide	5/6/2015
Environment		Technical Results	3002006400	Contributions of Supply and Demand Resources to Required Power System Reliability Services	5/8/2015
Nuclear		Technical Results	3002006412	Chemical Engineering Evaluation / Feasibility Study of an On-Line Lithium Removal Process	5/8/2015
Power Delivery & Utilization	174	Technical Results	3002006203	Recommended Settings for Voltage and Frequency Ride-Through of Distributed Energy Resources	5/8/2015
Technology Innovation		Technical Results	3002006400	Contributions of Supply and Demand Resources to Required Power System Reliability Services	5/8/2015
Nuclear	41.07.01	Technical Results	3002005285	Modular Accident Analysis Program 5 (MAAP5) Applications Guidance: Desktop Reference for Using MAAP5 Software - Phase 2 Report	5/14/2015
Power Delivery & Utilization		Technical Results	3002002244	More Light Equals a Lot of Power: Industrial Center of Excellence Energy Efficiency Assessment Case Study	5/14/2015

EPRI Sector	Program Id	Product Type	Product Id	Product Description	Product Date
Generation	87	Technical Results	3002004478	Well-Engineered Weld Repair of Grade 91 Steel: Analysis of the Performance of 9Cr-1Mo (E8015-B8) Filler Metal, Part I	5/14/2015
Generation	87	Technical Results	3002005350	A Well-Engineered Approach for Establishing the Minimum Allowable Post-Weld Heat Treatment for Power Generation Applications of Grade 91 Steel	5/14/2015
Generation	87	Technical Results	3002005351	A Perspective on the Selection of Preheat, Interpass, and Post-Weld Cool Temperatures Using Grade 91 Steel as an Example	5/14/2015
Generation		Technical Results	3002002148	Demonstration Development Project: Feasibility of an Adiabatic Evaporator for Flue Gas Desulfurization Wastewater Zero Liquid Discharge Treatment Using Flue Gas Heat	5/15/2015
Power Delivery & Utilization	40	Technical Results	3002006377	Data Analytics Initiative for Transmission and Distribution: Year Two Update	5/15/2015
Power Delivery & Utilization	170	Technical Results	3002006264	Heat Pump Water Heater Demonstration at Delaware County Electric Cooperative, Inc. in Delhi, New York: Executive Summary	5/26/2015
Generation	64	Technical Results	3002006111	Ethanolamine (ETA), Its Decomposition Products, and Two-Phase Flow-Accelerated Corrosion: The Effect of ETA, Ammonia, Formic Acid, and Acetic Acid	5/28/2015
Generation	87	Technical Results	3002006403	Alternative Well-Engineered Weld Repair Options for Grade 91 Steel: An Executive Summary of Results from 2010 to 2014	5/28/2015
Nuclear		Technical Results	3002005180	Program on Technology Innovation: Development and Validation of a Ground-Based Wind Turbine Blade Inspection System	5/28/2015
Technology Innovation		Technical Results	3002005180	Program on Technology Innovation: Development and Validation of a Ground-Based Wind Turbine Blade Inspection System	5/28/2015
Power Delivery & Utilization	161	Technical Results	3002006384	Development of Outage Management Status Messages and Test Plan for Phase 1: Red Button	5/29/2015
Generation	185	Technical Results	3002005224	Bench-Scale Electro-Biochemical Reactor Evaluation: Nitrate and Selenium Removal from Flue Gas	5/29/2015
Nuclear	41.05.02	Technical Results	3002005488	Five-Year Summary for State-of-the-Fleet Assessments of Flow-Accelerated Corrosion Program Effectiveness	5/29/2015
Environment		Technical Results	3002004335	Program on Technology Innovation: Feasibility Study to Utilize Waste Heat-Enabled Green Chillers for Power Plant Steam Condensation	5/31/2015
Technology Innovation		Technical Results	3002004335	Program on Technology Innovation: Feasibility Study to Utilize Waste Heat-Enabled Green Chillers for Power Plant Steam Condensation	5/31/2015
Environment		Peer Literature	3002006393	Atmospheric Emission Characterization of Marcellus Shale Natural Gas Development Sites	6/1/2015
Technology Innovation		Peer Literature	3002006393	Atmospheric Emission Characterization of Marcellus Shale Natural Gas Development Sites	6/1/2015
Power Delivery & Utilization	161	Technical Results	3002005095	Smart Grid Communications Intelligencer, Spring 2015	6/2/2015
Environment		Technical Results	3002005381	Program on Technology Innovation: Tracking the Demand for Electricity from Grid-Related Services – Phase II Delphi Panel Results	6/10/2015
Technology Innovation		Technical Results	3002005381	Program on Technology Innovation: Tracking the Demand for Electricity from Grid-Related Services – Phase II Delphi Panel Results	6/10/2015
Generation	87	Technical Results	3002003260	Data Compilation for Grade 91 Steel Creep-Fatigue Datasheets	6/12/2015
Nuclear		Technical Results	3002006526	Program on Technology Innovation: High-Performance Computing for Weld Residual Stress Modeling: A Feasibility Evaluation	6/15/2015

EPRI Sector	Program Id	Product Type	Product Id	Product Description	Product Date
Technology Innovation		Technical Results	3002006526	Program on Technology Innovation: High-Performance Computing for Weld Residual Stress Modeling: A Feasibility Evaluation	6/15/2015
Nuclear	41.02.01	Technical Results	3002005401	Computational Fluid Dynamics Benchmark of High Fidelity Rod Bundle Experiments: Industry Round Robin Phase 2 - Rod Bundle with Mixing Vane Grids	6/16/2015
Environment	49	Technical Results	3002006298	2015 CCP Summer Meeting	6/17/2015
Power Delivery & Utilization	182	Technical Results	3002005824	FirstEnergy's Smart Grid Investment Grant Consumer Behavior Study: Phase 1 - Final Evaluation	6/17/2015
Power Delivery & Utilization	173	Technical Results	3002006525	Model User Guide for Generic Renewable Energy System Models	6/18/2015
Environment	178	Technical Results	3002006439	EGEAS Capabilities Manual: Version 11.0	6/19/2015
Environment	178	Technical Results	3002006440	EGEAS User's Guide: Version 11.0	6/19/2015
Generation		Technical Results	3002006386	MATS (Mercury and Air Toxics) Control in High SO3 Flue Gas at Georgia Power Plant Bowen	6/19/2015
Nuclear	41.07.01	Technical Results	3002005296	EPRI Low Power and Shutdown Probabilistic Risk Assessment Standard Pilot: Palo Verde Self-Assessment	6/23/2015
Nuclear	41.05.03	Technical Results	3002005379	Program on Technology Innovation: Optical Fiber Bragg Gratings for Pressure Monitoring in Nuclear Power Plant Applications - Industrial Performance Testing Results	6/26/2015
Technology Innovation		Technical Results	3002005379	Program on Technology Innovation: Optical Fiber Bragg Gratings for Pressure Monitoring in Nuclear Power Plant Applications - Industrial Performance Testing Results	6/26/2015
Power Delivery & Utilization	1	Software	3002005966	PRE-SW OpenDSS Study File Converter v1.0 - Beta	6/27/2015
Nuclear	41.07.01	Technical Results	3002005684	Central and Eastern United States Seismic Source Characterization for Nuclear Facilities: Maximum Magnitude Distribution Evaluation	6/29/2015
Power Delivery & Utilization	161	Technical Results	3002005579	Information and Communication Technology (ICT) Interoperability Newsletter, June 2015	6/30/2015
Nuclear	41.05.01	Software	3002005428	EPRI Preventive Maintenance Basis Database (PMBD) Version 3.1	6/30/2015
Power Delivery & Utilization		Technical Results	3002006348	Program on Technology Innovation: Utilities and Open Source Software	6/30/2015
Power Delivery & Utilization	180	Technical Results	3002006373	Arc Flash Update for 480-V Network Protectors	6/30/2015
Technology Innovation		Technical Results	3002006348	Program on Technology Innovation: Utilities and Open Source Software	6/30/2015
Power Delivery & Utilization	161	Technical Results	3002006001	Common Information Model Primer: Third Edition	7/1/2015
Generation	78	Technical Results	3002006090	Flue Gas Desulfurization Gypsum Agricultural Network: Alabama (Bermudagrass)	7/9/2015
Power Delivery & Utilization	183	Technical Results	3002006272	Cyber Security and Privacy Newsletter, July 2015	7/13/2015
Power Delivery & Utilization	161	Technical Results	3002006492	Security Implications and Considerations for Serial to IP-Based SCADA Migration Revisited	7/14/2015

EPRI Sector	Program Id	Product Type	Product Id	Product Description	Product Date
Generation	65	Technical Results	3002005576	Remediation of Lost Demulsibility in Turbine Oil	7/15/2015
Environment	49	Technical Results	3002006282	Hydraulic Conductivity of Compacted Clay Liners Permeated with Coal Combustion Product Leachates: Interim Report	7/15/2015
Nuclear	41.05.02	Technical Results	3002005530	Recommendations for an Effective Program Against Erosive Attack	7/15/2015
Nuclear	41.07.01	Technical Results	3002005295	Fukushima Technical Evaluation: Phase 2--Revised GOTHIC Analysis	7/15/2015
Environment		Technical Results	3002005759	The Electric Power Industry Business Case for Sustainability: Literature Review and Executive Rationale	7/20/2015
Power Delivery & Utilization	1	Software	3002005102	PRE-SW: Grid-IQ Flicker Evaluation Module (FEM) v3.0 Beta	7/21/2015
Power Delivery & Utilization	35	Technical Results	3002006527	Supplemental Testing to Confirm or Refine Gap Factor Utilized in Calculation of Minimum Vegetation Clearance Distances (MVCD): Tests: Results and Analysis Including a Recalculation of MVCD for 1.0 Gap Factor	7/21/2015
Generation	63	Technical Results	3002005958	Nondestructive Examination and Diagnostic/Troubleshooting Guide for Attemperators	7/21/2015
Nuclear	41.10.01	Technical Results	3002005485	EPRI Product Mapping to International Atomic Energy Agency (IAEA) International Generic Ageing Lessons Learned (IGALL) Aging Management Program Categories	7/22/2015
Power Delivery & Utilization	37	Technical Results	3002006383	How EPRI IEMI/EMP Research Fits Together: An Introduction to EPRI Research on Intentional Electromagnetic Interference (IEMI) and Electromagnetic Pulse (EMP) Threats, Vulnerability, Mitigation, and Risk Management	7/27/2015
Nuclear	41.05.02	Technical Results	3002006470	EPRI Standardized Task Evaluation Program Implementation Guide, Revision 1	7/27/2015
Power Delivery & Utilization		Technical Results	3002006692	Capacity and Energy in the Integrated Grid	7/27/2015
Technology Innovation		Technical Results	3002006692	Capacity and Energy in the Integrated Grid	7/27/2015
Nuclear	41.05.03	Technical Results	3002005507	Program on Technology Innovation: Area Acoustic and Electromagnetic Emissions Monitoring--Initial Feasibility and Proof of Concept	7/28/2015
Technology Innovation		Technical Results	3002005507	Program on Technology Innovation: Area Acoustic and Electromagnetic Emissions Monitoring--Initial Feasibility and Proof of Concept	7/28/2015
Nuclear	41.05.02	Technical Results	3002005345	Program on Technology Innovation: Evaluation of Data Reconciliation Methods for Power Recovery	7/29/2015
Nuclear	41.07.01	Technical Results	3002004396	High Frequency Program: Application Guidance for Functional Confirmation and Fragility Evaluation	7/29/2015
Technology Innovation		Technical Results	3002005345	Program on Technology Innovation: Evaluation of Data Reconciliation Methods for Power Recovery	7/29/2015
Power Delivery & Utilization	161	Technical Results	3002006002	Common Information Model (CIM) 2014 Update	7/30/2015
Generation	64	Technical Results	3002003678	State of Knowledge on Film-Forming Amines	7/30/2015
Generation	87	Technical Results	3002006390	Guidelines and Specifications for High-Reliability Fossil Power Plants, 2nd Edition: Best Practice Guideline for Manufacturing and Construction of Grade 91 Steel Components	7/30/2015

EPRI Sector	Program Id	Product Type	Product Id	Product Description	Product Date
Generation	185	Technical Results	3002006549	Physical/Chemical Treatment of Flue Gas Desulfurization Wastewater - Case Study 1	7/30/2015
Environment	54	Technical Results	3002006304	Fish Protection Technical Brief: Key Genetic Applications That Can Improve Early Life Stage Characterizations and Quantifications	7/31/2015
Generation	64	Technical Results	3002001916	Control of Corrosion in the Steam Turbine Phase Transition Zone (PTZ), Final Report: Neutralizing Amines	7/31/2015
Power Delivery & Utilization	1	Software	3002005100	PRE-SW: Grid-IQ Harmonics Evaluation Module (HEM) v 3.0 - Beta	8/4/2015
Environment	50	Technical Results	3002006708	Generic Work Plan to Assess Dense Non-Aqueous Phase Liquid Mobility in the Subsurface at Manufactured Gas Plant Sites	8/4/2015
Generation	185	Technical Results	3002002143	State of Knowledge: Power Plant Wastewater Treatment - Membrane Technologies	8/4/2015
Power Delivery & Utilization	94	Technical Results	3002006714	Compressed Air Energy Storage Demonstration Newsletter, August 2015	8/5/2015
Nuclear	41.05.02	Technical Results	3002006066	Typical Format for Documenting Commercial-Grade Item Dedication Technical Evaluations	8/6/2015
Nuclear	41.05.01	Technical Results	3002005521	Program on Technology Innovation: Machine Verification in Laser-Scanned Spaces - Status Update 2	8/10/2015
Technology Innovation		Technical Results	3002005521	Program on Technology Innovation: Machine Verification in Laser-Scanned Spaces - Status Update 2	8/10/2015
Power Delivery & Utilization	37	Technical Results	3002006451	Implementing the IEC 61850 Substation Automation Standard	8/11/2015
Generation	193	Technical Results	3002006216	Utilizing Unmanned Aircraft Systems (UAS) as a PV O&M Tool	8/12/2015
Power Delivery & Utilization	170	Technical Results	3002005682	LIGHTFAIR International 2015 Conference Report: New York, New York, May 3-7, 2015	8/13/2015
Technology Innovation		Technical Results	3002005682	LIGHTFAIR International 2015 Conference Report: New York, New York, May 3-7, 2015	8/13/2015
Environment	49	Technical Results	3002006296	Characterization of Coal Combustion Spray Dryer Absorber Material Using the Modified Leaching Environmental Assessment Framework	8/14/2015
Generation		Technical Results	3002006659	Program on Technology Innovation: Integrating Cooling System with Membrane Distillation to Substantially Reduce Water Requirements	8/14/2015
Technology Innovation		Technical Results	3002006659	Program on Technology Innovation: Integrating Cooling System with Membrane Distillation to Substantially Reduce Water Requirements	8/14/2015
Generation	87	Technical Results	3002003324	Application of Small Punch Fracture Toughness of Turbine Materials	8/17/2015
Generation	64	Technical Results	3002003485	Iron Analysis and Speciation: Sampling and Validation	8/20/2015
Power Delivery & Utilization		Technical Results	3002006508	Program on Technology Innovation: EPRI Grid Transformation Phase II: Seamless Geospatial Power Systems Model	8/20/2015
Power Delivery & Utilization	D_SG	Technical Results	3002006694	Guidebook for Cost/Benefit Analysis of Smart Grid Demonstration Projects: Revision 3	8/20/2015
Technology Innovation		Technical Results	3002006508	Program on Technology Innovation: EPRI Grid Transformation Phase II: Seamless Geospatial Power Systems Model	8/20/2015

EPRI Sector	Program Id	Product Type	Product Id	Product Description	Product Date
Generation	68	Software	3002005039	Cyber Security Solutions for I&C Systems - Topic 3: Security Event Monitoring Module Computer Based Training Module Rev15	8/21/2015
Generation	185	Technical Results	3002004893	Flue Gas Desulfurization (FGD) Wastewater Chemical Precipitation Bench-Scale Treatability Study	8/24/2015
Generation	66	Technical Results	3002006513	Regen-SCOT: Rocket Engine-Derived High Efficiency Turbomachinery for Electric Power Generation	8/26/2015
Environment	50	Technical Results	3002006800	Background Polycyclic Aromatic Hydrocarbons (PAHs): Re-Assessment of Statistics and Distributions	8/27/2015
Power Delivery & Utilization	182	Software	3002006317	Electricity Service Plan Preferences Estimator Tool KCP&L (ESPP KCP&L) v1.0	8/27/2015
Nuclear	41.09.02	Technical Results	3002005411	Summary of Department of Energy Decommissioning Technology Demonstrations	8/28/2015
Nuclear	41.02.01	Technical Results	3002005557	Program on Technology Innovation: Coated Molybdenum-Alloy Cladding for Accident-Tolerant Fuel: Progress Report	8/28/2015
Technology Innovation		Technical Results	3002005557	Program on Technology Innovation: Coated Molybdenum-Alloy Cladding for Accident-Tolerant Fuel: Progress Report	8/28/2015
Environment	49	Technical Results	3002006285	Monitored Natural Attenuation for Inorganic Constituents in Coal Combustion Residuals	8/30/2015
Power Delivery & Utilization	18	Technical Results	3002006566	Plug-In Hybrid Medium-Duty Truck Demonstration and Evaluation	8/31/2015
Power Delivery & Utilization		Technical Results	3002006856	Update on FAA Regulations on Unmanned Aircraft Systems: An EPRI White Paper	9/4/2015
Environment		Technical Results	3002006814	Program on Technology Innovation: A Review of the Benefits, Challenges, and Potential Uses of Air Quality Microsensors for Utility Purposes	9/7/2015
Technology Innovation		Technical Results	3002006814	Program on Technology Innovation: A Review of the Benefits, Challenges, and Potential Uses of Air Quality Microsensors for Utility Purposes	9/7/2015
Power Delivery & Utilization	D_SG	Technical Results	3002004662	FirstEnergy Case Study on Integrated Control Platform Visualization:EPRI Smart Grid Demonstration Initiative	9/8/2015
Generation	75	Technical Results	3002003377	Laboratory Study of Hydrated Lime Resistivity: Impact of Sorbents on Electrostatic Precipitator Performance	9/9/2015
Power Delivery & Utilization		Technical Results	3002005054	Insulator Calculation Engine (ICE) Video	9/10/2015
Power Delivery & Utilization		Technical Results	3002005055	Video Report: Power Transformer Expert System (PTX)	9/10/2015
Power Delivery & Utilization		Technical Results	3002005056	Underground Transmission Workstation Software Video	9/10/2015
Power Delivery & Utilization		Technical Results	3002005057	Circuit Breaker Lubrication-Engineering Guide and Selection Tool	9/10/2015
Power Delivery & Utilization		Technical Results	3002005060	Electrical Effects of HVDC Transmission Lines Video	9/10/2015
Power Delivery & Utilization		Technical Results	3002006830	Program on Technology Innovation: DesignLights Consortium 2015 Stakeholder Meeting Report	9/11/2015
Technology Innovation		Technical Results	3002006830	Program on Technology Innovation: DesignLights Consortium 2015 Stakeholder Meeting Report	9/11/2015

EPRI Sector	Program Id	Product Type	Product Id	Product Description	Product Date
Environment	54	Technical Results	3002006310	Fourth Thermal Ecology Conference	9/15/2015
Generation	69	Software	3002006663	Common Information Model/Augmented Reality Demonstration	9/15/2015
Generation	87	Technical Results	3002006598	Atlas of Steam-Side Oxide Scales Formed on Superheater and Reheater Tubes	9/16/2015
Power Delivery & Utilization	18	Technical Results	3002006875	Environmental Assessment of a Full Electric Transportation Portfolio, Volume 1: Background, Methodology, and Best Practices	9/17/2015
Power Delivery & Utilization	18	Technical Results	3002006876	Environmental Assessment of a Full Electric Transportation Portfolio, Volume 2: Greenhouse Gas Emissions	9/17/2015
Power Delivery & Utilization	18	Technical Results	3002006880	Environmental Assessment of a Full Electric Transportation Portfolio, Volume 3: Air Quality Impacts	9/17/2015
Power Delivery & Utilization	161	Technical Results	3002005802	Automated Demand Response and Ancillary Services Demonstration Project Newsletter, August 2015	9/18/2015
Nuclear	41.03.01	Technical Results	3002005371	Susceptibility Assessment Criteria for Chloride-Induced Stress Corrosion Cracking (CISCC) of Welded Stainless Steel Canisters for Dry Cask Storage Systems	9/18/2015
Nuclear	41.01.01	Technical Results	3002005623	Guidelines for Material Procurement for Use in Light Water Reactor Environments	9/22/2015
Environment	54	Technical Results	3002006431	Evaluation of Volitional Use of a Heated Discharge Plume by Resident Fish at TVA's Cumberland Fossil Plant	9/23/2015
Power Delivery & Utilization	18	Technical Results	3002006838	Incentives Drive Employee Plug-in Electric Vehicle Purchases at PG &E	9/23/2015
Environment		Technical Results	3002006555	Program on Technology Innovation: Proceedings of the 2015 NSF-EPRI Power Plant Dry Cooling Science and Technology Innovation Program Annual Review Meeting	9/24/2015
Technology Innovation		Technical Results	3002006555	Program on Technology Innovation: Proceedings of the 2015 NSF-EPRI Power Plant Dry Cooling Science and Technology Innovation Program Annual Review Meeting	9/24/2015
Power Delivery & Utilization	18	Technical Results	3002006855	NV Energy Invites Employees and Customers to Charge	9/25/2015
Generation	65	Technical Results	3002006234	Strain-Based Turbine Generator Torsional Vibration Monitoring System—Phase 3: Prototype Field Application	9/29/2015
Environment	49	Technical Results	3002006820	Website Posting and Inspections Guidance for Coal Combustion Product Impoundments and Landfills	9/29/2015
Nuclear	41.02.01	Technical Results	3002005558	Feasibility Study for Detecting Cracks in Lifting Handles of BWR Fuel Bundles and Control Rods Using Guided Ultrasonic Waves	9/29/2015
Nuclear	41.01.04	Technical Results	3002005498	Materials Reliability Program: Finite-Element Model Validation for Dissimilar Metal Butt-Welds (MRP-316 Revision 1): Volumes 1 and 2	9/29/2015
Nuclear	41.01.04	Technical Results	3002005499	Materials Reliability Program: Welding Residual Stress Dissimilar Metal Butt-Weld Finite Element Modeling Handbook (MRP-317, Revision 1)	9/29/2015
Nuclear	41.04.01	Technical Results	3002005390	Program on Technology Innovation: Concrete Repairs in the Power Generating Industry	9/29/2015
Nuclear	41.07.01	Technical Results	3002005288	Central and Eastern United States Seismic Source Characterization for Nuclear Facilities: Review for Reservoir-Induced Seismicity (RIS) in the Southeast and Earthquakes in South Carolina Near the 1886 Charleston Earthquake	9/29/2015
Power Delivery & Utilization		Technical Results	3002006862	Program on Technology Innovation: Test Script for International Electrotechnical Committee 61968-6:FDIS Messages	9/29/2015

EPRI Sector	Program Id	Product Type	Product Id	Product Description	Product Date
Technology Innovation		Technical Results	3002005390	Program on Technology Innovation: Concrete Repairs in the Power Generating Industry	9/29/2015
Technology Innovation		Technical Results	3002006862	Program on Technology Innovation: Test Script for International Electrotechnical Committee 61968-6:FDIS Messages	9/29/2015
Environment	56	Technical Results	3002006252	Non-Chemical Metal Cleaning Wastes	9/30/2015
Power Delivery & Utilization	1	Software	3002005960	PRE-SW Capacitor Switching Assessment (CSA-DLL) Module v1.0 - Beta	9/30/2015
Power Delivery & Utilization	170	Technical Results	3002006785	Demand Response-Ready End-Use Technologies: Overcoming Barriers to Customer Adoption of DR-Ready Devices	9/30/2015
Environment	56	Technical Results	3002006341	Evaluation of FGD Wastewater Treatment Costs	9/30/2015
Nuclear	41.05.03	Technical Results	3002005367	Program on Technology Innovation: Video Content Analytics for Nuclear Process Monitoring: A Technology Survey	9/30/2015
Nuclear	41.02.01	Technical Results	3002005551	Feasibility Study for Measuring Distortion in BWR Fuel Bundle Upper End Fittings Using Laser Scanners	9/30/2015
Power Delivery & Utilization		Technical Results	3002005757	Program on Technology Innovation: Measuring Customer Preferences for Alternative Electricity Service Plans - An Application of a Discrete Choice Experiment	9/30/2015
Power Delivery & Utilization	161	Technical Results	3002005096	Smart Grid Communications Intelligencer, Fall 2015	9/30/2015
Technology Innovation		Technical Results	3002005367	Program on Technology Innovation: Video Content Analytics for Nuclear Process Monitoring: A Technology Survey	9/30/2015
Technology Innovation		Technical Results	3002005757	Program on Technology Innovation: Measuring Customer Preferences for Alternative Electricity Service Plans - An Application of a Discrete Choice Experiment	9/30/2015
Generation	108	Technical Results	3002006517	Program on Technology Innovation: Fossil Fleet Transition with Fuel Changes and Large Scale Variable Renewable Integration	10/2/2015
Technology Innovation		Technical Results	3002006517	Program on Technology Innovation: Fossil Fleet Transition with Fuel Changes and Large Scale Variable Renewable Integration	10/2/2015
Environment	42	Technical Results	3002006263	A Case Study Assessment of Trace Metal Atmospheric Emissions and Their Aquatic Impacts in the San Juan River Basin. Phase 1: Four Corners Power Plant	10/6/2015
Environment	54	Software	3002003957	EPRI Larval Fish and Egg Taxonomic Key v1.0	10/7/2015
Environment	54	Software	3002006302	Entrainment Condition Tool (ENTRAIN) Version 1.0	10/7/2015
Environment	49	Technical Results	3002006289	Potential Failure Mode Analysis for Coal Combustion Residual Impoundments: Guidance Document	10/7/2015
Environment	49	Technical Results	3002006290	Centrifuge Models of Embankment Failures on Saturated Coal Ash	10/7/2015
Power Delivery & Utilization	94	Technical Results	3002006673	Energy Storage Technical Specification Template: Guidelines Developed by the Energy Storage Integration Council for Distribution-Connected Systems	10/9/2015
Nuclear		Technical Results	3002006863	Program on Technology Innovation: Round-Robin Testing of Mini-CT Weld Specimens	10/12/2015
Technology Innovation		Technical Results	3002006863	Program on Technology Innovation: Round-Robin Testing of Mini-CT Weld Specimens	10/12/2015

EPRI Sector	Program Id	Product Type	Product Id	Product Description	Product Date
Power Delivery & Utilization	183	Technical Results	3002006273	Cyber Security and Privacy Newsletter, October 2015	10/14/2015
Nuclear	41.07.01	Technical Results	3002005292	External Flooding Hazard Analysis: State of Knowledge Assessment	10/14/2015
Generation	185	Technical Results	3002006935	Laboratory Evaluation of Arsenic Adsorption Media for Flue Gas Desulfurization Wastewater	10/15/2015
Power Delivery & Utilization	D_SG	Technical Results	3002004632	Kansas City Power & Light Residential Time-of-Use Impact Study: EPRI Smart Grid Demonstration	10/15/2015
Power Delivery & Utilization	161	Technical Results	3002006738	Advanced Metering Infrastructure Requirements for Future-Proof Deployments	10/19/2015
Power Delivery & Utilization	161	Technical Results	3002006951	Demand Response-Ready Programmable Packaged Terminal Air Conditioner Specification: Preliminary Requirements for CEA-2045 Field Demonstration	10/19/2015
Generation		Technical Results	3002006770	Can Future Coal Power Plants Meet CO2 Emission Standards Without Carbon Capture & Storage?	10/19/2015
Technology Innovation		Technical Results	3002006770	Can Future Coal Power Plants Meet CO2 Emission Standards Without Carbon Capture & Storage?	10/19/2015
Power Delivery & Utilization	161	Technical Results	3002005586	Electric Utility Data Synthesis	10/21/2015
Nuclear	41.03.01	Technical Results	3002005460	Program on Technology Innovation: Technology Assessment of a Molten Salt Reactor Design -- The Liquid Fluoride Thorium Reactor (LFTR)	10/22/2015
Technology Innovation		Technical Results	3002005460	Program on Technology Innovation: Technology Assessment of a Molten Salt Reactor Design -- The Liquid Fluoride Thorium Reactor (LFTR)	10/22/2015
Generation		Technical Results	3002006890	Program on Technology Innovation: Investigation and Demonstration of Advanced Production Simulation Techniques to Assess Flexible Resources in Integrating Variable Generation	10/26/2015
Technology Innovation		Technical Results	3002006890	Program on Technology Innovation: Investigation and Demonstration of Advanced Production Simulation Techniques to Assess Flexible Resources in Integrating Variable Generation	10/26/2015
Power Delivery & Utilization	35	Software	3002005689	Aging Chamber Report Tool (ACRT) v8.0	10/27/2015
Nuclear	41.03.01	Technical Results	3002005508	Degradation Mechanisms and Inspection Techniques for Concrete Structures in Dry Storage Systems for Spent Nuclear Fuel	10/27/2015
Environment	54	Technical Results	3002006870	Ohio River Ecological Research Program (ORERP): 2013 Ohio River Monitoring Results	10/28/2015
Environment	54	Technical Results	3002006735	Best Management Practices Manual for Preventing Cooling Water Intake Blockages	10/29/2015
Nuclear	41.01.04	Technical Results	3002005349	Materials Reliability Program: Pressurized Water Reactor Internals Inspection and Evaluation Guidelines (MRP-227, Revision 1)	10/29/2015
Nuclear	41.01.01	Technical Results	3002005478	Program on Technology Innovation: Review of Oxidation and Surface Film Formation Studies on Austenitic Alloys in Light Water Reactor Coolants	10/29/2015
Nuclear	41.07.01	Technical Results	3002005287	Identification of External Hazards for Analysis in Probabilistic Risk Assessment: Update of Report 1022997	10/29/2015
Nuclear	41.08.01	Technical Results	3002005440	Advanced Nuclear Technology: Anchorage of High-Strength Reinforcing Bars with Standard Hooks	10/29/2015
Technology Innovation		Technical Results	3002005478	Program on Technology Innovation: Review of Oxidation and Surface Film Formation Studies on Austenitic Alloys in Light Water Reactor Coolants	10/29/2015

EPRI Sector	Program Id	Product Type	Product Id	Product Description	Product Date
Environment	49	Technical Results	3002006291	Pond Closures	10/30/2015
Nuclear	41.07.01	Technical Results	3002005300	Technical Basis for Severe Accident Mitigating Strategies: Volume 2	10/30/2015
Generation	64	Technical Results	3002006101	Effect of Filming Amines on Steel and Copper Alloy Corrosion: Interim Report	11/2/2015
Environment	56	Technical Results	3002006256	Managing FGD Water Workshop	11/3/2015
Power Delivery & Utilization	174	Technical Results	3002007047	Rolling Out Smart Inverters: Assessing Utility Strategies and Approaches	11/4/2015
Power Delivery & Utilization	37	Technical Results	3002005905	Transformer Forensics Database v4.0	11/4/2015
Environment	54	Peer Literature	3002006698	A review and assessment of the potential use of RNA:DNA ratios to assess the condition of entrained fish larvae	11/5/2015
Environment		Peer Literature	3002007043	Round Robin Tests on Nitrosamines Analysis in the Effluents of a CO2 Capture Pilot Plant	11/6/2015
Power Delivery & Utilization	D_SG	Technical Results	3002004625	FirstEnergy Distribution Data Analytics Using Integrated Distributed Energy Resource Sensor Data: EPRI Smart Grid Demonstration	11/6/2015
Technology Innovation		Peer Literature	3002007043	Round Robin Tests on Nitrosamines Analysis in the Effluents of a CO2 Capture Pilot Plant	11/6/2015
Generation	65	Software	3002003907	PRE-SW: Bearing Action Advisor (BAA) v1.0	11/8/2015
Environment	54	Technical Results	3002003958	Internet-based Larval Fish and Egg Taxonomic Key for Freshwater Environments	11/9/2015
Nuclear	41.01.01	Technical Results	3002005476	Program on Technology Innovation: Crack Tip Strain Rate Models for Environmentally-Assisted Fatigue Crack Growth in BWR and PWR Environments	11/10/2015
Technology Innovation		Technical Results	3002005476	Program on Technology Innovation: Crack Tip Strain Rate Models for Environmentally-Assisted Fatigue Crack Growth in BWR and PWR Environments	11/10/2015
Environment	54	Technical Results	3002006301	Clean Water Act §316(b): Conference on Engineering, Biological and Economic Challenges of the New Existing Facility Rule	11/11/2015
Power Delivery & Utilization	94	Technical Results	3002007067	Grid Interactive Microgrid Controllers and the Management of Aggregated Distributed Energy Resources (DER): Relationship of Microgrid Controller with Distributed Energy Resource Management System (DERMS) and Utility Distributed Management System (DMS)	11/11/2015
Power Delivery & Utilization	35	Software	3002005681	Insulator Calculation Engine (ICE) v3.5	11/12/2015
Power Delivery & Utilization	D_SG	Technical Results	3002005011	Smart Grid Demonstration Initiative Case Studies Volume 2	11/12/2015
Generation	65	Technical Results	3002004969	Best Practices to Avoid Problems During Generator Rotor Rewind	11/13/2015
Generation	63	Technical Results	3002005955	Assessment of Eddy Current Arrays for the Detection of Repair Welds in Grade 91 Cast Valve Bodies	11/13/2015
Power Delivery & Utilization	1	Software	3002005959	PRE-SW: Incipient Cable Fault Detection (ICF-DLL) Module Version 1.0 - Beta	11/16/2015
Generation		Technical Results	3002007072	Program on Technology Innovation: Building Integrated Photovoltaics in 2015 and Beyond: Technology, Markets, and Products	11/16/2015

EPRI Sector	Program Id	Product Type	Product Id	Product Description	Product Date
Generation	63	Technical Results	3002006904	State of Knowledge Regarding Supercritical Waterwall Circuit Fluid Flow, Heat Transfer, and Temperature Instability	11/16/2015
Generation	87	Technical Results	3002006972	Proceedings: EPRI International Conference on Corrosion in Power Plants	11/16/2015
Nuclear	41.01.04	Technical Results	3002005501	Materials Reliability Program: Experimental Plan for Primary Water Stress Corrosion Crack Initiation Testing (MRP-404)	11/16/2015
Technology Innovation		Technical Results	3002007072	Program on Technology Innovation: Building Integrated Photovoltaics in 2015 and Beyond: Technology, Markets, and Products	11/16/2015
Power Delivery & Utilization	37	Technical Results	3002005910	Circuit Breaker Lubrication Selection Tool Version 1.0	11/17/2015
Generation		Technical Results	3002007063	Program on Technology Innovation: Rapid Response Absorber	11/17/2015
Nuclear		Software	3002007138	Fleet-Wide Prognostic and Health Management Suite (FW-PHM Suite) v1.2 Demonstration Website	11/17/2015
Technology Innovation		Technical Results	3002007063	Program on Technology Innovation: Rapid Response Absorber	11/17/2015
Power Delivery & Utilization	182	Software	3002006186	Electricity Service Plan Preferences Estimator Tool Program 182 (ESPP Prog 182) Version 1.0	11/18/2015
Environment	54	Technical Results	3002006309	Through-Screen Velocity Estimating Tool Version 1.0	11/19/2015
Generation	68	Software	3002005041	Cyber Security Solutions for I&C Systems - Topic 4: Control Network Scanning Module Rev 15.00	11/19/2015
Nuclear	41.05.01	Technical Results	3002005363	Improving the Execution and Productivity of Maintenance with Electronic Work Packages: A Mobile Work Management Initiative	11/19/2015
Power Delivery & Utilization	37	Technical Results	3002006929	Transmission Resiliency News, Issue 3	11/19/2015
Power Delivery & Utilization	35	Software	3002005687	Polymer Insulator Population Assessment (PIPA) v4.5	11/20/2015
Environment	62	Technical Results	3002006342	EPRI Occupational Health and Safety Annual Report 2014: Injury and Illness Among the Electric Energy Workforce, 1995-2013	11/20/2015
Environment	54	Technical Results	3002006300	Fish Protection Information Center	11/20/2015
Power Delivery & Utilization	174	Technical Results	3002005791	Alternatives to the 15% Rule: Modified Screens and Validation	11/20/2015
Nuclear		Technical Results	3002004995	Program on Technology Innovation: Analysis of Hazard Models for Cyber Security, Phase I	11/20/2015
Power Delivery & Utilization	182	Technical Results	3002001615	Understanding Customer Participation in Feedback Programs: A Sub-Project of CenterPoint Energy's Real-time Feedback Pilot Project	11/20/2015
Technology Innovation		Technical Results	3002004995	Program on Technology Innovation: Analysis of Hazard Models for Cyber Security, Phase I	11/20/2015
Generation	78	Technical Results	3002006091	Leaching from Roadway Substructures Constructed with Coal Combustion Products: Assessment of Field Data and Impact Analysis	11/21/2015
Environment	49	Technical Results	3002006287	Groundwater Monitoring Guidance for the Coal Combustion Residuals Rule	11/23/2015

EPRI Sector	Program Id	Product Type	Product Id	Product Description	Product Date
Environment	56	Technical Results	3002006251	Flue Gas Desulfurization (FGD) Wastewater Chemical Precipitation Treatment Performance Characterization Study	11/24/2015
Nuclear	41.02.01	Technical Results	3002005540	Fuel Reliability Program: Proposed Reactivity Insertion Accident (RIA) Acceptance Criteria, Revision 1	11/24/2015
Environment		Peer Literature	3002007185	Thermodynamics of Organic Amines in the Atmosphere	11/28/2015
Technology Innovation		Peer Literature	3002007185	Thermodynamics of Organic Amines in the Atmosphere	11/28/2015
Power Delivery & Utilization	161	Technical Results	3002005580	Information and Communication Technology (ICT) Interoperability Newsletter, November 2015	11/30/2015
Nuclear	41.05.02	Software	3002005668	CHECWORKS Steam/Feedwater Application (SFA) Version 4.1	11/30/2015
Generation	69	Technical Results	3002006568	Lubrication Standards Guideline Manual	11/30/2015
Generation	193	Technical Results	3002006723	Utility Application of LiDAR-Based Rooftop Photovoltaic Technical Potential Analysis	11/30/2015
Nuclear	41.09.01	Technical Results	3002005564	Development of Generic Scaling Factors for Technetium-99 and Iodine-129 in Low and Intermediate Level Waste	11/30/2015
Power Delivery & Utilization		Technical Results	3002007028	Program on Technology Innovation: Seamless Bulk Electric Grid Management	11/30/2015
Technology Innovation		Technical Results	3002007028	Program on Technology Innovation: Seamless Bulk Electric Grid Management	11/30/2015
Environment	55	Technical Results	3002007068	Individual Species Assessment: Eastern Massasauga (<i>Sistrurus catenatus</i>)	12/1/2015
Generation	75	Technical Results	3002006156	SCR Mercury Oxidation Data to Support MATS Mercury Compliance, 2015 Update	12/1/2015
Generation	75	Technical Results	3002007073	Low-Temperature Mercury Oxidation Catalyst Technology Update	12/1/2015
Nuclear	41.05.03	Technical Results	3002005385	Severe Nuclear Accidents: Lessons Learned for Instrumentation, Control and Human Factors	12/1/2015
Power Delivery & Utilization	174	Technical Results	3002006594	Alternatives to the 15% Rule: Final Project Summary	12/1/2015
Power Delivery & Utilization	170	Technical Results	3002005818	Electric Customer Load Volatility and Its Impact on Electricity Costs, Prices, and Profits	12/1/2015
Nuclear	41.05.01	Technical Results	3002005354	Controllable Reactor Coolant Pump Seal Prototype: Interim Progress Report	12/2/2015
Technology Innovation		Technical Results	3002005354	Controllable Reactor Coolant Pump Seal Prototype: Interim Progress Report	12/2/2015
Generation	87	Technical Results	3002006755	Evaluation of the Resistance of Creep-Strength-Enhanced Ferritic Steels to Stress Corrosion Cracking in Various Environments: Follow-On Studies Using the Jones Test	12/3/2015
Power Delivery & Utilization	18	Technical Results	3002007146	Plug-in Hybrid Tugboats: The Carolyn Dorothy and the Campbell Foss in California	12/4/2015
Power Delivery & Utilization	18	Technical Results	3002006993	NextEra Energy, FPL Spur PEV Adoption through Education and Workplace Charging	12/4/2015

EPRI Sector	Program Id	Product Type	Product Id	Product Description	Product Date
Power Delivery & Utilization	18	Technical Results	3002007142	SRP Cultivates Plug-in Electric Vehicle Community Among Employees and Customers	12/4/2015
Generation	78	Technical Results	3002006092	Utilization of Geopolymer Concrete in Solidification/Stabilization of Sorbent-Impacted Fly Ash and Power Plant Wastewater Treatment Residuals: Literature Review and Preliminary Results	12/4/2015
Environment		Technical Results	3002006996	Sustainability Reporting Trends for the Electric Power Industry	12/4/2015
Generation	63	Technical Results	3002005187	Nondestructive Methods for Detection of High-Temperature Damage in Creep-Strength-Enhanced Ferritic Steels (Grades 91 and 92) as a Basis for Life Evaluation	12/4/2015
Environment	55	Technical Results	3002007069	Individual Species Assessment: Indiana Bat (<i>Myotis sodalis</i>)	12/7/2015
Power Delivery & Utilization	18	Technical Results	3002007147	Battery Electric Ferry: The Ampere in Norway	12/7/2015
Power Delivery & Utilization	18	Technical Results	3002007144	Gulf Power's Green Pool Vehicles Fuel Employee and Community PEV Engagement	12/7/2015
Generation	65	Technical Results	3002005182	Guidelines for Reducing the Time and Cost of Turbine-Generator Maintenance Overhauls and Inspections-2015	12/7/2015
Generation	176	Technical Results	3002004254	Southern/MHI PC with CCS Demo Project: 2013 Plant Barry Capture Test Campaign Results	12/7/2015
Power Delivery & Utilization		Technical Results	3002006170	Program on Technology Innovation: Assessment of Kinetic Energy Tiles	12/7/2015
Power Delivery & Utilization	170	Technical Results	3002005664	Survey of Energy Efficiency Options and Existing Programs for Commercial Refrigeration	12/7/2015
Technology Innovation		Technical Results	3002006170	Program on Technology Innovation: Assessment of Kinetic Energy Tiles	12/7/2015
Generation	65	Technical Results	3002005181	Guidelines for Reducing the Time and Cost of Turbine-Generator Maintenance Overhauls and Inspections-2015: Supplemental Addition	12/8/2015
Environment	49	Technical Results	3002006292	Corrective Action for Closed and Closing Ash Ponds	12/8/2015
Generation	79	Technical Results	3002006042	Laboratory Testing Guidelines for Gas Turbine Selective Catalytic Reduction (SCR) and CO Catalysts	12/8/2015
Generation	73	Technical Results	3002006098	Guidelines for Speciated Mercury Field Measurements	12/9/2015
Power Delivery & Utilization	18	Technical Results	3002005989	Plug-In Electric Vehicles as Distributed Energy Resources - Technology Update	12/9/2015
Generation	75	Technical Results	3002006157	Halogen Addition for Mercury Control and Related Balance-of-Plant Issues	12/9/2015
Generation		Technical Results	3002007188	Southern/MHI PC with CCS Demo Project: 2014 Plant Barry Capture Test Campaign Results	12/9/2015
Power Delivery & Utilization	35	Technical Results	3002005685	Insulator Reference Book: 2015 Update, Chapters 1-4	12/10/2015
Generation	71	Technical Results	3002006144	2015 Impacts of Refined Coals and Additives	12/10/2015
Generation	87	Technical Results	3002006227	Evaluation of an Ex-Service Ferritic-to-Ferritic Dissimilar Metal Weld Between Grade 22 and Grade 91	12/10/2015

EPRI Sector	Program Id	Product Type	Product Id	Product Description	Product Date
Nuclear	41.02.01	Technical Results	3002005395	Laboratory Tests on Alloy X-750 Spacer Corrosion in Simulated BWR Environments: Final Results	12/10/2015
Power Delivery & Utilization	1	Software	3002005961	Open PQ Dashboard Version 1.0 (EAS Template for MATLAB DLL)	12/11/2015
Power Delivery & Utilization	37	Technical Results	3002007174	Solid-State Fault Current Limiter Development: Design, Build, and Testing Update of a 15.5-kV Solid-State Current Limiter Power Stack	12/11/2015
Power Delivery & Utilization	1	Software	3002005175	Open PQ Dashboard Version 1.0 (Source code)	12/11/2015
Power Delivery & Utilization	37	Technical Results	3002005912	Field Guide: Lubrication of High-Voltage Circuit Breakers - 2015 Update	12/11/2015
Power Delivery & Utilization	37	Technical Results	3002005913	Field Guide: High-Voltage Circuit Breaker Compressors - 2015 Update	12/11/2015
Power Delivery & Utilization	1	Software	3002005173	Open PQ Dashboard Version 1.0 (Install Package)	12/11/2015
Nuclear	41.05.02	Technical Results	3002005332	Program on Technology Innovation: Polymers in Nuclear Power Plants, Current Status and Prospects for Expansion	12/11/2015
Power Delivery & Utilization		Software	3002005022	Open PQ Dashboard Version 1.0 (PQI Data Integration)	12/11/2015
Technology Innovation		Technical Results	3002005332	Program on Technology Innovation: Polymers in Nuclear Power Plants, Current Status and Prospects for Expansion	12/11/2015
Generation	69	Software	3002006934	PRE-SW: Maintenance Analysis Report Generator (MARGe) Version 0.1 - Beta	12/13/2015
Environment	49	Technical Results	3002006297	Leaching Behavior of Oxyanions from Fly Ash: Preliminary Results for Sorbent-Impacted Samples	12/14/2015
Generation	63	Software	3002004629	PRE-SW: BLESS Version Win 7 - Prototype	12/14/2015
Nuclear		Technical Results	3002006432	PWR Fuel Reactivity Depletion Uncertainty Quantification – Methods Validation Using BEAVRS Flux Map Data	12/14/2015
Power Delivery & Utilization	170	Technical Results	3002005695	Dimming Characteristics of Low Cost LED Lamps	12/14/2015
Power Delivery & Utilization	170	Technical Results	3002005696	Thermal Failure Points of Screw-Based Lamps	12/14/2015
Power Delivery & Utilization	182	Technical Results	3002006715	FirstEnergy Consumer Behavior Study: Phase 2 Impact Analysis	12/14/2015
Environment	49	Technical Results	3002006283	Coal Combustion Residuals Leachate Management: Characterization of Leachate Quantity and Evaluation of Leachate Minimization and Management Methods	12/15/2015
Environment		Technical Results	3002006811	Program on Technology Innovation: Assessing the State of the Art in Nanoscale Enhanced Heat Transfer	12/15/2015
Generation	64	Technical Results	3002006105	Operator Guide: Cycle Chemistry, Volume 1: Once-Through Oxygenated Treatment, Volume 2: Drum Unit, and Volume 3: Combined Cycle Gas Turbine Unit	12/15/2015
Nuclear	41.07.01	Technical Results	3002005301	Technical Evaluation of Fukushima Accidents: Phase 2	12/15/2015
Power Delivery & Utilization	170	Technical Results	3002007006	Laboratory Test Results of Self-Contained Commercial Refrigerator and Freezer Systems	12/15/2015

EPRI Sector	Program Id	Product Type	Product Id	Product Description	Product Date
Technology Innovation		Technical Results	3002006811	Program on Technology Innovation: Assessing the State of the Art in Nanoscale Enhanced Heat Transfer	12/15/2015
Generation	75	Technical Results	3002006155	Mercury and Air Toxics Control 2015 Update	12/16/2015
Power Delivery & Utilization	37	Technical Results	3002005907	Power Circuit Breaker Diagnostics Effectiveness Assessment: Characterization of Dynamic Contact Resistance Measurements	12/16/2015
Power Delivery & Utilization	37	Technical Results	3002005908	Circuit Breaker Component and Subsystem Performance: Pumps and Compressors	12/16/2015
Power Delivery & Utilization	37	Technical Results	3002005914	High-Voltage Circuit Breaker Guidebook Development: 2015 Update	12/16/2015
Environment	103	Technical Results	3002007017	Program 103 Clean Power Plan Compliance Pathway Summaries	12/16/2015
Generation	69	Technical Results	3002006569	Guidance for Scheduling Maintenance in Fossil Power Generation	12/16/2015
Nuclear		Technical Results	3002006779	Underwater Inspection of Concrete Structures: Landscape Study on Remote Operating Vehicles (ROVs) and Autonomous Underwater Vehicles (AUVs)	12/16/2015
Nuclear	41.08.01	Software	3002006350	Seasonal/Annual Cooling Tower Impacts (SACTI) Version 2.0 with Source Code	12/16/2015
Power Delivery & Utilization	174	Technical Results	3002007139	Analysis to Inform CA Grid Integration: Methods and Default Settings to Effectively Use Advanced Inverter Functions in the Distribution System	12/16/2015
Technology Innovation		Technical Results	3002006779	Underwater Inspection of Concrete Structures: Landscape Study on Remote Operating Vehicles (ROVs) and Autonomous Underwater Vehicles (AUVs)	12/16/2015
Environment	59	Technical Results	3002006177	Sampling and Analysis for Steam Electric Power Plant Wastewater Monitoring	12/17/2015
Power Delivery & Utilization	18	Technical Results	3002006163	State of Hybrid and Plug-in Electric Marine Technology	12/17/2015
Power Delivery & Utilization	18	Technical Results	3002005949	Plug-in Electric Vehicle Projections: Scenarios and Impacts	12/17/2015
Nuclear	41.05.02	Technical Results	3002005208	Flow-Accelerated Corrosion Nondestructive Evaluation Reference Guide	12/17/2015
Environment	54	Technical Results	3002006303	Internet-based Tool for Entrainment Classifications of Freshwater Fish Species â€” http://www.eprientraincondition.com/ENTRAIN/Home.vbhtml	12/17/2015
Nuclear		Technical Results	3002004997	Program on Technology Innovation: Cyber Hazards Analysis Risk Methodology, Phase II: A Risk Informed Approach	12/17/2015
Nuclear		Technical Results	3002005449	Program on Technology Innovation: Nonlinear Ultrasonic Characterization of Radiation Damage in Ferritic RPV Steel	12/17/2015
Power Delivery & Utilization	170	Technical Results	3002005691	Survey of State-of-the-Art in Large Commercial Space Conditioning	12/17/2015
Power Delivery & Utilization	170	Technical Results	3002005692	Efficiency Potential: Set-Top Boxes	12/17/2015
Technology Innovation		Technical Results	3002004997	Program on Technology Innovation: Cyber Hazards Analysis Risk Methodology, Phase II: A Risk Informed Approach	12/17/2015
Technology Innovation		Technical Results	3002005449	Program on Technology Innovation: Nonlinear Ultrasonic Characterization of Radiation Damage in Ferritic RPV Steel	12/17/2015

EPRI Sector	Program Id	Product Type	Product Id	Product Description	Product Date
Generation	65	Technical Results	3002006238	Review of Damage to Generator Retaining Rings	12/18/2015
Power Delivery & Utilization	199	Technical Results	3002006050	Electrification Knowledge Base: Summary and 2015 Updates	12/18/2015
Power Delivery & Utilization	199	Software	3002006635	Electrification Knowledge Base (EKB) Version 2.0	12/18/2015
Power Delivery & Utilization	94	Technical Results	3002006074	Integration Guidelines for Energy Storage: 2015, A Project Management Handbook for Distribution-Connected Energy Storage Developed by the Energy Storage Integration Council	12/18/2015
Power Delivery & Utilization	170	Technical Results	3002005809	Load Shape Library Version 3.0	12/18/2015
Power Delivery & Utilization	37	Technical Results	3002005917	Circuit Breaker Mechanism Maintenance Supplements: Mechanism-Specific Instructions for Cost-Effective, Limited Disassembly Refurbishment	12/18/2015
Power Delivery & Utilization	174	Technical Results	3002005795	Determining the Effectiveness of Feeder Clustering Techniques for Identifying Hosting Capacity for DER	12/18/2015
Power Delivery & Utilization	D_SG	Technical Results	3002002257	Photovoltaic Smoothing Using Coordinated Control of a Battery and Gas Generator: Public Service Company of New Mexico Smart Grid Demonstration	12/18/2015
Environment		Technical Results	3002007194	Power Plant Cooling System Overview: Guidance for Researchers and Technology Developers	12/18/2015
Power Delivery & Utilization	18	Technical Results	3002005921	Progress and Prospects of Advanced Lithium Ion Batteries	12/18/2015
Power Delivery & Utilization	199	Technical Results	3002006047	Electrification Analytics and Modeling Expansion	12/18/2015
Technology Innovation		Technical Results	3002007194	Power Plant Cooling System Overview: Guidance for Researchers and Technology Developers	12/18/2015
Generation	65	Technical Results	3002006235	Evaluation of Condition Monitoring Methods for Steam Turbine Valves: Phase 1-Failure Modes and Effects Analysis	12/21/2015
Power Delivery & Utilization	35	Technical Results	3002005690	Small Scale Aging of Polymer Insulators: Development of Small Scale Test Chamber and Insulator Evaluation Criteria	12/21/2015
Generation	65	Technical Results	3002006026	Operational and Control Strategies for Reducing Steam Turbine Damage from Cycling Combined Cycle Plants	12/21/2015
Generation	65	Technical Results	3002006241	Guideline for Developing Turbine-Generator End-of-Life Maintenance Strategies	12/21/2015
Power Delivery & Utilization	161	Technical Results	3002006917	Opportunities and Hesitations Associated with Open Advanced Metering Infrastructure	12/21/2015
Power Delivery & Utilization	37	Technical Results	3002005988	Industry-Wide Circuit Breaker Database: Data Model, Analysis and Case Studies	12/21/2015
Power Delivery & Utilization	199	Technical Results	3002006055	Electrification Working Council	12/21/2015
Power Delivery & Utilization	18	Technical Results	3002006161	Versatile Auxiliary Power System for Fleet Vehicle Electrification - 2015 Update	12/21/2015
Power Delivery & Utilization	37	Technical Results	3002007162	Circuit Breaker Lubrication: Engineering Application Guide and Selection Tool	12/21/2015
Power Delivery & Utilization	180	Technical Results	3002006121	Distribution Systems " Undergound Distribution: Evaluation of Advanced Cable Diagnostics-Gas Detection of Melted Insulation	12/21/2015

EPRI Sector	Program Id	Product Type	Product Id	Product Description	Product Date
Environment	54	Technical Results	3002003424	Changes to the Wabash River Fish Community Following the Shutdown of the Breed Power Plant	12/21/2015
Generation		Technical Results	3002005985	Development of an Internal Access Header Inspection Tool	12/21/2015
Generation		Technical Results	3002007171	Program on Technology Innovation: National Carbon Capture Center 2015 Report	12/21/2015
Generation	63	Technical Results	3002005870	Ferritic Superheater and Reheater Tubing Life Assessment Handbook	12/21/2015
Generation	63	Technical Results	3002005935	Investigation of Acoustic Microscopy Imaging for Early Stage Creep Damage Detection: 2015 Update	12/21/2015
Generation	63	Technical Results	3002005941	Guidelines for the Nondestructive Evaluation of Boiler Components	12/21/2015
Generation	63	Technical Results	3002006021	Locating Welds in High-Energy Pipe Through Insulation	12/21/2015
Generation	64	Technical Results	3002006356	Neutralizing Amine Application for Continuous Service in Fossil Plants and Heat Recovery Steam Generators	12/21/2015
Generation	87	Technical Results	3002006758	Cold Weld Repair of Ferritic Components - Case Studies of UK Power Stations	12/21/2015
Generation	68	Software	3002005043	Cyber Security Solutions for I&C Systems - Topic 5: Hardening Cyber Assets Module Rev 15	12/21/2015
Generation	185	Technical Results	3002007212	Evaluation of Vacom One-Step System for Concentrating Flue Gas Desulfurization Wastewater: Pilot Testing at the Water Research Center	12/21/2015
Power Delivery & Utilization		Technical Results	3002006786	Program on Technology Innovation: Gallium-Nitride Transistors for High-Efficiency Industrial Power Supplies, Phase 3: Evaluation of a Prototype Power Supply Utilizing GaN	12/21/2015
Power Delivery & Utilization	18	Technical Results	3002005994	Open Vehicle-Grid Integration Platform " Unified Approach to Grid / Vehicle Integration: Definition of Use Case Requirements	12/21/2015
Power Delivery & Utilization	D_SG	Technical Results	3002004671	Duke Energy Smart Grid Host Site Progress Report: Final Edition	12/21/2015
Power Delivery & Utilization	37	Technical Results	3002005902	EPRI Power Transformer Guidebook: The Copper Book	12/21/2015
Power Delivery & Utilization	37	Technical Results	3002005900	Improving Diagnostic Effectiveness of Dissolved Gas Analysis Through New Markers: Laboratory Tests with Known Faults	12/21/2015
Power Delivery & Utilization	37	Technical Results	3002005903	Transformer Remaining Life Research: Analysis of the First Data Set from Online Field Monitoring	12/21/2015
Technology Innovation		Technical Results	3002005985	Development of an Internal Access Header Inspection Tool	12/21/2015
Technology Innovation		Technical Results	3002006786	Program on Technology Innovation: Gallium-Nitride Transistors for High-Efficiency Industrial Power Supplies, Phase 3: Evaluation of a Prototype Power Supply Utilizing GaN	12/21/2015
Technology Innovation		Technical Results	3002007171	Program on Technology Innovation: National Carbon Capture Center 2015 Report	12/21/2015
Power Delivery & Utilization	35	Technical Results	3002005683	Stress Testing Guy Strain Insulators: 2015 Conditions	12/22/2015
Generation	108	Technical Results	3002005519	Operations and Maintenance Integrated Training Program for Fossil Generation: Implementing a Systematic Approach to Training and Qualification	12/22/2015

EPRI Sector	Program Id	Product Type	Product Id	Product Description	Product Date
Generation	193	Technical Results	3002006218	Budgeting for Solar PV Plant Operations and Maintenance: Practices and Pricing	12/22/2015
Power Delivery & Utilization	37	Technical Results	3002005987	Industry-Wide Transformer Database: Key Findings and Case Studies	12/22/2015
Power Delivery & Utilization	199	Technical Results	3002006051	An Industry Outlook for Indoor Agriculture: A 2015 Electrification Technology Deep Dive Summary	12/22/2015
Power Delivery & Utilization	170	Technical Results	3002005665	Pumped Refrigerant Economizers: Emerging Technology for Efficient Data Center Cooling	12/22/2015
Power Delivery & Utilization	18	Technical Results	3002006036	Market and Technology Assessment of Electric Transport Refrigeration Units	12/22/2015
Power Delivery & Utilization	37	Technical Results	3002005915	Circuit Breaker Condition Monitoring: Using Relays for Breaker Diagnostics	12/22/2015
Environment	54	Technical Results	3002006306	An Introduction to Social Costs and Resources for 316(b) Entrainment Evaluations	12/22/2015
Power Delivery & Utilization	161	Technical Results	3002006577	Telecommunications Solutions for a Distribution Network: A Hydro-Québec Case Study	12/22/2015
Environment	54	Technical Results	3002003429	Entrainment Best Technology Assessment for Existing Cooling Water Intake Structures: Technical Support Document	12/22/2015
Generation	63	Technical Results	3002005874	Root Cause Investigation of Failure in Long Seam-Welded Hot Reheat Pipe at American Electric Power's John E. Amos Plant	12/22/2015
Generation	63	Technical Results	3002005939	Guideline for Phased Array Ultrasonic Testing Characterization and Sizing of Thermal Fatigue and Creep Cracking in Piping	12/22/2015
Generation	64	Technical Results	3002006104	Field Guide: Inspection of Steam/Water Cycle Components from a Chemistry Perspective	12/22/2015
Generation	64	Technical Results	3002007080	Evaluation of Boiler and Heat Recovery Steam Generator Chemical Cleaning Waste Treatment Options	12/22/2015
Generation	87	Technical Results	3002006757	Supporting Data for Reducing the Minimum Allowable Post-Weld Heat Treatment for Power Generation Applications of Grade 91 Steel	12/22/2015
Generation	87	Technical Results	3002006759	Cracking in Thick-Section Dissimilar Metal Welds-Case Studies	12/22/2015
Generation	87	Technical Results	3002007149	Modeling for Field Post-Weld Heat Treatment Guidance: Evaluation of American Welding Society D10.10 Guidelines	12/22/2015
Generation	87	Technical Results	3002007168	A Guide to In-Service Steam Turbine-Generator Materials Evaluation by Small Punch Testing	12/22/2015
Generation	69	Technical Results	3002006660	Mobile Technology Guidebook: 2015 Update	12/22/2015
Generation	69	Technical Results	3002006661	Integrating Bulk Power Generation Assets into the Common Information Model	12/22/2015
Generation	69	Technical Results	3002006724	Development and Management of Multimedia Knowledge Transfer for Operations and Maintenance	12/22/2015
Generation	69	Technical Results	3002006787	Fossil Equipment Reliability Program Implementation Guideline	12/22/2015
Power Delivery & Utilization	170	Technical Results	3002005720	Innovative Applications of Customer Data Analytics: A Case Study	12/22/2015

EPRI Sector	Program Id	Product Type	Product Id	Product Description	Product Date
Power Delivery & Utilization	D_SG	Technical Results	3002004641	Sacramento Municipal Utility District Smart Grid Host Site Report, Final Update	12/22/2015
Power Delivery & Utilization	37	Technical Results	3002005904	Transformer Life Extension - Membrane Technologies for Lifelong Oil Filtration: Development of a Full-Scale Dehydration Unit Using Membranes and a Solid-State Cooler	12/22/2015
Generation	65	Technical Results	3002005860	NDE Methodology Applied to Turbine Components: Phase Array Examination of Long-Shank Straddle-Mount Disk Attachments	12/23/2015
Power Delivery & Utilization	35	Technical Results	3002005688	Polymer Insulator Vintage Guide: Long Rod Suspension and Post Insulators	12/23/2015
Generation	75	Technical Results	3002006099	ESP Upgrades and Optimization: Operating Under MATS Conditions	12/23/2015
Generation	65	Technical Results	3002004970	Turbine-Generator Topics for Power Plant Engineers: Generator Synchronizing	12/23/2015
Generation	71	Technical Results	3002006143	Impact of Various Levels of NOx Control on Boiler Tube Life: Trade-Offs Between Deeper Staging for Lower NOx and Fireside Corrosion	12/23/2015
Environment	54	Technical Results	3002003426	Evaluation of Two Techniques for Rapid Condition Determination of Larvae	12/23/2015
Generation	63	Technical Results	3002005869	Influence of Unit Operation on Water Wall Corrosion Damage Fatigue in Corner-Fired, Controlled Circulation Units	12/23/2015
Generation	63	Technical Results	3002005940	Guideline for Phased Array Ultrasonic Test Detection and Sizing of Header Ligament Cracks	12/23/2015
Power Delivery & Utilization	D_SG	Technical Results	3002004670	Southern Company Smart Grid Host Site Progress Report	12/23/2015
Generation	75	Technical Results	3002006153	Utility Pulse Jet Baghouse Performance 2015 Update: Studies at Plant Bowen Pilot	12/28/2015
Power Delivery & Utilization	161	Technical Results	3002005727	Utility Cloud Integration Guidebook: A Guide for Enterprise Architects	12/28/2015
Power Delivery & Utilization	170	Technical Results	3002005693	Efficiency Potential: Heat Pump Clothes Dryers	12/28/2015
Generation	75	Technical Results	3002006154	Air Toxics Control by Wet FGD Systems: 2015 Technical Update	12/30/2015
Generation	75	Technical Results	3002007208	FGD Chemistry and Analytical Methods Handbook: Volume 2, Chemical and Physical Test Methods (Revision 3)	12/30/2015
Generation	71	Technical Results	3002006142	Materials Solutions to Corrosion, Circumferential Cracking and Slagging for Boiler Waterwalls: Laboratory and Field Evaluations of Protective Coatings	12/30/2015
Environment		Peer Literature	3002007062	Potential Occupational Exposures and Health Risks Associated with Biomass-Based Power Generation	12/30/2015
Power Delivery & Utilization	170	Technical Results	3002006848	Residential Net-Zero Energy Sustainability Verification: Applications and Impacts of Feedback Technologies to Achieve Net-Zero Energy Usage in Homes and Communities at Kaupuni Village in Hawaii	12/30/2015
Technology Innovation		Peer Literature	3002007062	Potential Occupational Exposures and Health Risks Associated with Biomass-Based Power Generation	12/30/2015
Environment	53	Technical Results	3002006262	Status of Water Quality Regulations and their Impact on Water Quality Trading in the United States	12/31/2015
Power Delivery & Utilization	183	Technical Results	3002005942	Cyber Security Architecture Methodology for the Electric Sector	12/31/2015

EPRI Sector	Program Id	Product Type	Product Id	Product Description	Product Date
Generation	65	Technical Results	3002006311	Crack Growth and Arrest in High Temperature Valve Bodies	12/31/2015
Power Delivery & Utilization	37	Technical Results	3002006417	EPRI Physical Security: How the Research Fits	12/31/2015
Power Delivery & Utilization	37	Software	3002005984	Industry-Wide Database (IDB) Version 1.0	12/31/2015
Environment	54	Technical Results	3002006308	Traveling Water Screen Optimization Technical Resource Report: 2015 Technical Update	12/31/2015
Power Delivery & Utilization	182	Technical Results	3002006183	EPRI You Ask, We Investigate Webcast Series, 2015, Number 1: The Demand for Residential Demand Charges	12/31/2015
Power Delivery & Utilization	182	Technical Results	3002006184	EPRI You Ask, We Investigate Webcast Series, 2015, Number 2: Bring Your Own Device Program Approaches	12/31/2015
Power Delivery & Utilization	182	Technical Results	3002006185	EPRI You Ask, We Investigate Webcast Series, 2015, Number 3: Obtaining Internal Support for Customer Choices	12/31/2015
Power Delivery & Utilization	183	Technical Results	3002005947	Creating Security Metrics for the Electric Sector	12/31/2015
Power Delivery & Utilization	174	Technical Results	3002005793	Integration of Hosting Capacity Analysis into Distribution Planning Tools	12/31/2015
Power Delivery & Utilization		Technical Results	3002004860	Application Programming Interfaces for a Smart Grid Open Application Platform	12/31/2015
Nuclear	41.01.01	Technical Results	3002005475	Program on Technology Innovation: Effects of Post Irradiation Annealing on IASCC	12/31/2015
Power Delivery & Utilization	170	Technical Results	3002005747	High Performance Homes and Buildings: European Initiatives	12/31/2015
Power Delivery & Utilization	183	Technical Results	3002006552	Deployment Options and Considerations for Substation Security Gateways: P183A Working Group White Paper	12/31/2015
Power Delivery & Utilization	D_SG	Technical Results	3002004618	Utility-Scale, Single-Customer Microgrid at Duke Energy: EPRI Smart Grid Demonstration Initiative	12/31/2015
Power Delivery & Utilization	37	Technical Results	3002006443	Geomagnetically-Induced Current (GIC) Reduction Device Application Guide	12/31/2015
Technology Innovation		Technical Results	3002005475	Program on Technology Innovation: Effects of Post Irradiation Annealing on IASCC	12/31/2015
Power Delivery & Utilization	D_SG	Technical Results	3002004639	Demand Response Standards and Interoperability: Kansas City Power & Light Smart Grid Demonstration	1/8/2016
Power Delivery & Utilization	161	Technical Results	3002005803	Automated Demand Response and Ancillary Services Demonstration Project Newsletter, December 2015	1/11/2016
Environment	103	Technical Results	3002007325	EPRI Comments on EPA Federal Plan Requirements for Greenhouse Gas Emissions from Electric Utility Generating Units: Docket No. EPAâ€ˆH Qâ€ˆOARâ€ˆ2015â€ˆ0199	1/11/2016
Generation	69	Technical Results	3002007305	Generation Configuration Management: State of the Industry	1/12/2016
Environment	55	Technical Results	3002007270	Voluntary Conservation Tools: Approaches to Cost-effectively Protect Multiple Candidate Species and to Avoid Listing	1/13/2016
Nuclear	41.09.02	Technical Results	3002007087	Proceedings: 14th EPRI International Nuclear Power Plant Decommissioning Workshop	1/22/2016

EPRI Sector	Program Id	Product Type	Product Id	Product Description	Product Date
Power Delivery & Utilization		Technical Results	3002007351	Program on Technology Innovation: Energy Efficiency Symposium 2015: November 11-13, 2015, Orlando, FL	1/27/2016
Technology Innovation		Technical Results	3002007351	Program on Technology Innovation: Energy Efficiency Symposium 2015: November 11-13, 2015, Orlando, FL	1/27/2016
Power Delivery & Utilization		Technical Results	3002007384	Program on Technology Innovation: Microgrid Implementations: Literature Review	1/28/2016
Technology Innovation		Technical Results	3002007384	Program on Technology Innovation: Microgrid Implementations: Literature Review	1/28/2016
Power Delivery & Utilization		Technical Results	3002007255	Evaluation of TV White Space for Utility Communications Networks	1/29/2016
Power Delivery & Utilization		Technical Results	3002007274	Program on Technology Innovation: Hydrogen Energy Systems Development in Europe	1/29/2016
Power Delivery & Utilization	161	Technical Results	3002007400	Top Ten Indicators of Enterprise Architecture (EA) Maturity	1/29/2016
Power Delivery & Utilization	161	Technical Results	3002007412	A Call to Action: Certification Testing for the Common Information Model	1/29/2016
Technology Innovation		Technical Results	3002007255	Evaluation of TV White Space for Utility Communications Networks	1/29/2016
Technology Innovation		Technical Results	3002007274	Program on Technology Innovation: Hydrogen Energy Systems Development in Europe	1/29/2016
Generation		Technical Results	3002007426	Program on Technology Innovation: Evaluation of CBA's Remedial Coal Solutions Upgrading Technology	2/5/2016
Power Delivery & Utilization		Technical Results	3002007428	Program on Technology Innovation: Open Enabling Platform for Enterprise-Wide Interoperability and the Integrated Grid Year One Update: Connecting the Present to the Future	2/5/2016
Technology Innovation		Technical Results	3002007426	Program on Technology Innovation: Evaluation of CBA's Remedial Coal Solutions Upgrading Technology	2/5/2016
Technology Innovation		Technical Results	3002007428	Program on Technology Innovation: Open Enabling Platform for Enterprise-Wide Interoperability and the Integrated Grid Year One Update: Connecting the Present to the Future	2/5/2016
Power Delivery & Utilization		Technical Results	3002006709	Program on Technology Innovation: EPRI 2015 Connected Devices Workshop Summary: Enabling Customer Resources for Energy Management	2/12/2016
Technology Innovation		Technical Results	3002006709	Program on Technology Innovation: EPRI 2015 Connected Devices Workshop Summary: Enabling Customer Resources for Energy Management	2/12/2016
Generation	87	Technical Results	3002007233	Well-Engineered Weld Repair of Grade 91 Steel: Welding Procedure Qualification to ASME Boiler and Pressure Vessel Code Section IX, Part II	2/15/2016
Power Delivery & Utilization		Technical Results	3002007018	Program on Technology Innovation: Capacity Adequacy and Variable Generation: Improved Probabilistic Methods for Representing Variable Generation in Resource Adequacy Assessment	2/15/2016
Technology Innovation		Technical Results	3002007018	Program on Technology Innovation: Capacity Adequacy and Variable Generation: Improved Probabilistic Methods for Representing Variable Generation in Resource Adequacy Assessment	2/15/2016
Generation		Technical Results	3002007215	Program on Technology Innovation: Mechanical Analysis of Dissimilar Metal Welds, Part I: Insight into Potential Failure Modes	2/15/2016
Power Delivery & Utilization	161	Technical Results	3002007445	Smart Grid Communications Intelligencer, Issue 14, Winter 2016	2/15/2016
Technology Innovation		Technical Results	3002007215	Program on Technology Innovation: Mechanical Analysis of Dissimilar Metal Welds, Part I: Insight into Potential Failure Modes	2/15/2016

EPRI Sector	Program Id	Product Type	Product Id	Product Description	Product Date
Generation	87	Technical Results	3002004483	Well-Engineered Weld Repair of Grade 91 Steel: Results for Partial Repair Welds, Part II - Excavation of the Original Weld to 25% or 50% Thickness	2/16/2016
Generation	87	Technical Results	3002004477	Well-Engineered Weld Repair of Grade 91 Steel - Results for Minor Repair Welds, Part I: Excavation on One Side of the Original Weld	2/16/2016
Generation	87	Technical Results	3002004479	Well-Engineered Weld Repair of Grade 91 Steel: Performance of Repair Welds Manufactured in an Ex-Service Grade 91 Steel Header	2/16/2016
Generation	87	Technical Results	3002004482	Well-Engineered Weld Repair of Grade 91 Steel: Welding Procedure Qualification to ASME B&PV Code Section IX and Supporting Data for Alternative Weld Repair Procedures	2/16/2016
Power Delivery & Utilization		Technical Results	3002007436	Program on Technology Innovation: Autonomous Mobile Measurement Platform (AMMP)	2/16/2016
Technology Innovation		Technical Results	3002007436	Program on Technology Innovation: Autonomous Mobile Measurement Platform (AMMP)	2/16/2016
Power Delivery & Utilization		Technical Results	3002005263	Practical Considerations for Designing and Implementing Experiments Involving Customers and Enabling Devices: Lessons Learned from EPRI's Smart Thermostat Collaborative Project	2/18/2016
Power Delivery & Utilization	170	Technical Results	3002005241	EPRI Smart Thermostat Collaborative: 2015 Technology Update	2/18/2016
Power Delivery & Utilization	18	Technical Results	3002005948	A Consumer's Guide to Plug-In Electric Vehicles	2/18/2016
Generation	193	Technical Results	3002006701	Reducing Risk, Increasing Lifecycle Value: Optimizing the Photovoltaic Plant Design and Development Process	2/19/2016
Nuclear	41.01.04	Technical Results	3002007392	Materials Reliability Program: Topical Report for Primary Water Stress Corrosion Cracking Mitigation by Surface Stress Improvement (MRP-335 Revision 3)	2/19/2016
Power Delivery & Utilization		Technical Results	3002006174	Program on Technology Innovation: Evaluation of Plasma Lighting: Lab Investigation, Technology Assessment, and Application Guide	2/19/2016
Technology Innovation		Technical Results	3002006174	Program on Technology Innovation: Evaluation of Plasma Lighting: Lab Investigation, Technology Assessment, and Application Guide	2/19/2016
Technology Innovation		Technical Results	3002007240	Program on Technology Innovation: Emerging Standards and Applications of Wireless Power Transfer	2/22/2016
Nuclear	41.07.01	Technical Results	3002007148	Seismic Evaluation Guidance: Spent Fuel Pool Integrity Evaluation	2/22/2016
Generation	64	Technical Results	3002006106	Acoustic Emissions Monitoring and Detection of Flow-Accelerated Corrosion	2/23/2016
Generation		Technical Results	3002007435	Program on Technology Innovation: Evaluation of a Prototype Quantum Cascade Laser Monitor for Nitric Oxide Measurements	2/23/2016
Technology Innovation		Technical Results	3002007435	Program on Technology Innovation: Evaluation of a Prototype Quantum Cascade Laser Monitor for Nitric Oxide Measurements	2/23/2016
Environment	102	Technical Results	3002007427	The Paris Agreement and Next Steps in Limiting Global Warming: Discussion Paper	2/26/2016
Power Delivery & Utilization	18	Technical Results	3002007495	Plug-In Electric Vehicle Multi-State Market and Charging Survey	2/26/2016
Environment		Technical Results	3002007308	Program on Technology Innovation: A Hybrid (Dry/Wet) Deplegator for Incorporation into Air-Cooled Steam Condenser Systems: Research and Development of a Novel Concept for Enhancing Air-Cooled Condenser Performance and Improving Steam Turbine Output	3/9/2016

EPRI Sector	Program Id	Product Type	Product Id	Product Description	Product Date
Technology Innovation		Technical Results	3002007308	Program on Technology Innovation: A Hybrid (Dry/Wet) Dephlegmator for Incorporation into Air-Cooled Steam Condenser Systems: Research and Development of a Novel Concept for Enhancing Air-Cooled Condenser Performance and Improving Steam Turbine Output	3/9/2016
Power Delivery & Utilization	D_SG	Technical Results	3002007129	JUMPSmartMaui Demonstration Project Phase 1 Assessment: EPRI Smart Grid Demonstration Initiative	3/11/2016
Power Delivery & Utilization	D_SG	Technical Results	3002004624	FirstEnergy Integrated Distributed Energy Resource Management Training, Use, and Acceptance	3/17/2016
Nuclear	41.08.01	Technical Results	3002007071	Advanced Nuclear Technology: Using Technology for Small Modular Reactor Staff Optimization, Improved Effectiveness, and Cost Containment	3/21/2016
Power Delivery & Utilization	199	Technical Results	3002007210	Advanced Manufacturing Ushers In New Trend in Future Industrial Loads: Part 2	3/22/2016
Generation		Technical Results	3002007541	Program on Technology Innovation: Material and Corrosion Experience of Currently Operating Zero Liquid Discharge Wastewater Treatment Systems for Flue Gas Desulfurization Purge Waters	3/23/2016
Nuclear	41.08.01	Technical Results	3002007425	Advanced Nuclear Technology: New Nuclear Power Plant Information Turnover Guide (Revision 1)	3/23/2016
Technology Innovation		Technical Results	3002007541	Program on Technology Innovation: Material and Corrosion Experience of Currently Operating Zero Liquid Discharge Wastewater Treatment Systems for Flue Gas Desulfurization Purge Waters	3/23/2016
Generation	65	Software	3002003908	Bearing Action Advisor (BAA) Version 1.0	3/24/2016
Power Delivery & Utilization		Technical Results	3002006915	Program on Technology Innovation: Assessment of Flow Battery Technologies for Stationary Applications	3/25/2016
Power Delivery & Utilization	94	Technical Results	3002007482	Nirvana Energy Systems - Thermoacoustics Micro Combined Heat and Power Generation Assessment	3/25/2016
Technology Innovation		Technical Results	3002006915	Program on Technology Innovation: Assessment of Flow Battery Technologies for Stationary Applications	3/25/2016
Environment	178	Technical Results	3002008242	Technical and Economic Challenges of Flexible Operations: Case Studies of California and Texas	3/28/2016
Generation	65	Software	3002007134	Turbine Generator Alignment (TGAlign) Version 3.0	3/28/2016
Generation	64	Technical Results	3002006103	Control of Corrosion in the Steam Turbine Phase Transition Zone (PTZ) Using Filming Amines	3/29/2016
Nuclear	41.04.01	Technical Results	3002007205	Exploratory Study on Vision-Based Algorithms to Size Cracks in Different Materials	3/29/2016
Technology Innovation		Technical Results	3002007205	Exploratory Study on Vision-Based Algorithms to Size Cracks in Different Materials	3/29/2016
Generation	64	Technical Results	3002006358	Field Flow-Accelerated Corrosion Monitoring System	3/30/2016
Nuclear	41.04.01	Technical Results	3002007626	Nondestructive Evaluation: Reactor Pressure Vessel Threads in Flange Examination Requirements	3/30/2016
Power Delivery & Utilization	18	Technical Results	3002008312	Electric Transportation Update, March 2016	3/30/2016
Generation	64	Technical Results	3002006102	Determine Magnetite Solubility at Power Plant Conditions in Aqueous Solutions of Neutralizing Amines and Decomposition Products	4/5/2016
Nuclear	41.01.04	Technical Results	3002008359	Pressurized Water Reactor Materials Reliability Program: Effects of Surface Peening on the Inspectability of Nondestructive Evaluation	4/6/2016

EPRI Sector	Program Id	Product Type	Product Id	Product Description	Product Date
Generation	87	Technical Results	3002007320	An Informed Perspective on the Use of Hardness Testing in an Integrated Approach to the Life Management of Grade 91 Steel Components	4/12/2016
Nuclear	41.07.01	Technical Results	3002002182	Verification and Validation of Selected Fire Models for Nuclear Power Plant Applications: Supplement 1	4/13/2016
Generation	75	Technical Results	3002006903	Survey of Recent Condensable Particulate Matter Measurements	4/15/2016
Power Delivery & Utilization	94	Software	3002006072	Energy Storage Cost Template and Tool: Guidelines Developed by the Energy Storage Integration Council for Distribution-Connected Systems (ESIC Cost Tool) v1.0	4/15/2016
Environment	54	Technical Results	3002006305	DNA Barcoding and Quantitative Polymerase Chain Reaction Techniques as Tools to Validate and Expedite Species Processing in Entrainment Samples	4/15/2016
Generation	63	Technical Results	3002008003	Influence of Unit Operation on Waterwall Corrosion Fatigue Damage in Corner Fired, Controlled Circulation Units - Instrument Placement and Preliminary Analysis of Responses	4/19/2016
Environment	49	Technical Results	3002007542	Qualitative Application of the Relative Impact Framework to Ten Tennessee Valley Authority Surface Impoundments	4/22/2016
Environment	54	Technical Results	3002008550	Proceedings: The Fourth Thermal Ecology Regulation Workshop	4/22/2016
Power Delivery & Utilization	174	Technical Results	3002008348	Integrated Grid Pilot Projects Quarterly Update: Q1 2016	4/22/2016
Nuclear	41.07.01	Technical Results	3002005298	Technical Evaluation of Fukushima Accidents: Phase 2â€”Potential for Recriticality During Degraded Core Reflood	4/26/2016
Power Delivery & Utilization	37	Technical Results	3002008781	Sensor Suite for Transmission Asset Management and Utilization	4/26/2016
Generation	64	Technical Results	3002008134	Further Investigation of Critical Parameters of Flow-Accelerated Corrosion in Two-Phase Flow	4/27/2016
Generation		Technical Results	3002007966	Corrosion of Materials Used in Geothermal Power Generation: Review of Materials and Treatment Technologies	4/29/2016
Nuclear	41.04.01	Technical Results	3002007329	Nondestructive Evaluation: Industry Best Practices for Performing Reliable NDE - Implementation Guide	4/29/2016
Nuclear	41.07.01	Technical Results	3002008110	Severe Accident Uncertainty Analysis in Real Time Using MAAP5	4/29/2016
Technology Innovation		Technical Results	3002008110	Severe Accident Uncertainty Analysis in Real Time Using MAAP5	4/29/2016
Generation	68	Software	3002008780	Cyber Security Solutions for I&C Systems - Topic 6: Introduction to Access Control and Permissions Management	5/2/2016
Nuclear	41.01.04	Technical Results	3002008636	Materials Reliability Program: Development of Probability of Detection Curves for Ultrasonic Examination of Dissimilar Metal Welds (MRP-262, Revision 2) - Typical PWR Leak-Before-Break Line Locations	5/2/2016
Environment	54	Peer Literature	3002008259	Quantifying Nonuse and Indirect Economic Benefits of Impingement & Entrainment Reductions at U.S. Power Plants	5/4/2016
Power Delivery & Utilization	18	Technical Results	3002008798	Pepco Demand Management Pilot for Plug-In Vehicle Charging in Maryland: Final Report--Results, Insights, and Customer Metrics	5/5/2016
Power Delivery & Utilization	199	Technical Results	3002003529	Electrification Initiative: Kansas City Power & Light (KCP &L) Case Study Report	5/6/2016
Nuclear	41.05.02	Technical Results	3002008126	2015 State-of-the-Fleet Assessment of Flow Accelerated Corrosion Program Effectiveness	5/10/2016

EPRI Sector	Program Id	Product Type	Product Id	Product Description	Product Date
Environment	42	Technical Results	3002006244	A Case Study Assessment of Trace Metal Atmospheric Emissions and Their Aquatic Impacts in the San Juan River Basin. Phase 2: Navajo Generating Station	5/10/2016
Generation		Technical Results	3002007871	Program on Technology Innovation: Application of Advanced Concrete Technology in Tall Wind Towers	5/13/2016
Generation	68	Technical Results	3002007524	Cyber Security Solutions for I&C Systems: Topic 6, Introduction to Access Control and Permissions Management	5/13/2016
Nuclear	41.03.01	Technical Results	3002008234	Dry Canister Storage System Inspection and Robotic Delivery System Development	5/13/2016
Technology Innovation		Technical Results	3002007871	Program on Technology Innovation: Application of Advanced Concrete Technology in Tall Wind Towers	5/13/2016
Power Delivery & Utilization	182	Technical Results	3002006187	Multi-Year Study of the Impacts of OG&E's SmartHours Residential Electric Service	5/16/2016
Environment	49	Technical Results	3002007543	Relative Impact Framework for Evaluating Coal Combustion Residual Surface Impoundment Closure Options	5/16/2016
Generation	73	Technical Results	3002008739	Portable Catalyst Test Facility System Description	5/17/2016
Power Delivery & Utilization	18	Technical Results	3002007751	The Value of Transportation Electrification: Three Preliminary Case Studies of Impacts on Utility Stakeholders	5/20/2016
Power Delivery & Utilization	170	Technical Results	3002008721	2016 ASHRAE Winter Conference and AHR Show	5/24/2016
Power Delivery & Utilization	161	Technical Results	3002008320	Demand Response-Ready Variable-Speed Pool Pump Specification: Preliminary Requirements for CEA-2045 Field Demonstration	5/24/2016
Power Delivery & Utilization	35	Technical Results	3002007373	Program on Technology Innovation: Innovative Cathodic Protection Application for Transmission Tower Concrete Foundations	5/24/2016
Technology Innovation		Technical Results	3002007373	Program on Technology Innovation: Innovative Cathodic Protection Application for Transmission Tower Concrete Foundations	5/24/2016
Environment	49	Technical Results	3002007544	Relative Impact Framework Application for a Hypothetical Coal Combustion Residual Surface Impoundment	5/25/2016
Nuclear	41.04.01	Technical Results	3002007821	Nondestructive Evaluation: EPRI NDE Program Product Catalog - 2015 Update	5/26/2016
Nuclear	41.07.01	Technical Results	3002005578	Refining And Characterizing Heat Release Rates From Electrical Enclosures During Fire (RACHELLE-FIRE): Volume 1: Peak Heat Release Rates and Effect of Obstructed Plume	5/26/2016
Power Delivery & Utilization	174	Technical Results	3002008557	Smart Grid Ready PV Inverters with Utility Communication: Results from Field Demonstrations	5/26/2016
Nuclear	41.04.01	Technical Results	3002007819	Program on Technology Innovation: Retrofitted Sensors for Nuclear Containment Structures	5/27/2016
Nuclear	41.04.01	Technical Results	3002008768	Nondestructive Evaluation: Phased Array Technologies: Essential Variables Defined	5/27/2016
Technology Innovation		Technical Results	3002007819	Program on Technology Innovation: Retrofitted Sensors for Nuclear Containment Structures	5/27/2016
Power Delivery & Utilization	37	Technical Results	3002008836	Touch and Step Voltage Measurements on Field-Installed Ground Grid Overlaid with Gravel and Asphalt Beds	5/31/2016
Environment		Technical Results	3002008737	Program on Technology Innovation: Demand Response and Behind-the-Meter Generator Scoping Study	5/31/2016

EPRI Sector	Program Id	Product Type	Product Id	Product Description	Product Date
Technology Innovation		Technical Results	3002008737	Program on Technology Innovation: Demand Response and Behind-the-Meter Generator Scoping Study	5/31/2016
Environment	103	Technical Results	3002005589	Quantifying Greenhouse Gas Emissions Reductions Associated with Large-Scale End-Use Energy Efficiency Projects	6/2/2016
Nuclear	41.02.01	Technical Results	3002008245	EPRI Loss-of-coolant-accident (LOCA) Test Program: Pellet Heating Test Phase III Preliminary Report	6/7/2016
Environment	103	Technical Results	3002008653	Simulating Annual Variation in Load, Wind, and Solar by Representative Hour Selection	6/9/2016
Generation	64	Technical Results	3002007937	Filming and Neutralizing Amine Application Continuous Service in Fossil Plants and Heat Recovery Steam Generators: Bethlehem Energy Center	6/9/2016
Nuclear		Technical Results	3002006955	Program on Technology Innovation: Data Science Emergence and Relevance to EPRI Research and Member Utilities	6/9/2016
Nuclear	41.04.01	Technical Results	3002008330	Nondestructive Evaluation: Procedure for Manual Phased Array Ultrasonic Testing of Weld Overlays - Procedure: EPRI-WOL-PA-1	6/9/2016
Technology Innovation		Technical Results	3002006955	Program on Technology Innovation: Data Science Emergence and Relevance to EPRI Research and Member Utilities	6/9/2016
Environment	55	Technical Results	3002008418	Defining Protection of Endangered Species from an Integrated Multispecies Perspective	6/13/2016
Nuclear	41.07.01	Technical Results	3002005302	Fire Events Database Update for the Period 2010-2014: Revision 1	6/14/2016
Generation	69	Technical Results	3002008038	Pump Virtual Sensors Project: Final Report	6/14/2016
Power Delivery & Utilization	18	Technical Results	3002008866	Open Vehicle-Grid Integration Platform: Systems Approach to Standards and Interoperability	6/15/2016
Environment	103	Technical Results	3002008864	Interactions Between Power Markets and Emissions Trading: A Simple Example	6/20/2016
Power Delivery & Utilization	174	Technical Results	3002008848	Defining a Roadmap for Successful Implementation of a Hosting Capacity Method for New York State	6/20/2016
Power Delivery & Utilization	36	Technical Results	3002007657	Electromagnetic Field Management User's Guide for Underground Transmission Systems-2016	6/22/2016
Power Delivery & Utilization	18	Technical Results	3002008935	Vehicle-to-Grid: State of the Technology, Markets, and Related Implementation	6/22/2016
Nuclear	41.02.01	Technical Results	3002006740	Program on Technology Innovation: Fuel Performance Margin Assessment using High-Performance Computing: A Feasibility Study	6/24/2016
Power Delivery & Utilization		Technical Results	3002008860	Program on Technology Innovation: Wearable Computers Assessment	6/24/2016
Technology Innovation		Technical Results	3002006740	Program on Technology Innovation: Fuel Performance Margin Assessment using High-Performance Computing: A Feasibility Study	6/24/2016
Technology Innovation		Technical Results	3002008860	Program on Technology Innovation: Wearable Computers Assessment	6/24/2016

Product Id	Product Sector	Program Id	Product Description	Product Type	Order Date
3002003404	Generation	75	2014 Update on EPRI's Balance-of-Plant Effects Study of Bromine-Based Mercury Controls	Technical Update	1/5/2015
3002003264	Environment	78	Field Leachate Data from Roadways Constructed with Coal Combustion Products: Preliminary Data Compilation	Technical Update	1/5/2015
1024703	Environment	55	Tools to Assess Water Balances at Existing and New Generating Stations	Technical Update	1/6/2015
TR-104299	Nuclear	41.09.03	Sodium Leakage From Condensate Polishers Under Alternate Amine Chemistry	Technical Report	1/6/2015
1025437	Power Delivery & Utilization	170	Energy Efficiency Demonstration Final Report	Technical Report	1/6/2015
TR-107680	Generation	65	Guidelines for the Procurement of On-Site Clip Replacement and Repairs of Water-Cooled Generators	Technical Report	1/7/2015
1024942	Power Delivery & Utilization	94	Energy Storage Technology and Application Cost and Performance Data Base-2012: Bulk Energy Storage Systems	Technical Update	1/9/2015
1021746	Power Delivery & Utilization	36	Electrical Safety Practices of Underground Transmission Systems--2011 Update	Technical Update	1/14/2015
1021746	Power Delivery & Utilization	36	Electrical Safety Practices of Underground Transmission Systems--2011 Update	Technical Update	1/14/2015
1015894	Power Delivery & Utilization	180	Urban Network Systems - Technologies and Best Practices	Technical Update	1/19/2015
1024391	Power Delivery & Utilization	180	Urban Network Practices: Ameren Missouri	Technical Update	1/19/2015
1024836	Power Delivery & Utilization	180	Urban Network Practices	Technical Update	1/19/2015
1023268	Power Delivery & Utilization	180	Urban Network Practices: Pacific Gas and Electric Company	Technical Update	1/19/2015
1022689	Power Delivery & Utilization	180	Urban Network Practices	Technical Update	1/19/2015
1019935	Power Delivery & Utilization	180	Urban Network Systems Practices	Technical Update	1/19/2015
1017689	Power Delivery & Utilization	180	Urban Underground Distribution Practices	Technical Update	1/19/2015
1023211	Power Delivery & Utilization		Improved ArcFlash Calculations for Transmission and Substations Situations	Supplemental Project	1/20/2015
HW-113512	Generation	87	Repair Technology for Stub Tube-to-Header Creep Damage	Hardware	1/24/2015
TR-103592-V4	Generation	63	State-of-the-Art Weld Repair Technology for High Temperature and Pressure Parts: Volume 4: Weld Repair of Pipe/Header Girth Welds	Technical Report	1/24/2015
1016849	Generation	88	Development of Methods to Repair Header Stub Tube Bends	Technical Update	1/24/2015

Product Id	Product Sector	Program Id	Product Description	Product Type	Order Date
TR-109795	Generation	69	Streamlined Reliability-Centered Maintenance (SRCM) Program for Fossil-Fired Power Plants	Technical Report	1/27/2015
1019688	Generation	69	Outage Milestone Manual for Fossil-Fueled Power Plants	Technical Report	1/27/2015
1026504	Generation	71	Proceedings of the Cooling Tower Technology Conference	Technical Report	2/2/2015
3002004668	Environment		Program on Technology Innovation: Feasibility Study of Using a Thermosyphon Cooler Hybrid System to Reduce Cooling Tower Water Consumption	Technical Report	2/2/2015
1022101	Generation	80	Induced-Draft Cooling Towers and Parallel Wet/Dry Cooling for Combined-Cycle Plants: Design Best Practices and Procurement Specifications	Technical Update	2/2/2015
1018662	Environment	54	EPRI Analyzes Impacts of Possible EPA Rule on Closed-Cycle Cooling Tower Retrofit	Success Story	2/2/2015
3002003427	Environment	54	Quantifying Nonuse and Indirect Economic Benefits of Impingement and Entrainment Reductions	Technical Report	2/2/2015
3002001425	Environment	54	Entrainment Abundance Monitoring Technical Support Document: Updated for the New Clean Water Act §316(b) Rule	Technical Report	2/2/2015
3002004150	Environment	54	Clean Water Act §316(b) Existing Facility Rule Summary	Technical Update	2/2/2015
3002000231	Environment		Fish Protection Technology Manual	Technical Update	2/2/2015
1023453	Environment	54	Clean Water Act Section 316(b) Closed-Cycle Cooling Retrofit Research Program Results Summary	Technical Report	2/2/2015
1022760	Environment	54	Net Environmental and Social Effects of Retrofitting Power Plants with Once-Through Cooling to Closed-Cycle Cooling	Technical Report	2/2/2015
3002001117	Environment	49	Coal Combustion Residuals Pond Closure: Guidance for Dewatering and Capping	Technical Report	2/9/2015
1023779	Environment	56	Management of Process Wastewater at Coal-Fired Power Plants	Technical Update	2/9/2015
3002001143	Environment	49	Coal Combustion Residuals Pond Closure: Guidance for Construction Over Closed or Closing Ponds	Technical Report	2/9/2015
3002004297	Environment	49	Guidance for Coal Combustion Residuals Pond Closure and Overfills	Technical Update	2/9/2015
1023741	Environment	49	State-of-the-Practice Liners and Caps for Coal Combustion Product Management Facilities	Technical Report	2/9/2015
3002003187	Generation	64	Thermolysis of Neutralizing Amines Under Superheater Conditions: Investigation of Metal Surface Catalysis, Pressure, and Temperature Relations	Technical Report	2/11/2015
1025711	Power Delivery & Utilization		Characterizing Residential Customer Preferences for Electric Service Plans	Supplemental Project	2/12/2015
3002000386	Power Delivery & Utilization	182	Matching Electric Service Plans to Utility Strategic Goals	Supplemental Project	2/12/2015

Product Id	Product Sector	Program Id	Product Description	Product Type	Order Date
3002002541	Generation	87	Electrochemical Corrosion Investigation of Alloy 2205: Laboratory Testing in Simulated and Actual Absorber Slurries	Technical Update	2/13/2015
3002003548	Power Delivery & Utilization	182	What We Have Learned and How to Apply it to Your Utility, Program 182: Understanding Electric Utility Customers - Electric Service Plan/Behavioral Program Evidence Review Webcast	Technical Update	2/13/2015
3002001266	Power Delivery & Utilization	182	Specifications for and Design of an Electric Service Plan Portfolio Management System	Technical Update	2/13/2015
1023509	Generation	63	Evaluation of Digital Radiographic System for Detection and Evaluation of Flow-Accelerated Corrosion in Power Plant Piping	Supplemental Project	2/17/2015
1018940	Generation	63	Digital X-Ray for Boiler Tube Crack Detection	Technical Update	2/17/2015
1025759	Power Delivery & Utilization	177	Kansas City Power and Light Company Smart Grid Host Site 2012 Progress Report: For the Period Ending December 2012	Technical Update	2/17/2015
1026444	Power Delivery & Utilization	177	Case Study on Customer Acceptance and Technology Adoption: Kansas City Power & Light	Technical Update	2/17/2015
3002003548	Power Delivery & Utilization	182	What We Have Learned and How to Apply it to Your Utility, Program 182: Understanding Electric Utility Customers - Electric Service Plan/Behavioral Program Evidence Review Webcast	Technical Update	2/19/2015
1024401	Power Delivery & Utilization	182	Methods for Characterizing Customer Preferences for Electric Service Plans	Technical Update	2/19/2015
3002001266	Power Delivery & Utilization	182	Specifications for and Design of an Electric Service Plan Portfolio Management System	Technical Update	2/19/2015
3002004037	Power Delivery & Utilization	18	Open Vehicle-Grid Integration Platform: Phase 1 Development Update	Technical Update	2/22/2015
3002002931	Power Delivery & Utilization	18	Plug-in Electric Vehicle Multi-State Market and Charging Survey	Technical Update	2/22/2015
3002003008	Power Delivery & Utilization	18	Plug-in Electric Vehicles as Distributed Energy Resources - Technology Update	Technical Update	2/22/2015
3002000665	Power Delivery & Utilization	18	Unified Plug-in Electric Vehicle (PEV) to Smart Grid Integration Approach within Automotive and Utility Industries	Technical Update	2/22/2015
3002000575	Power Delivery & Utilization	18	Total Cost of Ownership for Current Plug-in Electric Vehicles: Fall 2013 Update	Technical Update	2/22/2015
1024100	Power Delivery & Utilization	18	Electric Vehicle Supply Equipment (EVSE) Test and Evaluation	Technical Update	2/22/2015
1024101	Power Delivery & Utilization	18	Understanding the Grid Impacts of Plug-In Electric Vehicles (PEV): Phase 1 Study -- Distribution Impact Case Studies	Technical Update	2/22/2015
1021636	Power Delivery & Utilization	18	Plug-In Electric Vehicle Charging Load Profile Forecasts for the Salt River Project Service Area	Technical Update	2/22/2015
3002005089	Generation	87	Service Experience with Creep Strength Enhanced Ferritic Steels in Power Plants in the Asia-Pacific Region	Technical Report	3/2/2015

Product Id	Product Sector	Program Id	Product Description	Product Type	Order Date
3002003482	Generation	64	Assessment of Amines with Condensate Polishing/Filtration: Filming Amine Impact on Powdered Ion Exchange Resins and Long-Term/Low-Concentration Application on Bead Resins	Technical Report	3/2/2015
3002004444	Power Delivery & Utilization	40	Categorizing Line Transient Overvoltage (TOV) Values for Determining Minimum Approach Distances: Technical Basis for Characterizing T-Values for Live-Line Work	Technical Update	3/3/2015
3002004444	Power Delivery & Utilization	40	Categorizing Line Transient Overvoltage (TOV) Values for Determining Minimum Approach Distances: Technical Basis for Characterizing T-Values for Live-Line Work	Technical Update	3/6/2015
3002005097	Power Delivery & Utilization	35	Foundation Analysis and Design (FAD) Tools Version 5.1.19	Software	3/9/2015
3002005097	Power Delivery & Utilization	35	Foundation Analysis and Design (FAD) Tools Version 5.1.19	Software	3/10/2015
1019641	Generation	64	Cycle Chemistry Instrumentation Validation	Technical Report	3/20/2015
3002003376	Environment	59	State of Knowledge of Condensable Particulate Matter Methods	Technical Update	3/23/2015
3002001249	Power Delivery & Utilization	174	Enterprise Integration Functions for Distributed Energy Resources: Phase 1	Technical Update	3/26/2015
3002004906	Power Delivery & Utilization	18	PEPCO Demand Management: Plug-in Electric Vehicle (PEV) Charging Pilot	Technical Update	3/29/2015
3002003969	Generation	71	2015 Heat Rate Improvement Conference	Technical Update	3/31/2015
3002005262	Generation	64	Aluminum Aqueous Chemistry and Liquid-Vapor Partitioning in Power Plant Steam Generator Systems	Technical Update	4/6/2015
CS-3717	Generation	65	Assessment of Fossil Steam Bypass Systems	Technical Report	4/9/2015
1022128	Generation	87	Development of an Integrated Model to Predict and Control Oxide Scale Exfoliation	Technical Update	4/9/2015
1019793	Generation	87	Development of an Integrated Model to Predict and Control Oxide Scale Exfoliation	Technical Update	4/9/2015
1019688	Generation	69	Outage Milestone Manual for Fossil-Fueled Power Plants	Technical Report	4/14/2015
3002004255	Environment		Sustainability Metric Compilation for the Electric Power Industry: Results of Industry Interviews and Metric Database Development	Technical Report	4/20/2015
3002005598	Power Delivery & Utilization	180	Medium-Voltage Arc Flash: Switchgear and Live-Front Transformers	Technical Report	4/20/2015
1018693	Power Delivery & Utilization	180	Distribution Arc Flash	Technical Report	4/20/2015
1020210	Power Delivery & Utilization	1	Distribution Arc Flash	Technical Update	4/20/2015
1018694	Power Delivery & Utilization	180	Distribution Arc Flash	Technical Report	4/20/2015

Product Id	Product Sector	Program Id	Product Description	Product Type	Order Date
1019566	Power Delivery & Utilization	180	Distribution Dispatch, Fourth Quarter, 2009	Technical Update	4/20/2015
1020544	Power Delivery & Utilization	180	Arc Flash Phase II Work Practices Survey Report	Technical Update	4/20/2015
1022697	Power Delivery & Utilization	180	Distribution Arc Flash	Technical Report	4/20/2015
3002004988	Environment		Energy Sustainability Interest Group 2014 Summary	Brochure	4/20/2015
CS-4968	Generation	65	Assessment of Supercritical Power Plant Performance	Technical Report	4/20/2015
3002005808	Power Delivery & Utilization		Capturing the Economic Value of Transportation Electrification	Supplemental Project	4/22/2015
1019688	Generation	69	Outage Milestone Manual for Fossil-Fueled Power Plants	Technical Report	4/27/2015
3002003376	Environment	59	State of Knowledge of Condensable Particulate Matter Methods	Technical Update	4/27/2015
1012281	Generation	69	Outage Management Guidelines for Fossil- Fueled Power Plants	Technical Report	4/27/2015
3002003600	Generation	65	Reference Poster: Bearing Failures in Power Plant Rotating Equipment (Mandarin Simplified Translation)	Technical Update	4/28/2015
1026557	Generation	65	Reference Poster: Bearing Failures in Power Plant Rotating Equipment	Technical Update	4/28/2015
3002003595	Generation	65	Bearing Action Advisor Software Tool: 2014 Status Update	Technical Update	4/28/2015
1018151	Generation	63	Service Experience with Grade 91 Components	Technical Update	5/4/2015
1019328	Generation	87	Remaining Life Assessment of SA213 T91 Steel Superheater and Reheater Tubes Subjected to Long-Term Overheat-Creep Damage and Potenti al Use Limitations	Technical Report	5/4/2015
3002000083	Generation	63	Life Management of Creep Strength Enhanced Ferritic Steels Solutions for the Performance of Grade 91 Steel Overview	Technical Report	5/5/2015
3002003378	Generation	75	Utility Pulse Jet Baghouse Performance Update 2014	Technical Update	5/6/2015
1011418	Environment	190	Chapter 1: Pool-Type Fishways, Fish Passage Manual Chapter Updates	Technical Update	5/7/2015
1007309	Generation	71	Condenser Performance Monitoring Practices	Technical Update	5/14/2015
CS-5729	Generation	65	Condenser Performance Test and Back-Pressure Improvement	Technical Report	5/14/2015
CS-5662	Generation	65	Condenser Performance Test and Replacement Tubing Material Evaluation	Technical Report	5/14/2015

Product Id	Product Sector	Program Id	Product Description	Product Type	Order Date
3002006316	Power Delivery & Utilization		PRE-SW Electricity Service Plan Preferences Estimator Tool KCP&L (ESPP KCP&L) v1.0 - Beta	Software - Proof of	5/19/2015
1007309	Generation	71	Condenser Performance Monitoring Practices	Technical Update	5/19/2015
1017569	Generation	76	A Study of Activated Carbon Re-Entrainment from Electrostatic Precipitators	Technical Update	5/22/2015
3002006481	Generation	66	Supercritical Carbon Dioxide Brayton Power Cycle Pilot at Southwest Research Institute	Supplemental Project	5/26/2015
3002006481	Generation	66	Supercritical Carbon Dioxide Brayton Power Cycle Pilot at Southwest Research Institute	Supplemental Project	5/26/2015
3002006355	Generation	64	Heat Recovery Steam Generator Oxygen Injection: Case Study for Corrosion Reduction	Technical Update	5/27/2015
3002006377	Power Delivery & Utilization	40	Data Analytics Initiative for Transmission and Distribution: Year Two Update	Technical Update	5/27/2015
3002002329	Environment		Pond Closure Research Phase II	Supplemental Project	5/28/2015
3002001843	Generation	185	Flue Gas Desulfurization (FGD) Wastewater Treatment Technologies Evaluation	Supplemental Project	5/29/2015
1022556	Generation	75	Impacts of Limestone Characteristics on Flue Gas Desulfurization Gypsum Properties	Supplemental Project	5/29/2015
3002002542	Generation	87	Galvanic Corrosion Testing - Evaluation of Surface Preparation on Wet FGD Corrosion	Technical Update	5/29/2015
1025705	Power Delivery & Utilization	180	Distribution Modernization Demonstration	Supplemental Project	6/1/2015
3002003217	Generation	108	Fossil Power Plant Layup Resource Tool	Technical Update	6/3/2015
3002003446	Generation	71	Material Solutions to Corrosion, Circumferential Cracking, and Slagging for Boiler Waterwalls	Technical Update	6/3/2015
3002003376	Environment	59	State of Knowledge of Condensable Particulate Matter Methods	Technical Update	6/3/2015
3002004874	Environment	91	Program on Technology Innovation: The Evolving Emissions Profile of Distributed Energy Resource Technologies	Technical Report	6/3/2015
3002003767	Environment	49	LEAF Leaching Protocol	Technical Update	6/3/2015
1007309	Generation	71	Condenser Performance Monitoring Practices	Technical Update	6/3/2015
3002003374	Generation	75	Achieving MATS Compliance with Existing ESPs: ESP Upgrades Survey Summary	Technical Update	6/3/2015
3002006403	Generation	87	Alternative Well-Engineered Weld Repair Options for Grade 91 Steel: An Executive Summary of Results from 2010 to 2014	Technical Report	6/3/2015

Product Id	Product Sector	Program Id	Product Description	Product Type	Order Date
1025326	Generation	63	Guidelines for the Evaluation of Seam-Welded High-Energy Piping	Technical Report	6/3/2015
1014670	Generation	87	Boiler Metallurgical Guide - Materials Handbook - Carbon Steels	Technical Report	6/3/2015
3002003374	Generation	75	Achieving MATS Compliance with Existing ESPs: ESP Upgrades Survey Summary	Technical Update	6/9/2015
3002004444	Power Delivery & Utilization	40	Categorizing Line Transient Overvoltage (TOV) Values for Determining Minimum Approach Distances: Technical Basis for Characterizing T-Values for Live-Line Work	Technical Update	6/10/2015
1017471	Generation	63	Field Guide: Boiler Tube Failure	Technical Update	6/10/2015
1023393	Generation	63	Descriptions of Past Research: Boiler Life and Availability Improvement Program	Technical Update	6/10/2015
3002006111	Generation	64	Ethanolamine (ETA), Its Decomposition Products, and Two-Phase Flow-Accelerated Corrosion: The Effect of ETA, Ammonia, Formic Acid, and Acetic Acid	Technical Report	6/15/2015
1025825	Power Delivery & Utilization	18	Texas Plugs In: Houston and San Antonio Residents' Expectations of and Purchase Intentions for Plug-In Electric Vehicles	Technical Update	6/15/2015
1021285	Power Delivery & Utilization	18	Characterizing Consumers' Interest in and Infrastructure Expectations for Electric Vehicles: Research Design and Survey Results	Technical Report	6/15/2015
1022729	Power Delivery & Utilization	18	TVA Electric Vehicle Survey: Consumer Expectations for Electric Vehicles	Technical Update	6/16/2015
1021285	Power Delivery & Utilization	18	Characterizing Consumers' Interest in and Infrastructure Expectations for Electric Vehicles: Research Design and Survey Results	Technical Report	6/16/2015
3002006316	Power Delivery & Utilization		PRE-SW Electricity Service Plan Preferences Estimator Tool KCP&L (ESPP KCP&L) v1.0 - Beta	Software - Proof of	6/17/2015
1019688	Generation	69	Outage Milestone Manual for Fossil-Fueled Power Plants	Technical Report	6/17/2015
1025693	Power Delivery & Utilization		Understanding Maximum Load Capabilities of Polymer Post Insulators	Supplemental Project	6/17/2015
1010621	Generation	63	TULIP 2.0 - Tube Life Probability, Version 2.0	Software	6/17/2015
1000320	Generation	69	Best Practice Guideline for Maintenance Planning and Scheduling	Technical Report	6/19/2015
NP-3046	Nuclear	41.09.03	Evaluation of Condensate Polishers	Technical Report	6/22/2015
3002005036	Power Delivery & Utilization	D_SG	A Case Study on Delmarva Power's Fuel Cell Demonstration	Technical Update	6/22/2015
3002004715	Power Delivery & Utilization	94	Operational Performance and Benefits Assessment of a 3-MW Fuel Cell at a Utility Substation: Case Study: Delmarva Power/Bloom Energy Solid Oxide Fuel Cell	Technical Report	6/22/2015
1022420	Generation	63	Effect of Switching to Powder River Basin Coal on Increased Attemperator Use and Cold Reheat Piping Thermal Quench Damage	Technical Update	6/23/2015

Product Id	Product Sector	Program Id	Product Description	Product Type	Order Date
3002006440	Environment	178	EGEAS User's Guide: Version 11.0	Technical Update	6/23/2015
3002006403	Generation	87	Alternative Well-Engineered Weld Repair Options for Grade 91 Steel: An Executive Summary of Results from 2010 to 2014	Technical Report	6/23/2015
3002003363	Generation	87	Well-Engineered Weld Repair of Grade 91 Steel: Results of T91 Weld Repair Using the Nickel Base EPRI P87 Filler Metal	Technical Report	6/23/2015
3002003833	Generation	87	Best Practice Guideline for Well-Engineered Weld Repair of Grade 91 Steel	Technical Report	6/23/2015
NP-6516	Nuclear	41.05.01	Guide for the Application and Use of Valves in Power Plant Systems	Technical Report	6/24/2015
TR-105852-V1	Nuclear	41.05.01	Valve Application, Maintenance, and Repair Guide	Technical Report	6/24/2015
TR-102051-R1	Generation	68	Guidelines for the Selection and Application of Power Plant Control Valves: Revision 1	Technical Report	6/24/2015
CS-4810	Generation	65	Turbine and Superheater Bypass Evaluation	Technical Report	6/24/2015
1014240	Generation	69	Fossil Power Plant Outage Scoping and Scope Control	Technical Update	6/24/2015
1019687	Generation	69	Human Error Reduction	Technical Report	6/24/2015
1004383	Generation	69	Outage Management Benchmarking Guideline	Technical Report	6/24/2015
1019657	Generation	65	Steam Turbine Performance Engineer's Guide	Technical Report	6/24/2015
1026557	Generation	65	Reference Poster: Bearing Failures in Power Plant Rotating Equipment	Technical Update	6/24/2015
1019417	Environment	51	Utility Vegetation Management: Use of Reliability-Centered Maintenance Concepts to Improve Performance	Technical Report	6/26/2015
3002000082	Generation	63	Life Management of Creep Strength Enhanced Grade 91 Steel: Damage Calculator	Technical Update	6/29/2015
3002006582	Environment	103	Specific State Analysis and Research on the Clean Power Plan - CAA Sec. 111 (d)	Supplemental Project	6/29/2015
3002001056	Generation	64	Filming and Neutralizing Amine Application for Continuous Service in Fossil Plants and Heat Recovery Steam Generators	Technical Update	6/29/2015
1010188	Generation	64	Condenser Tube Failures: Theory and Practice	Technical Report	6/29/2015
TR-103377-V6	Generation	63	Life Assessment of Boiler Pressure Parts: Volume 6: Guidelines for NDE of Heavy Section Components	Technical Report	6/29/2015
1010621	Generation	63	TULIP 2.0 - Tube Life Probability, Version 2.0	Software	6/29/2015

Product Id	Product Sector	Program Id	Product Description	Product Type	Order Date
3002006316	Power Delivery & Utilization		PRE-SW Electricity Service Plan Preferences Estimator Tool KCP&L (ESPP KCP&L) v1.0 - Beta	Software - Proof of	7/2/2015
3002006476	Power Delivery & Utilization	161	Assessing Augmented Reality for the Electricity Industry	Supplemental Project	7/13/2015
3002006373	Power Delivery & Utilization	180	Arc Flash Update for 480-V Network Protectors	Technical Report	7/13/2015
1010653	Power Delivery & Utilization	180	Distribution Library--Wood Poles	Technical Update	7/13/2015
1010143	Environment	51	Environmental Profile of Utility Distribution Poles	Technical Report	7/13/2015
1019849	Environment	51	Assessment of Treated Wood and Alternate Materials for Utility Distribution Poles	Technical Update	7/13/2015
1014096	Environment	51	Demonstration of Decision Tool for Selection of Transmission Poles	Technical Report	7/13/2015
1005419	Environment	60	Radio Frequency Safety for the Electric Power Industry	Technical Report	7/14/2015
1019001	Generation	71	Assessment of an Online Fineness Probe	Technical Report	7/14/2015
3002006282	Environment	49	Hydraulic Conductivity of Compacted Clay Liners Permeated with Coal Combustion Product Leachates: Interim Report	Technical Update	7/20/2015
3002004111	Power Delivery & Utilization	94	Energy Storage Technology Update	Supplemental Project	7/20/2015
3002006282	Environment	49	Hydraulic Conductivity of Compacted Clay Liners Permeated with Coal Combustion Product Leachates: Interim Report	Technical Update	7/20/2015
1023597	Power Delivery & Utilization	35	Field Guide: Visual Inspection of Avian Issues on Transmission Structures (Optimized for Electronic Viewing)	Technical Update	7/21/2015
TR-105907	Power Delivery & Utilization	180	Efficient and Economic Grounding Arrangements for Distribution Lines	Technical Report	7/27/2015
TR-100218	Power Delivery & Utilization	180	Characteristics of Lightning Surges on Distribution Lines: Second Phase--Final Report: Second Phase--Final Report	Technical Report	7/27/2015
1017369	Power Delivery & Utilization	1	Communication - Problems-Damage Due to Lightning	Case Study	7/27/2015
3002003376	Environment	59	State of Knowledge of Condensable Particulate Matter Methods	Technical Update	7/28/2015
1024734	Generation	63	International Conference on Advances in Condition and Remaining Life Assessment for Fossil Power Plants -- Coal, Gas and Heat Recovery Steam Generator	Event Sheet	7/30/2015
TR-103377-V7	Generation	63	Life Assessment of Boiler Pressure Parts: Volume 7: Life Assessment Technology for Superheater/Reheater Tubes	Technical Report	7/30/2015
TR-103377-V1	Generation	63	Life Assessment of Boiler Pressure Parts: Volume 1: Executive Summary	Technical Report	7/30/2015

Product Id	Product Sector	Program Id	Product Description	Product Type	Order Date
1024402	Power Delivery & Utilization	182	Understanding Electric Utility Customers - 2012 Update	Technical Update	8/3/2015
1023561	Power Delivery & Utilization	170	Electricity Pricing Structures for the 21st Century: Remodeling or New Construction? A Summary of Workshop Presentations and Dialogue	Technical Update	8/3/2015
NP-1468	Nuclear	41.01.04	Corrosion Related Failures in Power Plant Condensers	Technical Report	8/3/2015
NP-2371	Nuclear	41.05.01	Condenser Retubing Criteria Manual	Technical Report	8/7/2015
NP-2062	Nuclear	41.05.01	Steam Plant Surface Condenser Leakage Study Update	Technical Report	8/7/2015
1010188	Generation	64	Condenser Tube Failures: Theory and Practice	Technical Report	8/7/2015
1015736	Generation	71	Condenser Technology Conference Proceedings	Technical Report	8/7/2015
1023068	Generation	71	Condenser Technology Conference Proceedings	Technical Report	8/7/2015
1022060	Generation	71	Compilation of Results and Feedback Regarding Steam Condenser Replacements for Power Plants	Technical Update	8/7/2015
NP-912	Nuclear	41.05.01	Location of Condenser Leaks at Steam Power Plants	Technical Report	8/7/2015
1003088	Nuclear	41.05.01	Condenser Application and Maintenance Guide	Technical Report	8/7/2015
3002002143	Generation	185	State of Knowledge: Power Plant Wastewater Treatment - Membrane Technologies	Technical Report	8/10/2015
CS-2961	Generation	65	Current Cathodic Protection Practice in Steam Surface Condensers	Technical Report	8/13/2015
1024205	Power Delivery & Utilization	37	Life Extension Guidelines for Substation Equipment	Technical Update	8/17/2015
3002001056	Generation	64	Filming and Neutralizing Amine Application for Continuous Service in Fossil Plants and Heat Recovery Steam Generators	Technical Update	8/19/2015
NP-2062	Nuclear	41.05.01	Steam Plant Surface Condenser Leakage Study Update	Technical Report	8/19/2015
CS-3623	Generation	63	Proceedings: Seminar on Dissimilar Welds in Fossil-Fired Boilers	Technical Report	8/20/2015
3002006729	Power Delivery & Utilization	180	Conductor Slap on Distribution Circuits	Supplemental Project	8/24/2015
1025704	Power Delivery & Utilization		Distribution Grid Resiliency	Supplemental Project	8/24/2015
NP-2062	Nuclear	41.05.01	Steam Plant Surface Condenser Leakage Study Update	Technical Report	8/24/2015

Product Id	Product Sector	Program Id	Product Description	Product Type	Order Date
1010188	Generation	64	Condenser Tube Failures: Theory and Practice	Technical Report	8/24/2015
1014165	Generation	71	2007 EPRI Feedwater Heater Conference Proceedings	Technical Report	8/24/2015
1024462	Power Delivery & Utilization	1	Flicker from Resistive Spot Welding in a Condenser-Tube Manufacturing Plant	Technical Update	8/24/2015
1010188	Generation	64	Condenser Tube Failures: Theory and Practice	Technical Report	8/25/2015
1010188	Generation	64	Condenser Tube Failures: Theory and Practice	Technical Report	8/25/2015
1015736	Generation	71	Condenser Technology Conference Proceedings	Technical Report	8/25/2015
3002006314	Power Delivery & Utilization		Forecasting Residential Solar Photovoltaic Adoption	Supplemental Project	8/25/2015
NP-2062	Nuclear	41.05.01	Steam Plant Surface Condenser Leakage Study Update	Technical Report	8/26/2015
3002004893	Generation	185	Flue Gas Desulfurization (FGD) Wastewater Chemical Precipitation Bench-Scale Treatability Study	Technical Update	8/31/2015
3002000433	Generation	64	Boiler Chemical Cleaning Waste Management Manual	Technical Report	9/3/2015
1019948	Power Delivery & Utilization	35	Compression Connector Threshold Analysis	Technical Update	9/9/2015
1021859	Power Delivery & Utilization	35	Evaluation of Compression Connector Remediation Techniques: Initial Testing Results	Technical Update	9/9/2015
1024125	Power Delivery & Utilization	35	Refinement of Infrared Measurements for Transmission Lines	Technical Update	9/9/2015
1021857	Power Delivery & Utilization	35	Refinement of Temperature Threshold Limits for Compression Connectors: Thermal Aging and Infrared Testing	Technical Update	9/9/2015
3002006272	Power Delivery & Utilization	183	Cyber Security and Privacy Newsletter, July 2015	Technical Update	9/9/2015
3002001916	Generation	64	Control of Corrosion in the Steam Turbine Phase Transition Zone (PTZ), Final Report: Neutralizing Amines	Technical Report	9/9/2015
3002003678	Generation	64	State of Knowledge on Film-Forming Amines	Technical Report	9/9/2015
3002003485	Generation	64	Iron Analysis and Speciation: Sampling and Validation	Technical Report	9/9/2015
3002000996	Generation	64	Chemical Cleaning Guidelines for Fossil-Fuel-Fired Power Plants	Technical Report	9/9/2015
3002006856	Power Delivery & Utilization		Update on FAA Regulations on Unmanned Aircraft Systems: An EPRI White Paper	Technical Update	9/14/2015

Product Id	Product Sector	Program Id	Product Description	Product Type	Order Date
3002003377	Generation	75	Laboratory Study of Hydrated Lime Resistivity: Impact of Sorbents on Electrostatic Precipitator Performance	Technical Update	9/14/2015
3002006830	Power Delivery & Utilization		Program on Technology Innovation: DesignLights Consortium 2015 Stakeholder Meeting Report	Technical Update	9/14/2015
3002006814	Environment		Program on Technology Innovation: A Review of the Benefits, Challenges, and Potential Uses of Air Quality Microsensors for Utility Purposes	Technical Update	9/14/2015
3002006285	Environment	49	Monitored Natural Attenuation for Inorganic Constituents in Coal Combustion Residuals	Technical Report	9/14/2015
3002004893	Generation	185	Flue Gas Desulfurization (FGD) Wastewater Chemical Precipitation Bench-Scale Treatability Study	Technical Update	9/14/2015
3002005557	Nuclear	41.02.01	Program on Technology Innovation: Coated Molybdenum-Alloy Cladding for Accident-Tolerant Fuel: Progress Report	Technical Report	9/14/2015
1008082	Generation	88	Guidelines for Controlling Flow-Accelerated Corrosion in Fossil and Combined Cycle Plants	Technical Report	9/14/2015
1017607	Generation	87	Strain Induced Precipitation Hardening of Stainless Steels	Technical Report	9/16/2015
3002006373	Power Delivery & Utilization	180	Arc Flash Update for 480-V Network Protectors	Technical Report	9/24/2015
3002001229	Environment	49	Dust Mitigation Methods for Coal Combustion Products	Technical Report	9/24/2015
3002006582	Environment	103	Specific State Analysis and Research on the Clean Power Plan - CAA Sec. 111 (d)	Supplemental Project	9/28/2015
1009755	Generation	87	Application and Repair of Overlay Welds	Technical Update	9/28/2015
1019783	Generation	87	Graphitization in C and C-Mo Steels	Technical Update	9/28/2015
1024961	Generation	63	Descriptions of Past Research: Flow-Accelerated Corrosion	Catalog	9/28/2015
1019177	Nuclear	41.05.02	State of the Fleet Project to Assess Flow-Accelerated Corrosion Program Effectiveness	Technical Report	9/28/2015
1015072	Nuclear	41	Flow-Accelerated Corrosion - The Entrance Effect	Technical Update	9/28/2015
3002006820	Environment	49	Website Posting and Inspections Guidance for Coal Combustion Product Impoundments and Landfills	Technical Report	9/30/2015
3002006896	Generation	73	Continuous SO3 Measurement Technologies	Supplemental Project	9/30/2015
3002004808	Generation	73	Evaluation of Reduced-Load SCR Operation	Supplemental Project	9/30/2015
3002004355	Generation	73	Portable Catalyst Test Facility	Supplemental Project	9/30/2015

Product Id	Product Sector	Program Id	Product Description	Product Type	Order Date
3002004794	Generation	73	Tunable Diode Laser Probe for In-Situ Flue Gas Measurements	Supplemental Project	9/30/2015
1024027	Generation	87	Use of Shot-Peening to Improve Steam-Grown Oxide Exfoliation Performance in Superheaters and Reheaters	Technical Report	9/30/2015
3002003361	Generation	87	Strain Induced Precipitation Hardening of Stainless Steels: Development of an Improved Test Method	Technical Update	9/30/2015
1024807	Generation	87	Program on Technology Innovation: Thin Aluminide Coatings for Internal Steam Oxidation Protection of Austenitic Boiler Tubes	Technical Update	9/30/2015
1015815	Generation		Welding Guidelines for Advanced Austenitics	Technical Report	9/30/2015
3002001478	Generation	87	The Advanced Austenitic Stainless Steels Handbook: 347HFG, SUPER304H, HR3C	Technical Report	9/30/2015
1019777	Generation	87	Strain-Induced Precipitation Hardening of Stainless Steels	Technical Update	9/30/2015
1017607	Generation	87	Strain Induced Precipitation Hardening of Stainless Steels	Technical Report	9/30/2015
3002004158	Power Delivery & Utilization	37	EPRI Power Transformer Guidebook: The Copper Book	Technical Update	10/2/2015
3002006820	Environment	49	Website Posting and Inspections Guidance for Coal Combustion Product Impoundments and Landfills	Technical Report	10/5/2015
3002006234	Generation	65	Strain-Based Turbine Generator Torsional Vibration Monitoring System—Phase 3: Prototype Field Application	Technical Report	10/5/2015
3002006820	Environment	49	Website Posting and Inspections Guidance for Coal Combustion Product Impoundments and Landfills	Technical Report	10/5/2015
3002006820	Environment	49	Website Posting and Inspections Guidance for Coal Combustion Product Impoundments and Landfills	Technical Report	10/5/2015
3002005097	Power Delivery & Utilization	35	Foundation Analysis and Design (FAD) Tools Version 5.1.19	Software	10/6/2015
1019014	Environment	62	EPRI Ergonomics Handbook for the Electric Power Industry DVD	Technical Report	10/13/2015
3002006286	Environment	49	Relative Impact Framework for Evaluating Coal Combustion Residual Surface Impoundment Closure Options	Technical Report	10/13/2015
3002006289	Environment	49	Potential Failure Mode Analysis for Coal Combustion Residual Impoundments: Guidance Document	Technical Report	10/13/2015
1014042	Environment	62	EPRI Ergonomics Handbook for the Electric Power Industry: Ergonomic Interventions for Electrical Workers in Fossil-Fueled Power Plants	Technical Report	10/13/2015
1015631	Environment	62	EPRI Ergonomics Handbook for the Electric Power Industry: Ergonomic Interventions for Plant Operators and Mechanics in Fossil-Fueled Generating Stations	Technical Report	10/13/2015
3002005097	Power Delivery & Utilization	35	Foundation Analysis and Design (FAD) Tools Version 5.1.19	Software	10/13/2015

Product Id	Product Sector	Program Id	Product Description	Product Type	Order Date
3002004444	Power Delivery & Utilization	40	Categorizing Line Transient Overvoltage (TOV) Values for Determining Minimum Approach Distances: Technical Basis for Characterizing T-Values for Live-Line Work	Technical Update	10/15/2015
1019628	Generation	63	Boiler Condition Assessment Guideline	Technical Report	10/19/2015
1004924	Generation	87	Low-Temperature Corrosion Problems in Fossil Power Plants -- State of Knowledge Report	Technical Report	10/19/2015
TR-103403	Nuclear	41.05.02	Service Water System Corrosion and Deposition Sourcebook	Technical Report	10/26/2015
TR-103500	Nuclear	41.01.04	Corrosion Evaluation of Service Water System Materials	Technical Report	10/26/2015
1004811	Environment	84	Opportunity Fuel Cofiring at Allegheny Energy: Final Report	Technical Report	10/26/2015
3002005802	Power Delivery & Utilization	161	Automated Demand Response and Ancillary Services Demonstration Project Newsletter, August 2015	Technical Update	10/27/2015
3002005586	Power Delivery & Utilization	161	Electric Utility Data Synthesis	Technical Update	10/27/2015
TR-103620	Generation	79	Measurement and Assessment Guide (MAG) for Improving Operations of Combustion Turbines	Technical Report	10/27/2015
1019752	Generation	80	Combustion Turbine Experience and Intelligence Report: 2010	Technical Update	10/27/2015
1000044	Generation	79	Proceedings: EPRI Workshop on Condition and Remaining Life Assessment of Hot Gas Path Components of Combustion Turbines	Technical Report	10/27/2015
TR-110860	Generation	80	Flexible Mid-Sized Gas Turbine: Preliminary Market Analysis	Technical Report	10/27/2015
TR-113985	Generation	79	Combustion Turbine Axial Compressor Monitor	Technical Report	10/27/2015
1023981	Generation	80	Combustion Turbine Experience and Intelligence Report: 2012	Technical Update	10/27/2015
1024143	Power Delivery & Utilization	35	Analysis of the Electric Field Levels and Corona on Polymer Insulator End Fittings	Technical Update	10/28/2015
1024144	Power Delivery & Utilization	35	Insulator Calculation Engine (ICE) 1.00 (for program 35.011 funders)	Software	10/28/2015
3002004088	Technology Innovation		Additive Manufacturing: 3-D Printing and Other Component Fabrication Innovations	Fact Sheet	11/3/2015
1025512	Generation	68	Southern Company Generation Monitoring and Diagnostic Center	Technical Update	11/9/2015
3002005476	Nuclear	41.01.01	Program on Technology Innovation: Crack Tip Strain Rate Models for Environmentally-Assisted Fatigue Crack Growth in BWR and PWR Environments	Technical Report	11/16/2015
3002001445	Generation	75	Effectiveness and Balance-of-Plant Impacts of Added Bromine	Technical Update	11/16/2015

Product Id	Product Sector	Program Id	Product Description	Product Type	Order Date
3002003404	Generation	75	2014 Update on EPRI's Balance-of-Plant Effects Study of Bromine-Based Mercury Controls	Technical Update	11/16/2015
3002005089	Generation	87	Service Experience with Creep Strength Enhanced Ferritic Steels in Power Plants in the Asia-Pacific Region	Technical Report	11/16/2015
1010527	Power Delivery & Utilization	94	Comparison of Distributed Generation Technology Options, 250-400 kW	Technical Update	11/18/2015
3002006857	Power Delivery & Utilization		Education and Training Courses for Power Engineers	Supplemental Project	11/19/2015
3002002386	Power Delivery & Utilization	180	Educating Power Engineers for a Future Distribution Grid	Supplemental Project	11/19/2015
3002006287	Environment	49	Groundwater Monitoring Guidance for the Coal Combustion Residuals Rule	Technical Report	11/30/2015
3002006251	Environment	56	Flue Gas Desulfurization (FGD) Wastewater Chemical Precipitation Treatment Performance Characterization Study	Technical Update	11/30/2015
3002006287	Environment	49	Groundwater Monitoring Guidance for the Coal Combustion Residuals Rule	Technical Report	11/30/2015
3002006289	Environment	49	Potential Failure Mode Analysis for Coal Combustion Residual Impoundments: Guidance Document	Technical Report	12/1/2015
3002006290	Environment	49	Centrifuge Models of Embankment Failures on Saturated Coal Ash	Technical Report	12/1/2015
3002006286	Environment	49	Relative Impact Framework for Evaluating Coal Combustion Residual Surface Impoundment Closure Options	Technical Report	12/1/2015
3002006287	Environment	49	Groundwater Monitoring Guidance for the Coal Combustion Residuals Rule	Technical Report	12/1/2015
3002004158	Power Delivery & Utilization	37	EPRI Power Transformer Guidebook: The Copper Book	Technical Update	12/2/2015
1015935	Power Delivery & Utilization	37	PTLOAD: Development of Algorithms to Include New Research Data on Loss of Life	Technical Update	12/2/2015
1015249	Power Delivery & Utilization	37	PTLOAD version 6.2	Software	12/2/2015
3002004158	Power Delivery & Utilization	37	EPRI Power Transformer Guidebook: The Copper Book	Technical Update	12/2/2015
1024572	Power Delivery & Utilization	37	PTLOAD: Comparison of Calculation Results Against Transformer Loading Standards	Technical Update	12/2/2015
1017734	Power Delivery & Utilization	37	EPRI Transformer Guidebook Development	Technical Update	12/2/2015
3002003789	Power Delivery & Utilization	37	High Voltage Circuit Breaker Guidebook: Development Approach, Table of Contents, and Draft Chapter	Technical Update	12/2/2015
TR-114200	Environment	60	Electric and Magnetic Field Management Reference Book: First Edition	Technical Report	12/2/2015

Product Id	Product Sector	Program Id	Product Description	Product Type	Order Date
1025440	Power Delivery & Utilization	37	EPRI Substation Grounding Project	Technical Update	12/2/2015
3002003824	Power Delivery & Utilization	37	Industrywide Transformer Database: Key Findings and Case Studies	Technical Update	12/2/2015
3002006354	Power Delivery & Utilization	37	Assessing and Enhancing the Security of Transmission Assets From Intentional Physical Attack	Technical Update	12/2/2015
3002003836	Power Delivery & Utilization	37	Dissolved Gas Analysis Guide for High Voltage Cables and Transformers â€” 2014 Update	Technical Update	12/2/2015
1002913	Nuclear	41.05.01	Power Transformer Maintenance and Application Guide	Technical Report	12/2/2015
1013566	Nuclear	41.05.02	Plant Support Engineering: Large Transformer End-of-Expected-Life Considerations and the Need for Planning	Technical Report	12/2/2015
IN-114516	Power Delivery & Utilization	37	A Suite of Sophisticated EPRI Maintenance Tools Helps Con Edison Maintain the Reliability of Their Substations in a Highly Cost Effective Manner	Innovators	12/2/2015
3002000520	Nuclear	41.08.01	General Outline for Conducting Quality Inspections and Tests of Concrete Placement at Nuclear Facilities: Standard and Optimized for Electronic Viewing Versions	Technical Report	12/2/2015
1024553	Power Delivery & Utilization	37	Field Guide: Did That Transformer Really Fail? Optimized for Electronic Viewing	Technical Update	12/2/2015
3002002570			Transmission and Substations Research and Development News, December 2014	Newsletters	12/2/2015
TR-105852-V1	Nuclear	41.05.01	Valve Application, Maintenance, and Repair Guide	Technical Report	12/2/2015
1017471	Generation	63	Field Guide: Boiler Tube Failure	Technical Update	12/7/2015
3002006568	Generation	69	Lubrication Standards Guideline Manual	Technical Report	12/7/2015
3002000996	Generation	64	Chemical Cleaning Guidelines for Fossil-Fuel-Fired Power Plants	Technical Report	12/9/2015
3002000996	Generation	64	Chemical Cleaning Guidelines for Fossil-Fuel-Fired Power Plants	Technical Report	12/9/2015
3002000996	Generation	64	Chemical Cleaning Guidelines for Fossil-Fuel-Fired Power Plants	Technical Report	12/9/2015
3002000996	Generation	64	Chemical Cleaning Guidelines for Fossil-Fuel-Fired Power Plants	Technical Report	12/9/2015
3002005085	Power Delivery & Utilization	170	Network Implementation Options for Plug-in Electric Vehicle Charging Infrastructureâ€”A Utility Perspective	Technical Update	12/9/2015
3002007073	Generation	75	Low-Temperature Mercury Oxidation Catalyst Technology Update	Technical Update	12/9/2015
3002006156	Generation	75	SCR Mercury Oxidation Data to Support MATS Mercury Compliance, 2015 Update	Technical Update	12/9/2015

Product Id	Product Sector	Program Id	Product Description	Product Type	Order Date
3002006092	Generation	78	Utilization of Geopolymer Concrete in Solidification/Stabilization of Sorbent-Impacted Fly Ash and Power Plant Wastewater Treatment Residuals: Literature Review and Preliminary Results	Technical Update	12/9/2015
3002007072	Generation		Program on Technology Innovation: Building Integrated Photovoltaics in 2015 and Beyond: Technology, Markets, and Products	Technical Update	12/9/2015
3002004995	Nuclear		Program on Technology Innovation: Analysis of Hazard Models for Cyber Security, Phase I	Technical Report	12/9/2015
3002006091	Generation	78	Leaching from Roadway Substructures Constructed with Coal Combustion Products: Assessment of Field Data and Impact Analysis	Technical Report	12/10/2015
3002005989	Power Delivery & Utilization	18	Plug-In Electric Vehicles as Distributed Energy Resources - Technology Update	Technical Update	12/14/2015
3002005989	Power Delivery & Utilization	18	Plug-In Electric Vehicles as Distributed Energy Resources - Technology Update	Technical Update	12/14/2015
3002005989	Power Delivery & Utilization	18	Plug-In Electric Vehicles as Distributed Energy Resources - Technology Update	Technical Update	12/14/2015
3002006144	Generation	71	2015 Impacts of Refined Coals and Additives	Technical Update	12/15/2015
3002006157	Generation	75	Halogen Addition for Mercury Control and Related Balance-of-Plant Issues	Technical Update	12/15/2015
3002006292	Environment	49	Corrective Action for Closed and Closing Ash Ponds	Technical Report	12/15/2015
3002005989	Power Delivery & Utilization	18	Plug-In Electric Vehicles as Distributed Energy Resources - Technology Update	Technical Update	12/15/2015
3002005664	Power Delivery & Utilization	170	Survey of Energy Efficiency Options and Existing Programs for Commercial Refrigeration	Technical Update	12/15/2015
3002006287	Environment	49	Groundwater Monitoring Guidance for the Coal Combustion Residuals Rule	Technical Report	12/15/2015
3002006091	Generation	78	Leaching from Roadway Substructures Constructed with Coal Combustion Products: Assessment of Field Data and Impact Analysis	Technical Report	12/15/2015
3002006820	Environment	49	Website Posting and Inspections Guidance for Coal Combustion Product Impoundments and Landfills	Technical Report	12/15/2015
3002000996	Generation	64	Chemical Cleaning Guidelines for Fossil-Fuel-Fired Power Plants	Technical Report	12/16/2015
3002006283	Environment	49	Coal Combustion Residuals Leachate Management: Characterization of Leachate Quantity and Evaluation of Leachate Minimization and Management Methods	Technical Report	12/21/2015
3002006105	Generation	64	Operator Guide: Cycle Chemistry, Volume 1: Once-Through Oxygenated Treatment, Volume 2: Drum Unit, and Volume 3: Combined Cycle Gas Turbine Unit	Technical Report	12/21/2015
3002006283	Environment	49	Coal Combustion Residuals Leachate Management: Characterization of Leachate Quantity and Evaluation of Leachate Minimization and Management Methods	Technical Report	12/21/2015
3002006155	Generation	75	Mercury and Air Toxics Control 2015 Update	Technical Update	12/21/2015

Product Id	Product Sector	Program Id	Product Description	Product Type	Order Date
3002001478	Generation	87	The Advanced Austenitic Stainless Steels Handbook: 347HFG, SUPER304H, HR3C	Technical Report	12/21/2015
3002000081	Generation	63	Life Management of Creep Strength Enhanced Grade 91 Steels - Atlas of Microstructures and Welds	Technical Report	12/21/2015
3002006155	Generation	75	Mercury and Air Toxics Control 2015 Update	Technical Update	12/21/2015
3002006303	Environment	54	Internet-based Tool for Entrainment Classifications of Freshwater Fish Species â€” http://www.eprientraincondition.com/ENTRAIN/Home.vbhtml	Technical Update	12/21/2015
3002006163	Power Delivery & Utilization	18	State of Hybrid and Plug-in Electric Marine Technology	Technical Report	12/21/2015
3002005921	Power Delivery & Utilization	18	Progress and Prospects of Advanced Lithium Ion Batteries	Technical Update	12/21/2015
3002006177	Environment	59	Sampling and Analysis for Steam Electric Power Plant Wastewater Monitoring	Technical Update	12/21/2015
3002004997	Nuclear		Program on Technology Innovation: Cyber Hazards Analysis Risk Methodology, Phase II: A Risk Informed Approach	Technical Report	12/21/2015
3002006811	Environment		Program on Technology Innovation: Assessing the State of the Art in Nanoscale Enhanced Heat Transfer	Technical Report	12/21/2015
1010621	Generation	63	TULIP 2.0 - Tube Life Probability, Version 2.0	Software	12/21/2015
3002003418	Generation	63	Ultrasonic Acceptance of Small Diameter Boiler Tube Butt Welds	Technical Update	12/21/2015
3002006660	Generation	69	Mobile Technology Guidebook: 2015 Update	Technical Report	12/23/2015
1013781	Power Delivery & Utilization	18	Plug-in Hybrid Electric Vehicles and Petroleum Displacement: A Regional Economic Impact Assessment	Technical Update	12/26/2015
3002007080	Generation	64	Evaluation of Boiler and Heat Recovery Steam Generator Chemical Cleaning Waste Treatment Options	Technical Update	12/28/2015
3002006104	Generation	64	Field Guide: Inspection of Steam/Water Cycle Components from a Chemistry Perspective	Technical Report	12/28/2015
3002005869	Generation	63	Influence of Unit Operation on Water Wall Corrosion Damage Fatigue in Corner-Fired, Controlled Circulation Units	Technical Update	12/28/2015
3002006177	Environment	59	Sampling and Analysis for Steam Electric Power Plant Wastewater Monitoring	Technical Update	12/28/2015
3002006105	Generation	64	Operator Guide: Cycle Chemistry, Volume 1: Once-Through Oxygenated Treatment, Volume 2: Drum Unit, and Volume 3: Combined Cycle Gas Turbine Unit	Technical Report	12/28/2015
3002005688	Power Delivery & Utilization	35	Polymer Insulator Vintage Guide: Long Rod Suspension and Post Insulators	Technical Update	12/28/2015
3002006099	Generation	75	ESP Upgrades and Optimization: Operating Under MATS Conditions	Technical Update	12/28/2015

Product Id	Product Sector	Program Id	Product Description	Product Type	Order Date
3002005994	Power Delivery & Utilization	18	Open Vehicle-Grid Integration Platform â€” Unified Approach to Grid / Vehicle Integration: Definition of Use Case Requirements	Technical Update	12/29/2015
3002006161	Power Delivery & Utilization	18	Versatile Auxiliary Power System for Fleet Vehicle Electrification - 2015 Update	Technical Update	12/29/2015
3002006143	Generation	71	Impact of Various Levels of NOx Control on Boiler Tube Life: Trade-Offs Between Deeper Staging for Lower NOx and Fireside Corrosion	Technical Update	1/4/2016
3002006099	Generation	75	ESP Upgrades and Optimization: Operating Under MATS Conditions	Technical Update	1/4/2016
3002007171	Generation		Program on Technology Innovation: National Carbon Capture Center 2015 Report	Technical Update	1/4/2016
3002006154	Generation	75	Air Toxics Control by Wet FGD Systems: 2015 Technical Update	Technical Update	1/4/2016
3002007208	Generation	75	FGD Chemistry and Analytical Methods Handbook: Volume 2, Chemical and Physical Test Methods (Revision 3)	Technical Update	1/4/2016
3002006153	Generation	75	Utility Pulse Jet Baghouse Performance 2015 Update: Studies at Plant Bowen Pilot	Technical Update	1/4/2016
3002006142	Generation	71	Materials Solutions to Corrosion, Circumferential Cracking and Slagging for Boiler Waterwalls: Laboratory and Field Evaluations of Protective Coatings	Technical Update	1/4/2016
3002006598	Generation	87	Atlas of Steam-Side Oxide Scales Formed on Superheater and Reheater Tubes	Technical Report	1/5/2016
1014193	Generation	87	Initial Oxide Growth and Exfoliation Model	Technical Update	1/5/2016
1013666	Generation		Program on Technology Innovation: Oxide Growth and Exfoliation on Alloys Exposed to Steam	Technical Report	1/5/2016
1017625	Generation	87	Development of an Integrated Model to Predict and Control Oxide Scale Exfoliation	Technical Update	1/5/2016
3002002053	Generation	63	Boiler Tube Internal Oxide Scale Thickness Measurement: Best Practices	Technical Update	1/5/2016
1013098	Generation	64	Integrated Boiler Tube Failure Reduction/Cycle Chemistry Improvement Program	Technical Report	1/7/2016
1023063	Generation	63	Boiler and Heat Recovery Steam Generator Tube Failures - Theory and Practice: Volume 1: Fundamentals, Volume 2: Water-Touched Tubes, and Volume 3: Steam-Touched Tubes	Technical Report	1/7/2016
1023087	Generation	63	Boiler Tube Failure Program Best Practices	Technical Update	1/7/2016
3002004158	Power Delivery & Utilization	37	EPRI Power Transformer Guidebook: The Copper Book	Technical Update	1/13/2016
1015249	Power Delivery & Utilization	37	PTLOAD version 6.2	Software	1/13/2016
3002004158	Power Delivery & Utilization	37	EPRI Power Transformer Guidebook: The Copper Book	Technical Update	1/14/2016

Product Id	Product Sector	Program Id	Product Description	Product Type	Order Date
1015249	Power Delivery & Utilization	37	PTLOAD version 6.2	Software	1/14/2016
3002006154	Generation	75	Air Toxics Control by Wet FGD Systems: 2015 Technical Update	Technical Update	1/15/2016
3002006104	Generation	64	Field Guide: Inspection of Steam/Water Cycle Components from a Chemistry Perspective	Technical Report	1/18/2016
3002006755	Generation	87	Evaluation of the Resistance of Creep-Strength-Enhanced Ferritic Steels to Stress Corrosion Cracking in Various Environments: Follow-On Studies Using the Jones Test	Technical Report	1/22/2016
3002004158	Power Delivery & Utilization	37	EPRI Power Transformer Guidebook: The Copper Book	Technical Update	1/22/2016
1015249	Power Delivery & Utilization	37	PTLOAD version 6.2	Software	1/22/2016
3002001917	Generation	71	EPRI Feedwater Heater Technology Conference Proceedings	Technical Report	1/25/2016
1023779	Environment	56	Management of Process Wastewater at Coal-Fired Power Plants	Technical Update	1/27/2016
1021199	Generation	63	Deaerator Tank Assessment Guideline	Technical Update	2/2/2016
3002007351	Power Delivery & Utilization		Program on Technology Innovation: Energy Efficiency Symposium 2015: November 11-13, 2015, Orlando, FL	Technical Update	2/4/2016
1024303	Power Delivery & Utilization	161	Monetizing the Geospatial Information System (GIS): The Value of GIS Data Quality for Electric Utilities	Technical Report	2/5/2016
3002001728	Power Delivery & Utilization	18	Total Cost of Ownership Model for Current Plug-in Electric Vehicles	Technical Report	2/5/2016
3002007426	Generation		Program on Technology Innovation: Evaluation of CBA™s Remedial Coal Solutions Upgrading Technology	Technical Update	2/8/2016
3002001445	Generation	75	Effectiveness and Balance-of-Plant Impacts of Added Bromine	Technical Update	2/8/2016
3002001444	Generation	75	Mercury Control Update 2013	Technical Update	2/8/2016
1019943	Power Delivery & Utilization	35	Overhead Conductor Management Guide	Technical Report	2/9/2016
1001997	Power Delivery & Utilization	35	Parameters that Influence the Aging and Degradation of Overhead Conductors	Technical Update	2/9/2016
1021372	Environment	54	Evaluation of Factors Affecting Juvenile and Larval Fish Survival in Fish Return Systems at Cooling Water Intakes	Technical Report	2/10/2016
3002001104	Environment	54	Engineering and Biological Assessment of Fine Mesh Fish Protection-Modified Traveling Water Screens	Technical Update	2/10/2016
1024697	Environment	54	Field Evaluation of Debris Handling and Sediment Clogging of a 2.0-mm Fine-Mesh Traveling Water Screen at the Hawthorn Power Plant, Missouri River, in Kansas City, Missouri	Technical Report	2/10/2016

Product Id	Product Sector	Program Id	Product Description	Product Type	Order Date
3002006735	Environment	54	Best Management Practices Manual for Preventing Cooling Water Intake Blockages	Technical Report	2/10/2016
3002004668	Environment		Program on Technology Innovation: Feasibility Study of Using a Thermosyphon Cooler Hybrid System to Reduce Cooling Tower Water Consumption	Technical Report	2/10/2016
3002001407	Environment		Program on Technology Innovation: Review of Advanced Cooling Tower Technologies with Reduced Cooled Water Temperature and Evaporation	Technical Report	2/10/2016
3002006659	Generation		Program on Technology Innovation: Integrating Cooling System with Membrane Distillation to Substantially Reduce Water Requirements	Technical Report	2/10/2016
3002005167	Environment		Program on Technology Innovation: Continuous, Low-Temperature, Membrane-Free Water Desalination Using Directional Solvent Extraction and Waste Heat from Power Plants	Technical Report	2/10/2016
3002002143	Generation	185	State of Knowledge: Power Plant Wastewater Treatment - Membrane Technologies	Technical Report	2/10/2016
TR-103552	Generation	65	Solid Particle Erosion Technology Assessment	Technical Report	2/11/2016
TR-102102	Generation	65	Feedpump Operation and Design Guidelines	Technical Report	2/11/2016
1017470	Generation	63	Kinetics and Morphology of Oxide Formed on Fe-9Cr-1Mo (Grade 91)	Technical Update	2/11/2016
3002003969	Generation	71	2015 Heat Rate Improvement Conference	Technical Update	2/16/2016
3002005874	Generation	63	Root Cause Investigation of Failure in Long Seam-Welded Hot Reheat Pipe at American Electric Power's John E. Amos Plant	Technical Update	2/16/2016
1025326	Generation	63	Guidelines for the Evaluation of Seam-Welded High-Energy Piping	Technical Report	2/16/2016
1025326	Generation	63	Guidelines for the Evaluation of Seam-Welded High-Energy Piping	Technical Report	2/17/2016
3002005874	Generation	63	Root Cause Investigation of Failure in Long Seam-Welded Hot Reheat Pipe at American Electric Power's John E. Amos Plant	Technical Update	2/17/2016
1021798	Generation	87	Fossil Power Plant Components Failure Analysis Guideline, Volume 3: Steps and Procedures	Technical Report	2/18/2016
1018749	Generation	87	Fossil Power Plant Components Failure Analysis Guideline	Assembled Package	2/18/2016
1012840	Generation	87	Grade 22 Low Alloy Steel Handbook	Technical Report	2/18/2016
1018996	Generation	63	Field Guide: Pocket Outage Inspection Manual	Technical Update	2/18/2016
1016670	Nuclear	41.04.01	Nondestructive Evaluation: Fast-Track NDE Work Force Enhancement	Technical Update	2/18/2016
1017471	Generation	63	Field Guide: Boiler Tube Failure	Technical Update	2/18/2016

Product Id	Product Sector	Program Id	Product Description	Product Type	Order Date
1018996	Generation	63	Field Guide: Pocket Outage Inspection Manual	Technical Update	2/19/2016
1018996	Generation	63	Field Guide: Pocket Outage Inspection Manual	Technical Update	2/19/2016
1017471	Generation	63	Field Guide: Boiler Tube Failure	Technical Update	2/19/2016
1017471	Generation	63	Field Guide: Boiler Tube Failure	Technical Update	2/19/2016
3002006174	Power Delivery & Utilization		Program on Technology Innovation: Evaluation of Plasma Lighting: Lab Investigation, Technology Assessment, and Application Guide	Technical Update	2/22/2016
3002007463	Power Delivery & Utilization	37	Electromagnetic Pulse (EMP) Grid Resiliency: Transmission Vulnerability and Mitigation	Supplemental Project	2/22/2016
3002001728	Power Delivery & Utilization	18	Total Cost of Ownership Model for Current Plug-in Electric Vehicles	Technical Report	2/24/2016
1009508	Generation	104	Pulverizer Maintenance Guide, Volume 2: Babcock & Wilcox Roll Wheel Pulverizers	Technical Report	2/24/2016
3002001728	Power Delivery & Utilization	18	Total Cost of Ownership Model for Current Plug-in Electric Vehicles	Technical Report	2/25/2016
3002005948	Power Delivery & Utilization	18	A Consumer's Guide to Plug-In Electric Vehicles	Technical Update	2/29/2016
3002002835	Generation	108	Systematic Approach to Reducing Minimum Load	Technical Report	3/1/2016
3002002170	Generation	63	Turndown and Ramp Rate Issues with Utility Boilers	Technical Update	3/1/2016
3002003457	Generation	71	Range and Applicability of Heat Rate Improvements	Technical Update	3/3/2016
TR-111541	Generation	68	Low Load/Low Air Flow Optimum Control Applications	Technical Report	3/3/2016
3002002835	Generation	108	Systematic Approach to Reducing Minimum Load	Technical Report	3/3/2016
1025351	Generation	185	Assessment of Water Balance Models	Technical Report	3/3/2016
3002002143	Generation	185	State of Knowledge: Power Plant Wastewater Treatment - Membrane Technologies	Technical Report	3/3/2016
1021215	Environment	56	Thermal Flue Gas Desulfurization Wastewater Treatment Processes for Zero Liquid Discharge Operations	Technical Update	3/3/2016
1020003	Power Delivery & Utilization	37	Visual Inspection Guide for Substations	Technical Update	3/7/2016
1018893	Power Delivery & Utilization	37	STLOAD 1.1 (Substation Terminal Equipment Loading Software)	Software	3/7/2016

Product Id	Product Sector	Program Id	Product Description	Product Type	Order Date
1021923	Power Delivery & Utilization	37	Substation Connectors Operating at Elevated Temperatures	Technical Update	3/7/2016
1019975	Power Delivery & Utilization	35	Guide for Operating Overhead Lines at High Temperatures	Technical Update	3/7/2016
1018782	Power Delivery & Utilization	35	Performance of Compression Fittings at Elevated Temperatures	Technical Report	3/7/2016
1017782			Effects of High-Temperature Cycling on Conductor Systems	Technical Update	3/7/2016
1015977	Power Delivery & Utilization	35	Effect of High Temperature Cycling on Conductor Systems	Technical Update	3/7/2016
3002005689	Power Delivery & Utilization	35	Aging Chamber Report Tool (ACRT) v8.0	Software	3/7/2016
1010250	Power Delivery & Utilization	35	230 kV Accelerated Aging Chamber	Technical Report	3/7/2016
1018893	Power Delivery & Utilization	37	STLOAD 1.1 (Substation Terminal Equipment Loading Software)	Software	3/8/2016
3002002235	Environment		Assessment of the Social Cost of Carbon and Development of Methods for Climate Risk Management	Supplemental Project	3/8/2016
3002003457	Generation	71	Range and Applicability of Heat Rate Improvements	Technical Update	3/10/2016
TR-109546	Generation	71	Heat Rate Improvement Reference Manual	Technical Report	3/10/2016
3002003969	Generation	71	2015 Heat Rate Improvement Conference	Technical Update	3/10/2016
1025326	Generation	63	Guidelines for the Evaluation of Seam-Welded High-Energy Piping	Technical Report	3/10/2016
1011828	Generation	104	Severe Duty Valve Maintenance Guide	Technical Report	3/10/2016
NP-3416	Nuclear	41.05.01	A Guide for Developing Preventive Maintenance Programs in Electric Power Plants	Technical Report	3/10/2016
1024431	Power Delivery & Utilization	183	Cryptographic Key Management (CKM) Design Principles for the Advanced Metering Infrastructure (AMI)	Technical Update	3/14/2016
3002006355	Generation	64	Heat Recovery Steam Generator Oxygen Injection: Case Study for Corrosion Reduction	Technical Update	3/15/2016
3002006105	Generation	64	Operator Guide: Cycle Chemistry, Volume 1: Once-Through Oxygenated Treatment, Volume 2: Drum Unit, and Volume 3: Combined Cycle Gas Turbine Unit	Technical Report	3/15/2016
1021767	Generation	64	Comprehensive Cycle Chemistry Guidelines for Fossil Plants	Technical Report	3/15/2016
1017476	Generation	64	Interim Guidance on Chemical Cleaning of Supercritical Units	Technical Report	3/15/2016

Product Id	Product Sector	Program Id	Product Description	Product Type	Order Date
1019002	Generation	71	Capital and Maintenance Projects for Efficiency Improvements	Technical Update	3/15/2016
1024812	Generation	194	A Systematic Approach to Reduce Power Plant Auxiliary Power	Supplemental Project	3/15/2016
1025731	Generation	63	Generation Advanced Nondestructive Evaluation Development	Supplemental Project	3/16/2016
3002004091	Generation	63	Damage Tolerance Analyses of Grade 91 Steel Welds	Technical Update	3/16/2016
1025326	Generation	63	Guidelines for the Evaluation of Seam-Welded High-Energy Piping	Technical Report	3/16/2016
3002007463	Power Delivery & Utilization	37	Electromagnetic Pulse (EMP) Grid Resiliency: Transmission Vulnerability and Mitigation	Supplemental Project	3/17/2016
1018334	Environment	60	EMF Measurement Video Tutorial on DVD	Technical Update	3/21/2016
3002007575	Power Delivery & Utilization	35	Effects of Cellular Antenna Attachments on Transmission Line Structures	Supplemental Project	3/21/2016
1025394	Environment	60	Factors Affecting the Performance of Medical Devices in the Workplace	Technical Update	3/21/2016
3002002835	Generation	108	Systematic Approach to Reducing Minimum Load	Technical Report	3/22/2016
3002005439	Generation	185	Landfill Leachate Treatment	Supplemental Project	3/24/2016
1025351	Generation	185	Assessment of Water Balance Models	Technical Report	3/24/2016
TR-105568	Generation	63	Corrosion Fatigue Crack Initiation of Boiler Tubes: Effect of Phosphate in Boiler Water	Technical Report	3/27/2016
1017839	Power Delivery & Utilization	180	Distribution Conductor Burndown Test Results	Technical Update	3/27/2016
1017390	Power Delivery & Utilization	1	Lumber-Wood Products - Fuses on Dip Pole Blowing	Case Study	3/27/2016
1017691	Power Delivery & Utilization	180	First Edition Underground Distribution Reference Book	Technical Update	3/27/2016
3002008130	Power Delivery & Utilization		Understanding Maximum Load Capabilities of Polymer Braced Post Insulators	Supplemental Project	3/28/2016
3002007575	Power Delivery & Utilization	35	Effects of Cellular Antenna Attachments on Transmission Line Structures	Supplemental Project	3/28/2016
3002006915	Power Delivery & Utilization		Program on Technology Innovation: Assessment of Flow Battery Technologies for Stationary Applications	Technical Update	3/30/2016
3002007541	Generation		Program on Technology Innovation: Material and Corrosion Experience of Currently Operating Zero Liquid Discharge Wastewater Treatment Systems for Flue Gas Desulfurization Purge Waters	Technical Update	3/30/2016

Product Id	Product Sector	Program Id	Product Description	Product Type	Order Date
3002008247	Generation	77	Characterization of Stack Particulate Matter	Supplemental Project	4/4/2016
3002008246	Generation	77	Demonstration of Alternative for Particulate Matter Continuous Emissions Monitoring Systems (CEMs) Calibration Methods	Supplemental Project	4/4/2016
3002006969	Generation	77	Demonstration of Novel HCl Continuous Monitoring Technologies	Supplemental Project	4/4/2016
3002006358	Generation	64	Field Flow-Accelerated Corrosion Monitoring System	Technical Report	4/4/2016
3002006103	Generation	64	Control of Corrosion in the Steam Turbine Phase Transition Zone (PTZ) Using Filming Amines	Technical Update	4/4/2016
1014295	Generation	87	Circumferential Seam Weld Cracking: An Interim Report	Technical Update	4/7/2016
1024124	Power Delivery & Utilization	35	Proper Construction and Installation of Compression Connectors, Version 1.0	Software	4/12/2016
1014295	Generation	87	Circumferential Seam Weld Cracking: An Interim Report	Technical Update	4/12/2016
3002000386	Power Delivery & Utilization	182	Matching Electric Service Plans to Utility Strategic Goals	Supplemental Project	4/13/2016
3002000386	Power Delivery & Utilization	182	Matching Electric Service Plans to Utility Strategic Goals	Supplemental Project	4/15/2016
3002005757	Power Delivery & Utilization		Program on Technology Innovation: Measuring Customer Preferences for Alternative Electricity Service Plans - An Application of a Discrete Choice Experiment	Technical Update	4/15/2016
3002006317	Power Delivery & Utilization	182	Electricity Service Plan Preferences Estimator Tool KCP&L (ESPP KCP&L) v1.0	Software	4/15/2016
3002004632	Power Delivery & Utilization	D_SG	Kansas City Power & Light Residential Time-of-Use Impact Study: EPRI Smart Grid Demonstration	Technical Update	4/18/2016
3002004639	Power Delivery & Utilization	D_SG	Demand Response Standards and Interoperability: Kansas City Power & Light Smart Grid Demonstration	Technical Update	4/18/2016
1024349	Power Delivery & Utilization	173	Bulk Electricity System Impacts of Distributed and Transmission System Connected Solar PV	Technical Update	4/18/2016
3002006915	Power Delivery & Utilization		Program on Technology Innovation: Assessment of Flow Battery Technologies for Stationary Applications	Technical Update	4/18/2016
3002006373	Power Delivery & Utilization	180	Arc Flash Update for 480-V Network Protectors	Technical Report	4/18/2016
3002005598	Power Delivery & Utilization	180	Medium-Voltage Arc Flash: Switchgear and Live-Front Transformers	Technical Report	4/18/2016
1025741	Power Delivery & Utilization	180	Distribution System Reliability Practices: Noteworthy Practices at DTE Electric	Technical Update	4/18/2016
3002007240	Technology Innovation		Program on Technology Innovation: Emerging Standards and Applications of Wireless Power Transfer	Technical Update	4/18/2016

Product Id	Product Sector	Program Id	Product Description	Product Type	Order Date
3002008672	Power Delivery & Utilization	35	Protective Arrester Overvoltage Control Device	Supplemental Project	4/19/2016
3002007575	Power Delivery & Utilization	35	Effects of Cellular Antenna Attachments on Transmission Line Structures	Supplemental Project	4/19/2016
1025856	Power Delivery & Utilization	182	Understanding Electric Utility Customers -- Summary Report	Technical Update	4/19/2016
3002006477	Power Delivery & Utilization	182	Characterizing Residential Customer Preferences for Electricity Service Plans: Phase 2	Supplemental Project	4/19/2016
3002005757	Power Delivery & Utilization		Program on Technology Innovation: Measuring Customer Preferences for Alternative Electricity Service Plans - An Application of a Discrete Choice Experiment	Technical Update	4/19/2016
3002004054	Power Delivery & Utilization	18	Total Cost of Ownership for Current Plug-in Electric Vehicles: Update to Model 2013 and 2014 Model Year Vehicles	Technical Update	4/20/2016
3002004860	Power Delivery & Utilization		Application Programming Interfaces for a Smart Grid Open Application Platform	Technical Update	4/22/2016
3002006098	Generation	73	Guidelines for Speciated Mercury Field Measurements	Technical Update	4/22/2016
3002006042	Generation	79	Laboratory Testing Guidelines for Gas Turbine Selective Catalytic Reduction (SCR) and CO Catalysts	Technical Update	4/22/2016
3002006156	Generation	75	SCR Mercury Oxidation Data to Support MATS Mercury Compliance, 2015 Update	Technical Update	4/22/2016
3002007073	Generation	75	Low-Temperature Mercury Oxidation Catalyst Technology Update	Technical Update	4/22/2016
3002006856	Power Delivery & Utilization		Update on FAA Regulations on Unmanned Aircraft Systems: An EPRI White Paper	Technical Update	4/22/2016
3002006386	Generation		MATS (Mercury and Air Toxics) Control in High SO3 Flue Gas at Georgia Power Plant Bowen	Technical Update	4/22/2016
3002005087	Generation	73	SCR Catalyst Mercury Oxidation Laboratory Testing Guideline – Industry Version	Technical Update	4/22/2016
3002003406	Generation	75	SCR Mercury Oxidation Data to Support MATS Mercury Compliance	Technical Update	4/22/2016
3002001437	Generation	73	Emissions Tradeoffs Between Boiler Operations and a Selective Catalytic Reduction System: Field Test Results and Analysis of Different Operating Scenarios for an 850-MW Opposed-Wall Design Unit	Technical Update	4/22/2016
1025075	Generation	176	Demonstration Development Project: Evaluation of a Test Loop to Demonstrate Handling Properties of Liquid CO2-Coal Slurry	Technical Update	4/22/2016
3002007208	Generation	75	FGD Chemistry and Analytical Methods Handbook: Volume 2, Chemical and Physical Test Methods (Revision 3)	Technical Update	4/22/2016
3002006154	Generation	75	Air Toxics Control by Wet FGD Systems: 2015 Technical Update	Technical Update	4/22/2016
3002006153	Generation	75	Utility Pulse Jet Baghouse Performance 2015 Update: Studies at Plant Bowen Pilot	Technical Update	4/22/2016

Product Id	Product Sector	Program Id	Product Description	Product Type	Order Date
3002006099	Generation	75	ESP Upgrades and Optimization: Operating Under MATS Conditions	Technical Update	4/22/2016
3002006155	Generation	75	Mercury and Air Toxics Control 2015 Update	Technical Update	4/22/2016
3002006157	Generation	75	Halogen Addition for Mercury Control and Related Balance-of-Plant Issues	Technical Update	4/22/2016
1023928	Generation	73	Investigation of Catalyst Deactivation from Operation Below the Minimum Operating Temperature	Technical Update	4/24/2016
1004001	Generation	65	Maintaining Lube Oil System Cleanliness in Motor Bearing Applications	Technical Report	4/28/2016
1017471	Generation	63	Field Guide: Boiler Tube Failure	Technical Update	4/29/2016
1018996	Generation	63	Field Guide: Pocket Outage Inspection Manual	Technical Update	4/29/2016
1022491	Environment	54	Closed-cycle Retrofit Study	Technical Report	5/2/2016
TR-102433-V1	Generation	63	Boiler Tube Failure Metallurgical Guide, Volume 1: Technical Report	Technical Report	5/4/2016
3002002516	Environment	59	Estimating Total Ammonia Emissions from Stationary Power Plants, 2014 Update	Technical Update	5/9/2016
1020245	Generation	64	Boiler and Turbine Steam and Cycle Chemistry Newsletter, October 2009	Newsletters	5/9/2016
1015657	Generation	64	Cycling, Startup, Shutdown, and Layup Fossil Plant Cycle Chemistry Guidelines for Operators and Chemists	Technical Report	5/9/2016
1007309	Generation	71	Condenser Performance Monitoring Practices	Technical Update	5/10/2016
GS-6427	Generation	65	Hydraulic Transients in Cooling-Water Systems	Technical Report	5/10/2016
CS-5729	Generation	65	Condenser Performance Test and Back-Pressure Improvement	Technical Report	5/10/2016
1013462	Generation	65	Turbine-Generator Auxiliary Systems, Volume 2: Turbine Steam Seal System Maintenance Guide	Technical Report	5/10/2016
3002004115	Power Delivery & Utilization	199	Marketing and Program Development for Deployment of Electrification Technologies	Supplemental Project	5/10/2016
3002004112	Power Delivery & Utilization	199	Electrification Portfolio Assessment	Supplemental Project	5/10/2016
1024665	Generation	65	Field Demonstration of Low-Pressure Turbine Blade Vibration Monitoring	Technical Report	5/13/2016
1024665	Generation	65	Field Demonstration of Low-Pressure Turbine Blade Vibration Monitoring	Technical Report	5/13/2016

Product Id	Product Sector	Program Id	Product Description	Product Type	Order Date
3002003529	Power Delivery & Utilization	199	Electrification Initiative: Kansas City Power & Light (KCP &L) Case Study Report	Technical Report	5/17/2016
3002003529	Power Delivery & Utilization	199	Electrification Initiative: Kansas City Power & Light (KCP &L) Case Study Report	Technical Report	5/18/2016
3002004761	Power Delivery & Utilization	18	Open Platform for Plug-in Vehicleâ€™Grid Integration	Supplemental Project	5/19/2016
3002005994	Power Delivery & Utilization	18	Open Vehicle-Grid Integration Platform â€™ Unified Approach to Grid / Vehicle Integration: Definition of Use Case Requirements	Technical Update	5/19/2016
3002004037	Power Delivery & Utilization	18	Open Vehicle-Grid Integration Platform: Phase 1 Development Update	Technical Update	5/19/2016
3002004860	Power Delivery & Utilization		Application Programming Interfaces for a Smart Grid Open Application Platform	Technical Update	5/19/2016
1013781	Power Delivery & Utilization	18	Plug-in Hybrid Electric Vehicles and Petroleum Displacement: A Regional Economic Impact Assessment	Technical Update	5/19/2016
3002006880	Power Delivery & Utilization	18	Environmental Assessment of a Full Electric Transportation Portfolio, Volume 3: Air Quality Impacts	Technical Report	5/19/2016
3002006875	Power Delivery & Utilization	18	Environmental Assessment of a Full Electric Transportation Portfolio, Volume 1: Background, Methodology, and Best Practices	Technical Report	5/19/2016
3002006876	Power Delivery & Utilization	18	Environmental Assessment of a Full Electric Transportation Portfolio, Volume 2: Greenhouse Gas Emissions	Technical Report	5/19/2016
1014295	Generation	87	Circumferential Seam Weld Cracking: An Interim Report	Technical Update	5/23/2016
1019632	Generation	63	Guide for Piping Stress Analysis and Assessment	Technical Update	5/23/2016
3002004639	Power Delivery & Utilization	D_SG	Demand Response Standards and Interoperability: Kansas City Power & Light Smart Grid Demonstration	Technical Update	5/24/2016
3002004632	Power Delivery & Utilization	D_SG	Kansas City Power & Light Residential Time-of-Use Impact Study: EPRI Smart Grid Demonstration	Technical Update	5/24/2016
3002003529	Power Delivery & Utilization	199	Electrification Initiative: Kansas City Power & Light (KCP &L) Case Study Report	Technical Report	5/24/2016
3002005263	Power Delivery & Utilization		Practical Considerations for Designing and Implementing Experiments Involving Customers and Enabling Devices: Lessons Learned from EPRIâ€™s Smart Thermostat Collaborative Project	Technical Update	5/24/2016
1026444	Power Delivery & Utilization	177	Case Study on Customer Acceptance and Technology Adoption: Kansas City Power & Light	Technical Update	5/24/2016
1023790	Environment	59	Estimating Total Sulfuric Acid Emissions from Stationary Power Plants	Technical Update	5/24/2016
3002000916			EPRI Journal, Spring 2013	EPRI Journal	5/26/2016
1023928	Generation	73	Investigation of Catalyst Deactivation from Operation Below the Minimum Operating Temperature	Technical Update	5/26/2016

Product Id	Product Sector	Program Id	Product Description	Product Type	Order Date
3002005738	Generation	108	Mission Profile Working Group	Supplemental Project	5/26/2016
3002004860	Power Delivery & Utilization		Application Programming Interfaces for a Smart Grid Open Application Platform	Technical Update	6/1/2016
3002001853	Technology Innovation		Breakthrough Technology: Transmission Line Inspection Robot for Condition-Based Asset Management	Fact Sheet	6/2/2016
1021876	Power Delivery & Utilization	35	Emerging and Future Inspection of Overhead Transmission Lines	Technical Update	6/2/2016
1002008	Power Delivery & Utilization	35	Transmission Line Inspection and Assessment: Learning Needs Analysis	Technical Update	6/2/2016
1011361	Power Delivery & Utilization	35	Electrical Condition Assessment of Polymer Insulators for Live Working: Progress Reports for the Development of a Portable Tester	Technical Report	6/2/2016
3002006050	Power Delivery & Utilization	199	Electrification Knowledge Base: Summary and 2015 Updates	Technical Update	6/2/2016
3002005805	Power Delivery & Utilization	18	Electric Forklifts	Case Study	6/2/2016
3002007373	Power Delivery & Utilization	35	Program on Technology Innovation: Innovative Cathodic Protection Application for Transmission Tower Concrete Foundations	Technical Update	6/6/2016
3002007576	Power Delivery & Utilization	35	Evaluation of Advanced Coating Systems for Transmission Line Structures	Supplemental Project	6/6/2016
3002007463	Power Delivery & Utilization	37	Electromagnetic Pulse (EMP) Grid Resiliency: Transmission Vulnerability and Mitigation	Supplemental Project	6/6/2016
3002007575	Power Delivery & Utilization	35	Effects of Cellular Antenna Attachments on Transmission Line Structures	Supplemental Project	6/6/2016
3002008110	Nuclear	41.07.01	Severe Accident Uncertainty Analysis in Real Time Using MAAP5	Technical Report	6/6/2016
3002008679	Power Delivery & Utilization	35	Understanding Maximum Load Capabilities of Polymer Braced Post Insulators	Supplemental Project	6/6/2016
3002008798	Power Delivery & Utilization	18	Pepco Demand Management Pilot for Plug-In Vehicle Charging in Maryland: Final Report--Results, Insights, and Customer Metrics	Technical Update	6/6/2016
3002007871	Generation		Program on Technology Innovation: Application of Advanced Concrete Technology in Tall Wind Towers	Technical Report	6/6/2016
3002007543	Environment	49	Relative Impact Framework for Evaluating Coal Combustion Residual Surface Impoundment Closure Options	Technical Report	6/6/2016
3002007544	Environment	49	Relative Impact Framework Application for a Hypothetical Coal Combustion Residual Surface Impoundment	Technical Report	6/6/2016
3002008737	Environment		Program on Technology Innovation: Demand Response and Behind-the-Meter Generator Scoping Study	Technical Report	6/6/2016
TR-100137	Generation	75	EPRI High-Sulfur Test Center Report: Factors in Limestone Reagent Selection	Technical Report	6/6/2016

Product Id	Product Sector	Program Id	Product Description	Product Type	Order Date
3002002835	Generation	108	Systematic Approach to Reducing Minimum Load	Technical Report	6/6/2016
3002001180	Generation	63	Effect of Flexible Operation on Boiler Components: Theory and Practice, Volume 1: Fundamentals	Technical Update	6/7/2016
3002003313	Generation	63	Effect of Flexible Operation on Boiler Components: Theory and Practice: Volume 2: Water-Touched Components	Technical Update	6/7/2016
1023830	Generation	63	Damage to Utility Boilers by Cycling and Flexible Operation: Report on the State of Knowledge	Technical Update	6/7/2016
3002000045	Generation	108	Primer on Flexible Operations in Fossil Plants	Technical Report	6/7/2016
1001507	Environment	178	Damage to Power Plants Due to Cycling	Technical Report	6/7/2016
1020504	Power Delivery & Utilization	18	Electric Vehicles: Characterizing Consumers' Interest and Infrastructure Expectations	Technical Update	6/8/2016
3002007495	Power Delivery & Utilization	18	Plug-In Electric Vehicle Multi-State Market and Charging Survey	Technical Update	6/8/2016
3002007240	Technology Innovation		Program on Technology Innovation: Emerging Standards and Applications of Wireless Power Transfer	Technical Update	6/8/2016
3002001263	Generation	65	Impact of Minimum Load Operation on Steam Turbines	Technical Report	6/8/2016
3002003555	Generation	65	Turbine Water Induction Protection System: Owner's Guide	Technical Report	6/8/2016
1021406	Generation	65	Short-Term Shutdown Guidance for Steam Turbine-Generators and Auxiliary Systems	Technical Report	6/8/2016
1004554	Generation	65	Electrohydraulic Control (EHC) Fluid Maintenance Guide	Technical Report	6/8/2016
1025331	Generation	65	Turbine Generator Auxiliary Systems Volume 1: Turbine Generator Lubrication System Maintenance Guide -- 2012 Update	Technical Report	6/8/2016
3002007373	Power Delivery & Utilization	35	Program on Technology Innovation: Innovative Cathodic Protection Application for Transmission Tower Concrete Foundations	Technical Update	6/13/2016
3002008679	Power Delivery & Utilization	35	Understanding Maximum Load Capabilities of Polymer Braced Post Insulators	Supplemental Project	6/13/2016
3002008867	Generation	77	Alternative Particulate Matter Continuous Emissions Monitoring Systems (CEMs) Calibration Methods: Portable PM Monitor Calibration System	Supplemental Project	6/14/2016
3002006955	Nuclear		Program on Technology Innovation: Data Science Emergence and Relevance to EPRI Research and Member Utilities	Technical Report	6/14/2016
1024128	Power Delivery & Utilization	35	Degradation Modes of Composite Crossarms and Poles, Desk Study	Technical Update	6/14/2016
1021995	Power Delivery & Utilization	180	Distribution Composite Crossarm Laboratory Testing	Technical Update	6/14/2016

Product Id	Product Sector	Program Id	Product Description	Product Type	Order Date
3002004482	Generation	87	Well-Engineered Weld Repair of Grade 91 Steel: Welding Procedure Qualification to ASME B&PV Code Section IX and Supporting Data for Alternative Weld Repair Procedures	Technical Report	6/21/2016
3002007320	Generation	87	An Informed Perspective on the Use of Hardness Testing in an Integrated Approach to the Life Management of Grade 91 Steel Components	Technical Update	6/21/2016
3002000082	Generation	63	Life Management of Creep Strength Enhanced Grade 91 Steel: Damage Calculator	Technical Update	6/21/2016
1026584	Generation	87	Creep Strength-Enhanced Ferritic (CSEF) Steel Welding Guide	Technical Report	6/21/2016
3002006390	Generation	87	Guidelines and Specifications for High-Reliability Fossil Power Plants, 2nd Edition: Best Practice Guideline for Manufacturing and Construction of Grade 91 Steel Components	Technical Report	6/22/2016
3002006390	Generation	87	Guidelines and Specifications for High-Reliability Fossil Power Plants, 2nd Edition: Best Practice Guideline for Manufacturing and Construction of Grade 91 Steel Components	Technical Report	6/24/2016
3002008038	Generation	69	Pump Virtual Sensors Project: Final Report	Technical Report	6/27/2016

2015 REPORT:

EPRI'S CONTRIBUTION TO THE PUBLIC BENEFIT

The Electric Power Research Institute, Inc. (EPRI) conducts research and development relating to the generation, delivery, and use of electricity for the benefit of the public. An independent, nonprofit organization, EPRI brings together its scientists and engineers as well as experts from academia and industry to help address challenges in electricity, including reliability, efficiency, affordability, health, safety, and the environment. EPRI also provides technology, policy, and economic analyses to drive long-range research and development planning, and supports research in emerging technologies.

EPRI members represent 90% of the electric utility revenue in the United States with international participation in 35 countries. EPRI's principal offices and laboratories are located in Palo Alto, Calif.; Charlotte, N.C.; Knoxville, Tenn.; and Lenox, Mass.

Areas of Focus

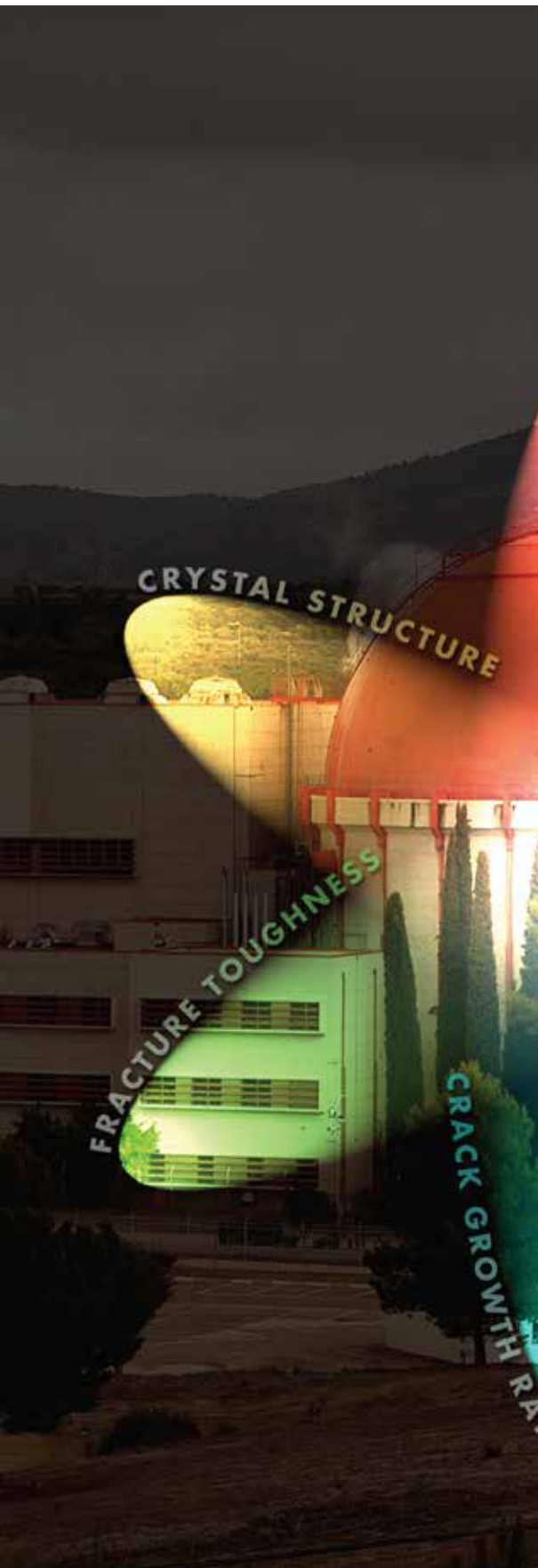
EPRI's collaborative research, development, and demonstration projects help solve specific, near-term problems while addressing long-range strategic challenges. Our research can help mitigate risks and contribute substantially to keeping electricity safe, reliable, efficient, affordable, and environmentally responsible.

Environment

EPRI's environment research provides global thought leadership to shape a sustainable future for electricity through collaborative environmental science and technology research. EPRI Environment conducts cross-cutting research addressing environmental, health, and economic issues from the generation, delivery, and use of electricity. Research focuses on air, land, water, and energy challenges; informs public policy; enables sustainable practices; and improves occupational health and safety.

Generation

EPRI's generation research provides information, processes, and technologies to improve the flexibility, reliability, performance, and efficiency of the existing fossil-fueled and renewable energy generating fleet. These advances will play a critical role in a low-emissions, water-constrained future, enabling utilities to improve current assets and build new, more efficient generating units with advanced technologies that reduce fuel and water consumption; limit emissions; enhance performance, efficiency, and reliability; and enable assets to better respond to changing demands in operations.



Nuclear

EPRI conducts research supporting the safe, reliable, cost-effective, and environmentally responsible use of nuclear power as a generation option. Through global collaboration with nuclear power plant operators, regulatory agencies, and other research organizations, EPRI develops cost-effective technologies, technical guidance, and knowledge transfer tools that help maximize the value of existing nuclear assets and inform the deployment of new nuclear technology.

Power Delivery and Utilization

EPRI's transmission and power delivery and utilization research focuses on technology to enhance the safety, reliability, and resiliency of the bulk power delivery system—connecting load centers and bulk generating stations—and technology to improve the delivery and utilization of electricity from the substation to the end user. Areas of research include smart grid, electric transportation, distribution, cyber security, and energy utilization.

Technology Innovation

EPRI's Technology Innovation program maintains a pipeline of emerging knowledge and technology to support power system transformation. By exploring early-stage, advanced R&D concepts, the program looks across the energy landscape at what will be valuable to EPRI members five to 10 years down the road. The Technology Innovation program is integral to EPRI's R&D portfolio, through which technical experts manage its programs to provide thought leadership, foster innovation, and accelerate the development of new knowledge and technology for commercial application.

EPRI's Articles of Incorporation establish how EPRI fulfills its public benefit mission to conduct and sponsor industry research and development relating to electricity generation, transmission, distribution, and utilization for the benefit of the public.

They require the institute to sponsor scientific R&D with a goal of providing economical, reliable electric service to the public with minimal adverse environmental effects, and to seek solutions to environmental challenges confronting the industry.

Through scientific study, EPRI is to discover and develop ways to protect, conserve, and maximize the efficient utilization of finite natural resources used by the industry, and to share those findings with organizations, people and stakeholders both public and private.

Finally, EPRI should provide forums for coordination and cooperation and for the exchange of information related to electric power scientific R&D, and to publicly disseminate information and data about its research activities.

To review EPRI's Articles of Incorporation click on this link: <http://www.epri.com/AboutUs/Pages/Governance.aspx>

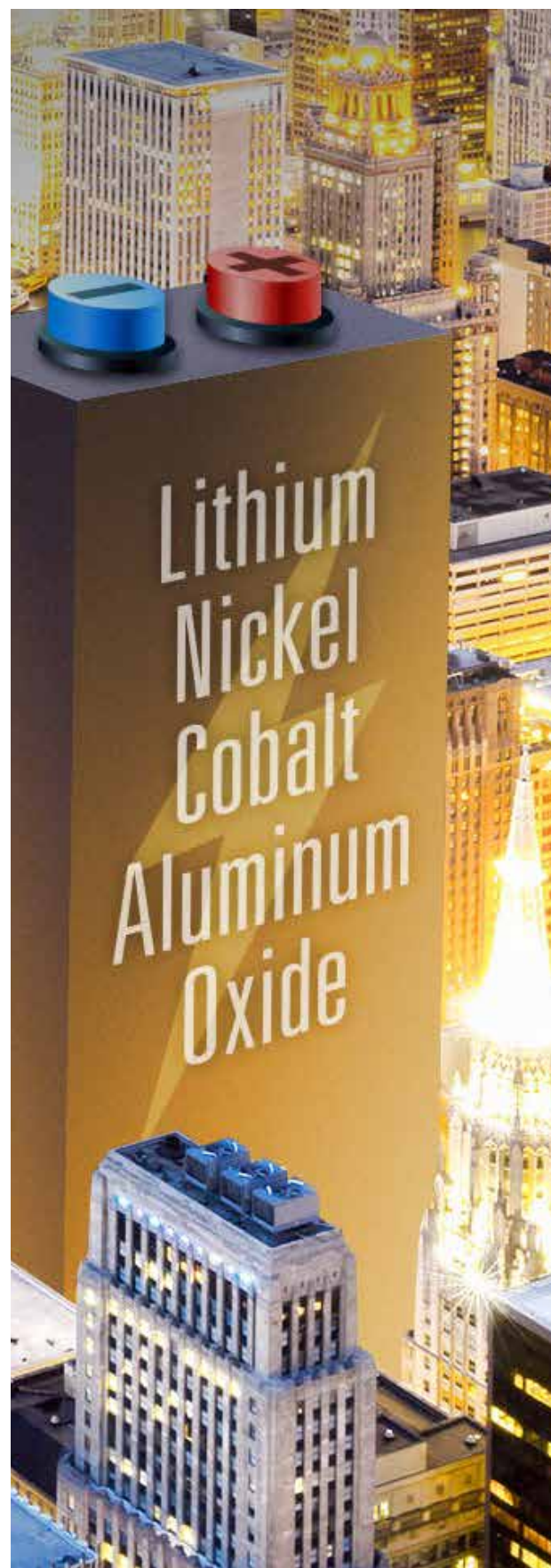
This report summarizes EPRI's stakeholder and communications outreach, which it conducts as part of its public interest mission.

Three key attributes of EPRI's work are:

- **Global Collaboration:** To deploy thought leadership and industry expertise, and provide the benefits of pooled resources, shared knowledge and diverse perspectives.
- **Thought Leadership:** Look at the big picture and the long term to identify and address key issues and challenges.
- **Industry Expertise/Science & Technology Innovation:** Bring together the expertise, experience, knowledge, and know-how to define and conduct the necessary R&D.

This report reviews:

1. EPRI's outreach in communicating key issues and R&D findings to federal/state/international legislators, regulators, and other stakeholders.
2. Technical and scientific information provided to inform policymakers and the energy sector.
3. Major R&D projects that support electric utilities/companies in providing electricity that is affordable, reliable and environmentally responsible. These may include direct and indirect benefits realized through the performance of individual electricity organizations, many of which are EPRI members.



2015 Outreach to Regulators, Legislators and Other Stakeholders

EPRI's 2015 outreach focused on federal/state legislative and regulatory branches of government, as well as increasing EPRI's exposure in non-traditional communities. Growing membership outside the United States has increased EPRI's exposure to electric utility stakeholders and regulators in diverse regions. Global dissemination of timely, accurate technical communications becomes more critical as energy and environmental policy issues assume global dimensions.

Three examples:

EPRI's Integrated Grid analysis continued to receive significant attention. Following the 2014 publication of the concept paper, the *Integrated Grid Benefit-Cost Framework* was released at the February 2015 NARUC Conference, at which NARUC's Board of Directors unanimously approved a resolution commending the analysis and communications outreach. Requests immediately followed for briefings on the benefit-cost framework. Mike Howard was invited by U.S. Senate Energy and Natural Resources Committee Chair, Lisa Murkowski, to open the first of several hearings on grid modernization prior to her introduction of comprehensive energy policy legislation. As in 2014, EPRI received invitations to present its new findings at all five NARUC regional meetings, as well as at individual state public utility commissions. Numerous requests were also received to brief state legislators at the individual state or regional levels.

Also dominating 2015 policy and regulatory considerations was the August announcement of final regulations relative to EPA's Clean Air Act Section 111 (b), 111 (d), and Federal Implementation Plan regarding 111 (d). Considerable interest was expressed in EPRI's *Energy, Environment and Economic Analysis—REGEN model* used in many cross-sector applications, including the institute's Clean Power Plan analysis. To assist state regulators, legislators, and energy/environmental officials in their understanding and possible development of State Implementation Plans, EPRI provided technical briefings to its Advisory Council, national electricity trade associations, non-governmental organizations (NGOs), and in public state venues.

Q4 briefings were held for federal agencies, NGOs, and national electricity trade associations, on *The Road from Paris: The Potential Value of International Emissions Trading Partnerships in Implementing Current and Future Pledges*. This preliminary analysis examined two questions in anticipation of COP21: 1) What might the Intended Nationally Determined Contributions (INDC) pledges mean for global greenhouse gas (GHG) emissions and climate change? 2) What is the value of achieving those commitments if countries engage in international emissions trading?

The Integrated Grid, REGEN analysis, and International Energy & Environmental Assessment are three of many examples where EPRI's technical work contributed relevant information on significant matters, fulfilling its public benefit mission.

2015 highlights:

Federal Executive Branch

- Following recognition of EPRI's contributions to the U.S. Department of Energy's Quadrennial Energy Review, and Quadrennial Technology Review—both issued in 2015—EPRI initiated outreach to the department regarding its second installment: QER 1.2, scheduled for publication in Q4 2016.
- EPRI briefed several agencies, including the U.S. State Department, EPA, CEQ, and DOE, on its International Assessment of Greenhouse Gas Emissions pledges, in anticipation of COP21.
- Rob Manning and Barbara Tyran briefed FERC Chairman Norman Bay and staff on EPRI's research portfolio, including HVDC, cyber security, and reliability.
- Ron Schoff presented the Integrated Grid at the DOE Energy Information Administration Annual Conference.

Congress

- Mike Howard testified before the U.S. Senate Committee on Energy and Natural Resources on EPRI's Integrated Grid.
- Rich Lordan testified before House Science Subcommittees on Energy and Oversight on "Examining Vulnerabilities of America's Power Supply", primarily focused on geomagnetic disturbances and electromagnetic pulse.
- Annabelle Lee testified before House Science Subcommittees on Energy and Research & Technology on cybersecurity for power systems.
- Mike Howard briefed House Grid Innovation Caucus staff on the Integrated Grid.

National Association of Regulatory Utility Commissioners (NARUC) Conferences

- Mike Howard launched EPRI's *Integrated Grid Benefit-Cost Framework* at the February NARUC Conference.
- Mike Howard, Ben York, and Barbara Tyran provided nationwide briefing to state commissioners/staff on the *Integrated Grid Benefit-Cost Framework*.
- NARUC Board of Directors approved a resolution commending EPRI's Integrated Grid technical analyses and communications outreach.





- Jessica Fox briefed NARUC/state public utility commission staffs on sustainability and provided an update to the NARUC Water Committee on EPRI's Water Quality Trading program.
- Integrated Grid presentations were delivered at all five regional conferences: MACRUC (Mark McGranaghan); SEARUC (Mark Duvall); NECPUC (Barbara Tyran); MARC (Bernie Neenan relative to demand response), Clark Gellings (relative to distributed generation); WCPSC (Hank Courtright).
- Three state commissions Integrated Grid briefings: Wisconsin (Ben York and Barbara Tyran); North Carolina (Ron Schoff and Barbara Tyran); Pennsylvania ("Post-COP21 International/U.S. Clean Power Plan Implications, Electric Sector's Role in Economy-wide Emission Reductions, 21st Century Technologies") (Anda Ray and Barbara Tyran).

International Outreach – Key Presentations

- Arshad Mansoor – "Integrated Grid" to Global Sustainable Electricity Partnership (GSEP).
- Hank Courtright – "Encouraging Innovations in Energy Markets" at World Forum on Energy Regulation; "Consumer Behavior: Lessons from the U.S." at CEER Customer Conference.
- Barbara Tyran – "Integrated Grid" at Canadian Association of Members of Public Utility Tribunals (CAMPUT).
- Acher Mosse – "Energy Storage Technologies" to GSEP working group.

State Government Outreach – Key Presentations

- Anda Ray – "Challenges and Opportunities for Electric Industries in the 21st Century" at Kentucky Governor's Energy Conference.
- Integrated Grid to: Council of State Governments, Montana State Senate Energy Committee, state stakeholders (Barbara Tyran); National Governors Association Energy Policy Institute (Ron Schoff); Legislative Energy Horizon Institute, PNWER (Robin Bedilion); National Conference of State Legislators Annual Legislative Summit (Jeff Roark); Kentucky Distributed Energy Workshop (Ben Kaun).

Energy Stakeholder Outreach – Key Presentations

- Mike Howard – EPRI's *Integrated Grid Benefit-Cost Framework* at USEA Annual State of the Energy Industry Forum.
- Mike Howard – "Advancing Energy Technologies" jointly with ARPA-E Director Ellen Williams at ICF Energy Briefing Series.
- Mike Howard and Mark Duvall participated in EPRI-NRDC National Press Club event to release joint report *Environmental Assessment of a*

Full Electric Transportation Portfolio.

- Mike Howard – "Integrated Grid" Update at EEI CEO Conference.
- Arshad Mansoor – "Integrated Grid" at EEI Convention.
- Rob Chapman – "Integrated Grid" at IBEW Annual Conference.
- David Porter – "Integrated Grid" at APPA National Conference.
- Barbara Tyran – "Evolving Distribution Systems" at Center for Public Utilities Current Issues Conference.
- Mark McGranaghan – "Integrated Grid and IT" at IEEE PES General Meeting.
- Omar Siddiqui – two Alliance to Save Energy events: 1) Energy Efficiency Technologies at EE Global Forum; 2) Energy Efficiency at Energy 2030 on the Road.
- Bill Gould – "Integrated Grid" to Mid-Atlantic Distributed Resources Initiative (MADRI).
- Barbara Tyran – "Integrated Grid" at Public Utilities Fortnightly conference at National Press Club.

Association of State Energy Research and Technology Transfer Institutes (ASERTTI)

- Barbara Tyran served as Vice President-Research on ASERTTI's Board of Directors and coordinated an EPRI presentation on advanced manufacturing.

National Association of State Energy Officials (NASEO)

- Barbara Tyran was Co-Chair of NASEO Affiliates, and presented "Integrated Grid" at NASEO Energy Policy Outlook Conference.
- Galen Rasche presented "IT Security and Privacy in an Interconnected, Intelligent Efficiency World" at the NASEO fall meeting.
- Barbara Tyran provided electric transportation briefing at the NASEO Western Conference.

Other State Affiliations

- Barbara Tyran served on Advisory Council: 1) Center for Public Utilities, Santa Fe, NM; 2) Maryland Clean Energy Center.



Media Relations and Outreach to the Public Benefit



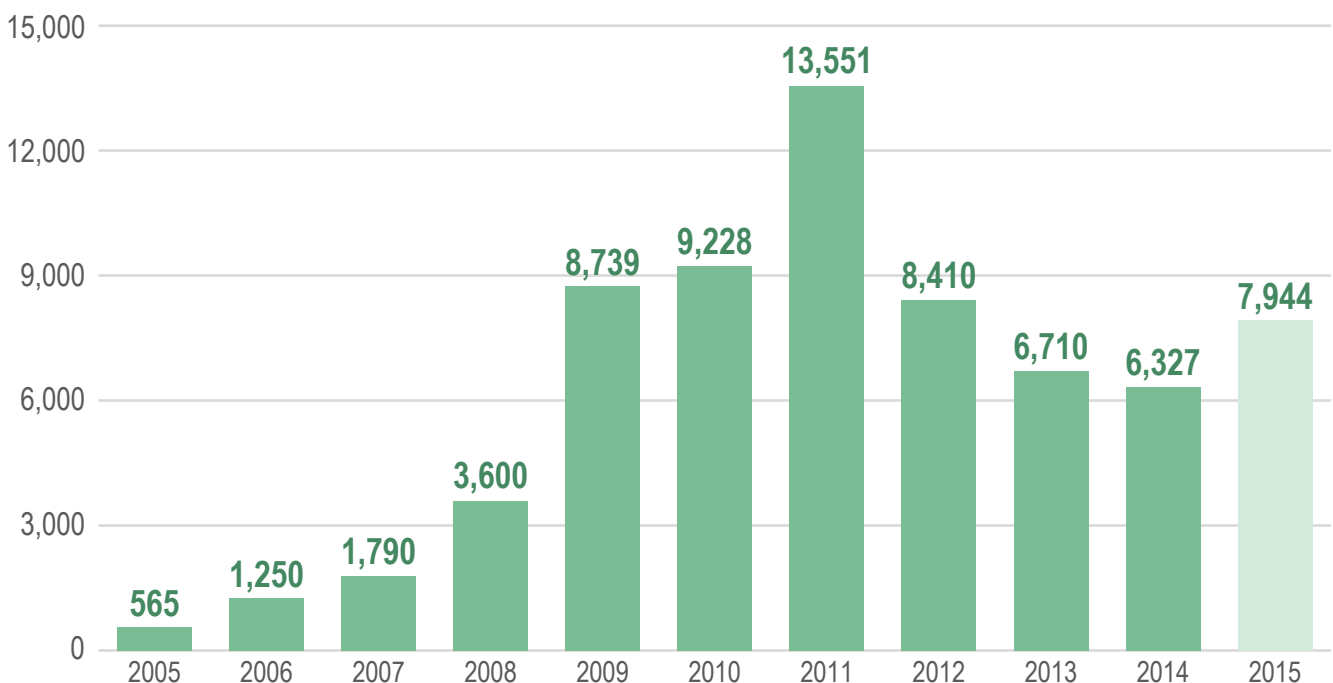
Mass media are critical to EPRI in informing the public, regulators, governments, and other stakeholders about key research and industry issues. Success of EPRI's media outreach and engagement can be measured by coverage of diverse issues spanning EPRI's research portfolio. EPRI research and experts are frequently cited or referenced in newspapers, technical journals, magazines, and broadcast outlets. This results from the effective working relationships of the media relations team with organizations that value EPRI's objective, scientific, and technical information.

EPRI Media Relations maintains strong working relationships with high-impact energy and science reporters at *The Wall Street Journal*, *The New York Times*, *EnergyBiz*, *Associated Press*, *NPR*, *Energy Daily*, *MIT Technology Review*, *CleanTechnica*, *Wall Street Journal*, and *IEEE Spectrum*, among others. In 2015, Media Relations issued 25 press releases and advisories; 12 EPRI Communications Spotlights, a monthly compilation of key media hits and social media metrics; 29 white papers and public reports; conducted 32 in-person informational briefings with EPRI researchers and executives; facilitated about 279 individual interviews; and hosted or co-hosted 5 national media conference calls. More than 113 papers and background information were distributed in response to media requests.

Our 2015 Numbers: EPRI's media hits reached 7,944, up 26% from 2014's 6,327. Our 2015 results represented a three-year high, with

Media Relations by the Numbers

Number of News Clips Per Year



significant traction from the Integrated Grid work, the EPRI-NRDC report, battery storage, nuclear plant operations, physical grid and cyber security protection, and the Clean Power Plan. A good deal of the coverage was driven by officer and staff engagement with international media in the European Union, Asia, and Southern Africa. Our international hits reached 20.55%, compared with 9%—a 120% year-over-year increase.

Hot Issues: The “Hot Issues” category compiles EPRI mentions, citations, and quotes in media as they relate to key industry issues. “Energy Efficiency (EE)” accounted for about one-fifth of EPRI’s 2015 media hits. This broad category includes topics such as improving the heat rate in fossil generation, variable-speed motor drives, programmable thermostats, and the impact of building code efficiency standards in lowering demand. “Electric Vehicle” results (14.3%) were driven by the impact EVs may have on a more integrated grid and by the EPRI-NRDC Report on the environmental impact of widespread adoption of electric transportation; “Nuclear Power/Nuclear Plant” (at 21.4%) was pushed by EPRI’s long-term operations and decommissioning involvement at Fukushima and San Onofre generating stations; The “Electric Grid” (5.0%) was heavily driven by the Integrated Grid work, especially related to renewables and the grid; and coverage of “Solar

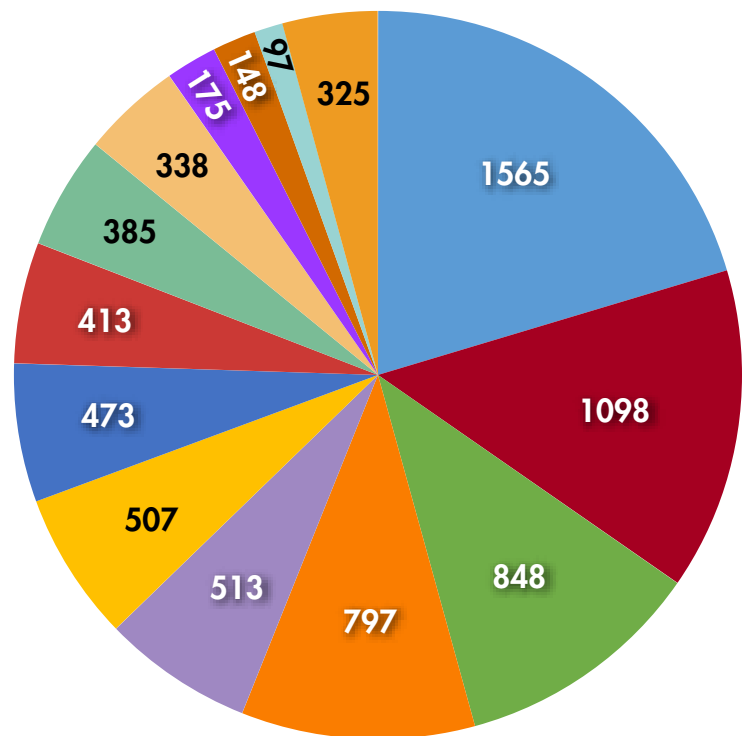


EPRI’s Annabelle Lee discussing efforts to address cyberthreats facing E.U. countries (E&E TV)

The Hot Issues in 2015

January 1 – December 31

- Energy Efficiency (20.4%)
- Electric Vehicle (14.3%)
- Nuclear Power (11.0%)
- Nuclear Plant (10.4%)
- Solar Power (6.7%)
- Air Issues (6.6%)
- Global Climate Change (6.2%)
- Wind Power (5.4%)
- Electric Grid (5.0%)
- Battery Storage (4.4%)
- CO₂ Capture (2.3%)
- Carbon Sequestration (1.9%)
- Ocean Energy (1.3%)
- Other (4.2%)





Power", "Air Issues", "Global Climate Change" and "Wind Power" (25%). Coverage of these issues was influenced by the COP21 in Paris and the Clean Power Plan.

Following are examples of EPRI's contributions to the "Hot Issues" in the industry (medium, headline, and summary):

Energy Efficiency

- *Science Daily* – "Thin Coating on Condensers Could Make Power Plants More Efficient" – The improvement in condenser heat transfer could lead to an overall improvement in power plant efficiency of 2% to 3%, enough to make a significant dent in global carbon emissions.
- *Forbes* – "This Earth Day Let's Start Using Analytics to Conserve Energy" – EPRI estimates the average energy bill will jump by 400% by 2050 if smart grids aren't deployed.

Electric Vehicles

- *Forbes* – "Why the Rise in Electric Cars and a Cleaner Grid is a Good Thing" – EPRI and NRDC report shows why electric cars and renewable energy generation will benefit the environment.
- *CNN* – "About Greener Driving" – A broadcast segment focused on the air quality impact of electric vehicles.

Electric Grid

- *Public Utilities Fortnightly* – "Getting Smart About the Integrated Grid" – A detailed commentary that makes the case for EPRI's Integrated Grid.
- *Greentech Media* – "Beyond Energy: Making the Distributed Grid Capacity Efficient"— This story examined EPRI's energy versus capacity concept.
- *NRDC Switchboard* – "A New Tool to Assess the Cost and Benefits of Distributed Energy" – This article was based on EPRI's assessment of the value of DER related to the Integrated Grid.
- *E&E News* – "Technology—A Missing Building Block in the Clean Power Plan" – This article examined EPRI's assessment of the impact of the Clean Power Plan on the industry.

Nuclear Plant/Nuclear Power

- *CNBC* – "No More Nukes? How About 80 Years of Them" – The network examined EPRI's role in looking at the viability of extending nuclear plant operating licenses out to 80 years.
- *Forbes* – "Who Says Nuclear Can't Smooth Out Erratic Wind?" The magazine looked at EPRI's work on flexible operations of nuclear plants.

- *Los Angeles Times* – “Edison Looks Into Best Dry Storage Options for San Onofre Nuclear Waste.” The newspaper cited EPRI’s assessment of the integrity of spent fuel canisters.

Solar Power

- *MIT Technology Review* – “Solar Thermal Power Heats Up Outside the US” – EPRI foresees a decline in the cost of solar thermal.
- *The New York Times* – “David Crane Leaves NRG” – Anda Ray comments on the utility business model.
- *Yahoo Finance* – “EPRI to Lead Research to Maximize Solar and Energy Storage Integration.” This article focused on EPRI research to facilitate integrating renewables onto the grid.

Global Climate Change

- *United Nations Association–UK* – “The New Power Generation 2020” – This was an EPRI commentary about the future of the global generation portfolio.
- *Forbes* – “How a Global Carbon Price is Slipping Through the Back Door” – This article covered EPRI’s idea of a global carbon trading market that was presented in the Paris climate talks.
- *Huffington Post* – “Tough Issues Linger in New Climate Deal Draft” – This story explained the difficulty in implementing an international carbon trading regime proposed by EPRI at the Paris climate talks.

Battery Storage

- *CleanTechnica* – “Energy Storage at an Inflection Point” – This article explored utility-scale storage and the California mandate, and sought an assessment by EPRI.
- *The Wall Street Journal* – “Will Homeowners Shell Out Thousands for Tesla Battery?” The Journal sought EPRI’s expertise to answer this question.
- *CNBC* – “Tesla’s New Bet – A Home Battery to Slash Energy Costs” – EPRI projects a payback period for wall-mounted battery.

EPRI officers played a visible and valuable role in public outreach about our research activities, either by contributing commentaries to publications or by sharing their expertise in media interviews. Among officer contributions were:

During 2015, 65 EPRI employees participated in media interviews as primary or secondary sources of information, providing scientific or technical information in the development of news stories.

EPRI’s media relationships and reputation continue to be reflected in its credibility and coverage. Indicative of EPRI’s credibility in the media is

Los Angeles Times

MIT
Technology
Review

The New York Times

YAHOO!
FINANCE



THE HUFFINGTON POST

Clean
Technica

THE WALL STREET JOURNAL.



The New York Times website, which for the fourth consecutive year lists EPRI among a select group of organizations to which it directs the public for reliable, objective, and credible information about energy and power. Among other organizations listed were the U.S. Department of Energy, the National Academies of Science, and the Council on Foreign Relations.

EPRI.com

EPRI.com is a primary vehicle for public information regarding its work in the electricity sector, and it serves as the gateway to the Member Center. With more than 50,000 visits per week, the site facilitates more than 830,000 publicly available research document downloads annually.

Social Media

Social media is an increasingly important, dynamic news source that guides and influences public discussion of issues. EPRI conducts social media outreach via Facebook, Twitter, LinkedIn and YouTube. Steady increases in subscribers and user interaction reflect EPRI's relevant voice in social media—enhancing its brand and public image for people seeking up-to-date information on the electricity industry quickly, succinctly, and directly.

- YouTube
 - 115 videos with more than 348,050 total views
 - 1,265 subscribers
 - Most watched video: *EPRI Distribution Research Arc Flash*
- Facebook
 - 8,487 Likes (Up 22%)
- Twitter
 - 11,200 Followers (Up 20%)
- LinkedIn
 - 11,572 Followers (Up 44%)

The following section summarizes key EPRI research initiatives in 2015.

Environment

International Climate Policy: EPRI participated in the United Nations Framework Convention on Climate Change (UNFCCC) 21st session of the Conference of the Parties (COP21), held from November 30 to December 11, 2015, in Paris. Three sessions showcased EPRI research and expertise, continuing its long history of involvement in international climate policy. EPRI's presence included an official side event on market mechanisms co-hosted with the Nicholas Institute at Duke University and the International Emissions Trading Association (IETA). The Paris negotiations and domestic policies set the stage for decisions where nations and states decided whether to link with other jurisdictions. This event explored the value and challenges of bilateral and multilateral market mechanisms with new analyses, perspectives, and lessons on implementation. EPRI experts also covered the social cost of carbon (SCC), a monetary estimate of the climate change damages to society from an additional unit of CO₂ emissions. Despite their use in policy to value CO₂ reductions, SCC estimates are difficult to interpret and evaluate. This session offered an in-depth look into the state of current modeling and understanding of potential damages, identifying issues and opportunities relevant to public discussion and future climate research and application. The third session covered international emissions trading markets. Given the scope of the climate challenge, it is important to look beyond economic sectors, national borders, and the near-term to explore potential policy designs and identify measures that could reduce mitigation costs. In addition to considering potential emissions consequences of pledges, session participants explored potential opportunities for international partnerships for emissions trading, characterizing those opportunities, and examining the implications and benefits for society.

ENV-Vision (Environmental Vision – International Electricity Sector Conference): Environmental issues facing the electricity sector are changing as rapidly as the dynamic global economy and evolving regulatory policy. There is an urgent need to anticipate future environmental challenges, identify major science and technology gaps, and design a research approach to enable sustainable and cost-effective solutions to those challenges. The first ENV-Vision Conference was held in 2015 to comprehensively focus on existing and emerging environmental challenges in the electricity sector. There were about 240 attendees at the conference, which attracted leaders, managers, and researchers to promote discussions on electricity sector environmental research and information needs and develop a vision for future electricity

Public Benefit Derived From EPRI's Technology R&D Programs





sector environmental research. The second edition of the conference will build on this success and continue enabling high-level discussions on current and future environmental challenges facing the electricity sector, identifying knowledge gaps, and defining research needed to solve those challenges. The 2016 conference will be held Tuesday, May 10, 2016 – Wednesday, May 11, 2016, at The Watergate Hotel in Washington, DC.

State-Specific Analysis and Research on the Clean Power Plan: The Clean Power Plan, combined with the final regulations on new fossil generation, are expected to significantly alter the mix of assets that generate, transmit, and use electric energy. Billions of dollars are at stake in capital investment and operating costs needed for compliance. The Clean Power Plan holds states responsible for creating implementation plans and provides an array of choices for these plans. These choices set the fundamental structure of the state response (rate-based vs. mass-based greenhouse gas reduction pathways), determine ease of access to cost-saving markets with other states, and impact the likelihood of federal approval of state plans. As the states develop and implement their respective compliance strategies, EPRI is providing comprehensive analyses of how the rules impact the power sector at state and regional levels. EPRI's state-specific analysis identifies and evaluates the key issues relating to state plans while providing a deep understanding of the trade-offs for the state's alternative compliance pathways to better inform compliance policy dialogues. On February 9, 2016, the U.S. Supreme Court temporarily halted implementation of the Clean Power Plan. While this "stay" remains in effect, EPRI will continue to evaluate the economic and system impacts of the Clean Power Plan, possible associated modifications to the rule, and any new proposed policies related to greenhouse gas mitigation. EPRI's ongoing research, in this area, will continue to focus on evaluating the cost-effective approaches to reducing GHG, including the effects of GHG policies on the consumer, the economy, and the power sector.

Endangered and Protected Species Research: Federal wildlife agencies have committed to clear lengthy backlogs of candidate species for listing as threatened or endangered, and the electric power industry, with assets that literally crisscross the country, has deep interests in ensuring that listing decisions are scientifically sound. In response, EPRI is working with the industry and regulators to develop constructive, collaborative approaches to collecting scientific data and advancing research on at-risk species and their habitats. In 2015, EPRI launched a new Endangered and Protected Species Research Program, which has been extremely popular across the industry. This area poses potential risk and cost to the industry with more than 251 potential new listings of

endangered species in 2016 and more than 600 being evaluated. This program develops forward-looking, in-depth studies of methodologies, ecological/spatial models, regulatory developments, and economic implications at the intersection of electric power company (and other commercial) activities and endangered and protected species. Candidate Conservation Agreements with Assurances (CCAAs) are one approach EPRI is evaluating. These negotiated agreements may preclude the need for formal listing, and lower the costs for species' protection, by creating plans to manage an ecosystem to benefit multiple species. A key goal of EPRI's work is development of a collaborative forum in which federal agencies and stakeholders can discuss the critical challenges and opportunities for cooperative actions before listing decisions are made. Workshops have been held with federal officials, helping EPRI identify areas where research can provide the scientific data federal agencies need for their decisions.

Air Quality Regulatory Benefits Assessment Tools Evaluation: EPRI has been conducting research to optimize benefits assessment tools for several years, with the research primarily centered on the Environmental Protection Agency's (EPA's) Benefits Mapping and Analysis Program (BenMAP), the tool most commonly used by the EPA to assess air quality regulatory benefits. Regulatory impact analyses (RIAs) are performed for any proposed EPA regulation that sets limits for air pollutants. RIAs consider both the costs to comply with a proposed standard and the public health benefits gained by compliance. To ensure that cost and benefit assessments of proposed regulations are based on sound science, it is critical that analytic tools employed reflect both the full spectrum of scientific knowledge and the scientific uncertainties around that knowledge. When EPRI examined BenMAP, researchers found it was based on just a few studies and did not adequately account for uncertainties. EPRI's research explored ways to improve the tool and obtain more scientifically sound results, giving the EPA additional information to draw upon in its rule makings and analytic processes. The research was effectively used in official comments to the EPA on various rule makings. This use helps communicate the need for better informed, science-driven improvements to benefit analyses of air quality rule making and standards, and the EPA is engaged with EPRI about ways to improve these assessments.

Generation

Water Management Technologies: Demands to supply water to a growing population are increasing worldwide and are having profound impacts on the use of limited water resources. The electric power industry requires large amounts of water and is frequently subject to





water shortages. It also discharges water that is no longer usable within the power plant, and needs to be able to comply with a wide range of global regulations on discharge limits and for improving water utilization for electricity generation. EPRI's Water Management Technology program identifies, evaluates, and demonstrates cost-effective and reliable treatment technologies. It also evaluates the performance, operability, reliability, and cost of advanced cooling technologies designed to reduce water withdrawal and consumption while minimizing the impact on plant thermal efficiency. Some of the research in both areas is conducted at the Water Research Center (WRC) at Georgia Power's Plant Barry. In 2012, a 14-member EPRI collaborative worked with Southern Company, Georgia Power, and Southern Research (SR) to develop the WRC, which provides generating companies, research organizations, and vendors access to full-scale infrastructure, treatable water, monitoring and analysis facilities, and specialized staff to research advanced cooling water technologies, biological and inorganic wastewater treatments, zero-liquid-discharge options, solid landfill water management, and water conservation.

Flexible Operations: The operating missions of traditional baseload generating units are rapidly changing. They are now being operated more flexibly for load following, low-load operations, rapid ramping, peaking, and more frequent reserve shutdowns. EPRI is working to address a number of challenges related to these new missions — turndown strategies for outputs well below previously established minimums; minimizing emissions controls impacts of low-load operations; boiler impacts of low-load operations; and new plant designs that increase operating flexibility and minimize cycling damage. EPRI also is investigating advanced controls, revised operating procedures, designs, and chemistries to mitigate negative reliability impacts while maintaining environmental compliance for coal and gas units. As part of that R&D, EPRI has established a Missions Profiles Working Group and has conducted a series of comprehensive “deep dives” into technical issues experienced by central-station generation units operating under new missions, helping EPRI and participating companies establish a holistic, prioritized knowledge base of technical issues. This is the starting point for an industry-wide resource for managing the impacts of these new operating modes. EPRI also has led multiple demonstration projects at member coal-fired plants that have significantly advanced understanding of the impacts and boundaries of operating environmental control systems — such as selective catalytic reduction (SCR) — at significantly lower loads than originally designed. This is forecast to save on the order of \$1 million at a single plant via the avoidance of unit startup costs, as well as minimizing power generated at a loss during slack demand periods.

And lower emissions will result from the ability to operate the SCR NO_x (nitrogen oxide) reduction system over a broader load range, which in turn makes easier the transition from coal-fired to reduced-carbon technologies.

Renewable Generation: Renewable energy is fundamentally changing the electricity industry's strategic landscape. Industry engagement in development and deployment of renewable energy for power generation has increased significantly, but over the long term, renewable energy investment will depend on the ability of assets to operate cost-effectively without mandates or subsidies. Targeted research is necessary to advance technologies that reduce the cost of renewable generation and improve overall reliability. EPRI's large-scale renewable generation R&D includes a new and expanded focus on hydropower, with increased focus on operations and maintenance, as well as wind and solar technologies. Two key EPRI R&D centers are the Solar Technology Acceleration Center (SolarTAC) in Aurora, Colo., a venue to collaboratively test, validate, and demonstrate advanced solar energy technologies and products, and the Southeastern Solar Research Center (SSRC) at Southern Research (SR) in Birmingham, Ala. EPRI is conducting evaluations at SolarTAC focused on independent field testing and performance assessment of innovative solar photovoltaic (PV) technologies. These offer the potential for dramatically lowering the cost of electricity. Multiple PV system R&D projects, ranging from tracking and orientation and equipment aging to automatic panel cleaning, also are underway at the SSRC, a facility developed by the Southern Company, its subsidiary Alabama Power, SR, and EPRI to evaluate the performance and operating characteristics of PV systems in the high heat, high humidity, high precipitation and high pollen environment typical of the Southeastern U.S. The SSRC includes multiple configurations of PV solar panel arrays, microinverters, and advanced energy-monitoring systems. EPRI also has explored the potential benefits of unmanned aerial systems (UAS, more commonly known as drones) for PV O&M applications; the results are available in *Utilizing Unmanned Aerial Systems as a PV O&M Tool* (EPRI document [3002006216](#)).

Improved Materials and Repairs: The Generation Sector's materials program conducted a large R&D project which found improved component repair performance was possible through elimination and/or reduction of post-weld heat-treatment (PWHT), combined with a novel step design process. The industry has implemented these research findings through new National Board Inspection Code (NBIC) rules for repair of tubing, group qualifications, and internal welding procedures. These new, innovative welding methods are more valuable for the significant reductions in time required for repairs. The cost savings by the first two





early utility adopters is estimated at more than \$1 million on the basis of the time saving alone. As utilities experience more damage due to cyclic operation of high-temperature components in flexible modes, these rapid repair technologies are becoming increasingly critical to provide cost-effective reliability in fossil (both coal and gas) power generation.

Carbon Reductions and Advanced Power Cycles: Sustainability and greenhouse gas emissions regulations are driving changes in the global power industry, but fossil fuels will remain an important part of generation. EPRI is working to develop new methods for generating power from fossil fuels that are dramatically more efficient and have lower CO₂ emissions. That research includes a portfolio of advanced coal- and natural gas-based generation technologies, including Rankine cycles with steam temperatures exceeding 1200°F (650°C); closed Brayton cycles using CO₂ as the working fluid; integrated gasification combined cycles (IGCCs) based on gas turbines with firing temperatures exceeding 2700°F (1500°C); oxygen-blown combustion processes (for pulverized coal [PC]); circulating fluidized-bed combustion and gas turbine combined-cycle units; and power generation concepts based on chemical looping and fuel cells. EPRI recently published a white paper, *Can Future Coal Power Plants Meet CO₂ Emission Standards Without Carbon Capture and Storage* (EPRI report [3002006770](#)), which examines the potential contributions of many advanced power technologies for carbon emission reductions. And, EPRI managed the successful 14-year U.S. Department of Energy/Ohio Coal Development Office industry collaborative project to develop materials to allow Rankine cycles to operate at temperatures up to 1400°F – an important R&D accomplishment. Among the expected benefits are a three to four percentage-point increase in thermal efficiencies of steam Rankine cycle power plants (resulting in reduced CO₂ emissions), advanced implementation of closed Brayton cycles with supercritical CO₂ (enabling even greater efficiency improvements and applicable to advanced nuclear cycles), and use of thinner steam piping, which should allow for more rapid ramping of power plants.

Advanced Sensors: Tube failures in heat recovery steam generators (HRSGs) is a primary cause of lost combined-cycle plant availability. Generation research has successfully demonstrated application of acoustic emission technology for determining if water or steam was flowing in certain parts of HRSGs in combined-cycle power plants. This application and the related work on design modifications is expected to provide substantial cost savings (installation is projected to cost less than \$100,000 per plant, compared to more than \$1 million for conventional solutions in the more than 2,400 HRSGs in operation worldwide) by

eliminating condensate flow tube failures and/or expensive controls and retrofits. This project was featured in an EPRI Journal [article](#).

Power Delivery and Utilization

The Integrated Grid Initiative: In early 2015 EPRI released the Integrated Grid Benefit-Cost Framework, which assessed the economics of integrated grid investments related to the integration of distributed energy resources (DER).

EPRI also developed analytic tools to help utilities identify the optimal path for integrating DER into the grid, including: an Integrated Modeling Requirements Tool; an Energy Storage Valuation Tool (ESVT); and, the streamlined hosting capacity tool.

EPRI then launched a series of Integrated Grid pilot projects that were aimed at assessing DER technologies, and how to optimally integrate them into the grid. The project spans six areas, including:

- Utility-Scale Solar: Explores ways to integrate utility-scale solar photovoltaic (PV) and the resultant benefits and costs.
- Utility-Scale Solar with Energy Storage: Evaluates the integration, benefits, and costs of utility-scale solar with energy storage.
- Distributed Energy Storage: Assesses options to integrate distributed energy storage and evaluates the associated benefits and costs.
- Microgrids: Explores a variety of microgrid integration options along with resultant benefits and costs.
- Electric Vehicle (EV) Charging Infrastructure: Evaluates the integration, benefits, and costs of EV charging infrastructure.
- Customer-Side Technologies: Assesses approaches for integration of customer-side technologies.

More than a dozen utilities across the United States committed to host a pilot project.

Electric Vehicles and Public Impact: EPRI and the Natural Resources Defense Council (NRDC) completed a report on the value of electric transportation in improving air quality and achieving emission goals. The report found that widespread adoption of electric transportation, including electrification in the off-road sector, could lead to substantial reductions in greenhouse gas (GHG) emissions and could improve air quality.

The report, *Environmental Assessment of a Full Electric Transportation Portfolio*, (EPRI report [3002006881](#)) projects GHG emissions through 2050 and air quality impacts in 2030. It found that GHG emissions from light-duty vehicles could drop as much as 64% below today's





levels. Widespread use of electric vehicles (EVs)—including lawn and garden equipment and heavy industrial equipment such as forklifts—could improve air quality, particularly in densely populated urban areas.

Use of electric vehicles would achieve greater reductions in GHG emissions, corresponding to the rate that the electric grid becomes cleaner, through greater reliance on renewables and low- and non-emitting generation.

Transmission and Substations Research: EPRI's Transmission and Substations team (T&S) completed its Vegetation Management Clearance guidelines for the North American Electric Reliability Corporation (NERC) (EPRI report [3002006078](#)). These guidelines help transmission operators and planners understand how much foliage can be in proximity to transmission lines or towers. T&S continues to build on experience in asset performance through an international asset performance database. This asset management program now provides specific asset guidance across the industry. Work continues to expand resiliency performance in areas such as physical and cyber security, weather hardening, and high-impact, low-frequency threats.

Grid Operations and Planning: The transmission Grid Operations and Planning team completed analyses and recommendations for fault ride-through performance of distributed energy resources, which serves as part of the foundation for the IEEE standard for future interconnection requirements. As more inverter-based distributed generation such as solar PV and energy storage comes online, these standards will be necessary to ensure these distributed resources contribute to overall system reliability. The Grid Operations and Planning team continues to refine DER integration models and analysis methods for deriving the maximum benefits of DER on both transmission and distribution systems. Grid Operations and Planning also provided industry-wide guidance on planning for geomagnetic disturbances, ensuring faster system restoration after disturbances, and continued to refine system protection tools and applications.

Distribution Grid Resiliency: The increased frequency and severity of recent storms has focused national attention on the need to enhance the resiliency of the distribution system from downed power lines to transformer damage. In 2015 EPRI completed a three-year, multi-deliverables research project on distribution grid resiliency (DGR) to help utilities determine the best improvements for enhancing the resiliency of distribution systems to enable more rapid recovery during extreme weather or man-made events.

Information and Communications Technology (ICT): The ICT program provides members with near-term results that can provide immediate value as well as longer-term research that realizes the vision of a highly integrated, interoperable electrical system.

The program conducts R&D in the following areas:

- Interoperability
- Data integration and management
- Telecommunications
- Enterprise architecture
- IT/OT convergence
- Business value of ICT
- Distributed intelligence
- Connected workforce

In November, the ICT program published its R&D Roadmap (EPRI report [3002006885](#)), which provides the strategic direction and research activities that the program will perform over the next four years. The Roadmap is a valuable tool for ICT program advisors because it communicates a vision for the future and identifies gaps that exist in realizing that vision.

Cyber Protection: Cyber security has become a critical priority for electric utilities. The evolving electric sector is increasingly dependent on information technology and telecommunications infrastructures to ensure the reliability and security of the electric grid. Cyber security measures must be designed and implemented to protect the electrical grid from attacks by nation-states and hackers. Cyber security also supports the grid's resiliency against natural disasters and inadvertent threats such as equipment failures and user errors.

(EPRI's) Cyber Security and Privacy Program addresses the emerging threats to an interconnected electric system through collaborative research on cyber security technology, standards, and business processes to protect the electric grid.

Ongoing program activities include:

- Security management and protection technology for power delivery systems
- Threat management for power delivery systems
- Methodologies for assessing and monitoring risk
- Metrics to support the risk assessment activities
- Improving security architecture methodologies





Nuclear

Frequency-Scanning Eddy Current Technique (F-SECT): To ensure adequate margins exist that support nuclear fuel operability and integrity, as well as address new regulations, technologies are being developed for plant operators that allow margins to be assessed on-site as opposed to time consuming and costly measurements at specialized off-site facilities. One such technology is EPRI's Frequency-Scanning Eddy Current Technique (F-SECT) which has been demonstrated at two nuclear plants and is near full commercialization. This technology is capable of measuring corrosion of fuel components and how much hydrogen has been absorbed by them.

Response to Li-7 Supply Issues: Western-style pressurized water reactors (those based on Westinghouse, Babcock and Wilcox, and Combustion Engineering designs) utilize lithium hydroxide (enriched in Li-7 to reduce tritium production) to control at-temperature pH at slightly alkaline conditions and to meet "shall" elements of the EPRI Pressurized Water Reactor (PWR) Primary Water Chemistry Guidelines (EPRI report [3002000505](#)). Ultimately this element supports management of materials reliability, fuel reliability, and reducing radiation fields. In 2015, several utilities in the US and abroad encountered difficulties in procuring Li-7 due to production issues. With the support of the United States Department of Energy and EPRI Emerging Issues funding, EPRI also initiated work on new technology to recover Li-7 from spent water purification resin. EPRI also initiated work to identify technical gaps associated with moving to potassium hydroxide for at-temperature pH control rather than Li-7 enriched lithium hydroxide.

Nuclear Power Plant Transformer Vulnerability: A vulnerability (known as the "Open Phase Issue") was identified with the large power transformers that provide electrical power to nuclear power plants. EPRI created an innovative and cost-effective solution that improves safe and reliable operation of the power plants. The solution was developed, and field tested through an EPRI cross-sector Nuclear and Power Delivery & Utilization initiative. The "Open Phase Issue" affects many nuclear and non-nuclear power plants worldwide. The open phase is often not noticeable through normal plant operation and not detectable by traditional methods yet can cause significant plant operational disruption and equipment damage. This solution provides a simple and cost-effective answer to the problem. The conservative cost benefit over other, less effective, industry solutions is \$1 million per power plant.

Cathodic Protection for Buried Assets at a Nuclear Power Plant: Buried pipe and tanks at nuclear power plants can be protected from corrosion

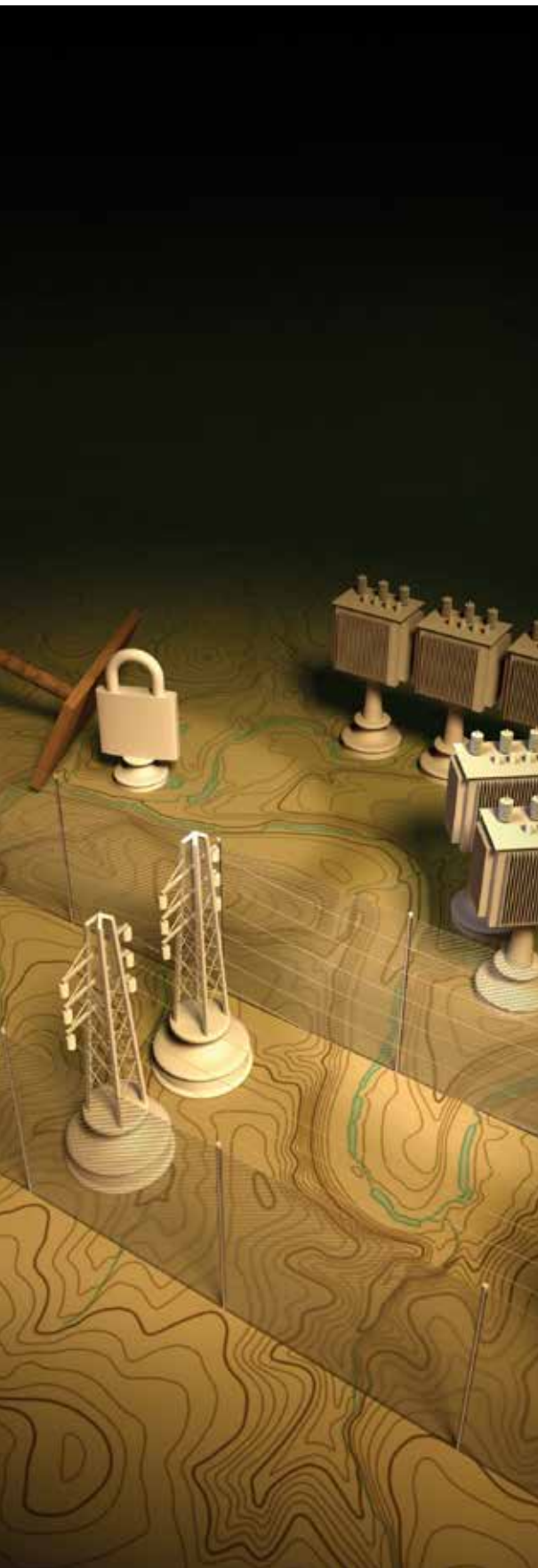
through cathodic protection. Unlike the straight, long runs of pipe in the oil and gas industry, the pipes at a nuclear power plant are close to other pipes, are in a spaghetti-like configuration, and may be attached to a copper grounding grid. As owner/operators look toward operating nuclear power plants longer, installing a cathodic protection system, upgrading an existing system, or identifying deficiencies in an existing system are key methods to cost effectively extend the life of the asset. EPRI developed a process that can be used to systematically establish an engineering basis for installing or upgrading cathodic protection of buried piping and tanks and for evaluating local plant areas that do not meet cathodic protection system acceptance criteria. Application of this process results in a well-engineered cathodic protection system that can protect the buried asset from corrosion and avoid pipe replacement and leaks that cost millions of dollars.

Improving the Characterization of Risk Information for Use in Decision-Making: EPRI has assembled a practical process to aid decision-makers using complex information relating to nuclear power plant risks, including how uncertainties shape understanding of those risks. See *An Approach to Risk Aggregation for Risk-Informed Decision-Making*, (EPRI report [3002003116](#)).

In response to challenges related to developing an appropriate perspective on the overall, or aggregate, risk of operating a nuclear power plant, EPRI has assembled a process to facilitate better understanding of quantitative estimates of risk and the insights that can be drawn from formal risk assessments. Because risk estimates inherently carry with them uncertainties, developing an appropriate understanding can be challenging. The EPRI process encompasses what are intended to be a framework and corresponding language that are more accessible for decision-makers who are not experts in the use of formal risk techniques. The process draws on the ability to consider multiple attributes, including elusive concepts such as inherent margins of safety and layers of protection (referred to as “defense in depth”). This process should support decisions that will lead to more effective allocation of resources available to improve nuclear safety.

High Burnup Fuel Demo: Nuclear plants have been shifting from lower burnup to higher burnup fuels in recent years, and continued research is needed to better understand the impacts, if any, of dry storage on high burnup fuel. EPRI is leading a multiyear research project through the U.S. Department of Energy to evaluate the safe storage of spent nuclear fuel in dry storage casks. EPRI is designing and implementing a test plan for a full-scale field assessment. The target date for loading fuel into the instrumented cask is mid-2017. EPRI is working with project participants





to complete fabrication of the modified cask that will allow monitoring over time through the period of loading and storage.

Circuit Cards: EPRI has developed technical guidance, called the “Gold Card,” for aging management of circuit cards. Analog circuit cards control virtually every significant safety-related and many non-safety-related systems in nuclear plants. However, the cards are subject to degradation from high temperatures, dust, humidity, bad power signals, and aging. EPRI initiated the Gold Card program in 2009 in response to an increase in circuit card failures across the nuclear power industry. EPRI collected knowledge about the circuit card components and developed guidance to prioritize cards, identify degradation mechanisms and failure risks, and appropriate handling and maintenance of cards. Since the publication of the Gold Card and adoption by the nuclear industry, there has been a dramatic decrease in critical circuit card failures.

Technology Innovation

A significant component of EPRI’s Technology Innovation (TI) program is providing thought leadership to the industry. A number of recently released, public white papers explore topics relevant to the issues the power industry expects to face and what should be considered today to prepare for a transformed future power system. TI is also leading EPRI’s engagement with the U.S. Department of Energy with the Incubatenergy Network to foster collaboration among entrepreneurs and identify promising new technologies.

Electric Power System Flexibility: Power system flexibility is the ability to adapt to dynamic conditions, and to provide affordable electricity while operating safely, reliably, and sustainably. What is driving the need for increased flexibility? Variable generation, such as wind and solar, uncertainty in fuel prices, changing consumer behavior and preferences that come with owning solar on the rooftop, plug-in electric vehicles in the garage, and smart appliances in the house.

EPRI’s white paper on flexibility describes innovative technologies that EPRI and electricity sector stakeholders are developing and applying to address these challenges. *Electric Power System Flexibility: Challenges and Opportunities* (EPRI report [3002007374](#)).

Electric Power System Connectivity: Connectivity becomes critical with the widespread deployment of communicating equipment that provides access to data streams and functionality that can inform decisions and behaviors, from the power plant to the consumer. Connectivity is instrumental in the grid’s transformation from a network providing one-

way power flow to one providing the interactive, two-way flow of power and information.

EPRI's white paper on connectivity shares challenges and opportunities in taking full advantage of emerging technology innovations to improve communication across the grid. *Electric Power System Connectivity: Challenges and Opportunities* (EPRI report [3002007375](#)).

Electric Power System Resiliency: In the context of the power system, resiliency describes hardening the system to withstand and to recover quickly from high-impact, low-frequency events that result in power system outages. For utilities, customers, and communities as a whole, extended outages have a range of impacts, including financial, health, and safety.

EPRI's white paper on resiliency examines the operational and technological aspects of grid resiliency and looks at innovations EPRI and others are developing to address the related challenges. *Electric Power System Resiliency: Challenges and Opportunities* (EPRI report [3002007376](#)).

The Integrated Grid: TI provided strategic and financial support for development of EPRI's *Integrated Grid Benefit-Cost Framework* white paper, which presents a transparent, consistent, four-part methodology for assessing the benefits and costs of transitioning to a more optimally integrated grid. This approach quantifies the impacts of distributed energy resources (DERs) on the interrelated distribution and bulk power systems, and monetizes these impacts to inform decision-making. As a result of the Integrated Grid Framework, EPRI's Power Delivery and Utilization team launched a series of pilot projects to dive deeper into researching DERs and supporting technology. The team is working with more than a dozen utilities, nationwide, to optimally integrate DERs into the system. *The Integrated Grid: A Benefit-Cost Framework* (EPRI report [3002004878](#)).

Incubatenergy Network: [The Incubatenergy Network](#) was launched in early 2015 with the U.S. National Renewable Energy Laboratory. EPRI is leading this effort with co-funding from the U.S. Department of Energy. The network connects leading clean energy incubators and related organizations to share best practices and expand collaboration in supporting entrepreneurs, advancing concepts to commercialization, and driving innovation in the electric sector and related industries. With more visibility on the startup companies being cultivated by Incubatenergy members, EPRI is identifying novel ideas that merit further exploration plus new technologies ready for field demonstration in energy production, delivery, storage, and utilization applications.



The Electric Power Research Institute, Inc. (EPRI, www.epri.com) conducts research and development relating to the generation, delivery and use of electricity for the benefit of the public. An independent, nonprofit organization, EPRI brings together its scientists and engineers as well as experts from academia and industry to help address challenges in electricity, including reliability, efficiency, affordability, health, safety and the environment. EPRI also provides technology, policy and economic analyses to drive long-range research and development planning, and supports research in emerging technologies. EPRI members represent 90% of the electric utility revenue in the United States with international participation in 35 countries. EPRI's principal offices and laboratories are located in Palo Alto, Calif.; Charlotte, N.C.; Knoxville, Tenn.; and Lenox, Mass.

Together . . . Shaping the Future of Electricity

March 2016

Electric Power Research Institute

3420 Hillview Avenue, Palo Alto, California 94304-1338 • PO Box 10412, Palo Alto, California 94303-0813 USA
800.313.3774 • 650.855.2121 • askepri@epri.com • www.epri.com

© 2016 Electric Power Research Institute (EPRI), Inc. All rights reserved. Electric Power Research Institute, EPRI, and TOGETHER . . . SHAPING THE FUTURE OF ELECTRICITY are registered service marks of the Electric Power Research Institute, Inc.