

BEFORE THE PUBLIC SERVICE
COMMISSION OF THE STATE OF MISSOURI
File No. ET-2014-0350 Tariff No. YE-2014-0494

In the Matter of Ameren Missouri's)	Direct Testimony of Karl R. Rabago
Application for Authorization to)	on Behalf of Missouri Solar Energy
Suspend Payment of Solar Rebates)	Industries Association

1 **Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS FOR THE RECORD.**

2 A. My name is Karl R. Rábago. My business address is 44 Briary Road, Dobbs Ferry, New
3 York.

4 **Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?**

5 A. I am the principal of Rábago Energy LLC, a Colorado limited liability company.

6 **Q. ON WHOSE BEHALF ARE YOU TESTIFYING IN THIS PROCEEDING?**

7 A. I am testifying on behalf of the Missouri Solar Energy Industries Association (“MOSEIA”).

8 **Q. PLEASE SUMMARIZE YOUR EDUCATION AND WORK EXPERIENCE.**

9 A. I earned a B.B.A. in management (1977) from Texas A&M University, a J.D. with honors
10 (1984) from the University of Texas School of Law, and LL.M. degrees in military law
11 (1988) and environmental law (1990) from, respectively, the U.S. Army Judge Advocate
12 General’s School and Pace University School of Law. I served for more than twelve years
13 as an officer in the U.S. Army, including in the Judge Advocate General’s Corps and as an
14 assistant professor of law at the United States Military Academy at West Point, New York.
15 I have also worked for more than 20 years in the electricity industry and related fields. I
16 have served as a Commissioner with the Texas Public Utility Commission (1992-1994) and
17 as a Deputy Assistant Secretary for the Office of Utility Technologies with the U.S.

1 Department of Energy (1995-1996). More recently, I have served as Director of
2 Government and Regulatory Affairs for the AES Corporation (2006-2008) and as Vice
3 President of Distributed Energy Services for Austin Energy, a large urban municipal
4 electric utility in Texas. In 2012, I founded and became the principal of Rábago Energy
5 LLC. I also currently serve as Chairman of the Board of Directors of the Center for
6 Resource Solutions (1997-present) and as a member of the Board of Directors of the
7 Interstate Renewable Energy Council (2012-present). My education and work experience is
8 set forth in detail on my resume, attached as Exhibit KRR-1.

9 **Q. HAVE YOU TESTIFIED PREVIOUSLY BEFORE THE MISSOURI PUBLIC**
10 **SERVICE COMMISSION (THE “COMMISSION”)?**

11 A. No, I have not. I have filed comments on behalf of MOSEIA in the Commission Staff’s
12 workshops on rulemakings to implement HB 142. I have attached those comments as
13 Exhibit KRR-2.

14 **Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY?**

15 A. The purpose of my testimony is to review the application of Ameren Missouri (the
16 “Company”) in light of HB 142 as codified in § 393.1030, RSMo, and evidence provided
17 by the Company. My testimony concludes that even taking the Company’s revenue
18 requirement calculations at face value, the Company has not reached the 1% revenue
19 requirement threshold provided for in statute, because values used by the Company in its
20 documents are not properly included in the 1% calculation.

21 **Q. What documents did you review in preparation of this testimony?**

22 A. I reviewed applicable provisions of Missouri statutes, regulations, and documents filed by
23 Ameren in this application. I also reviewed comments that I filed in Commission staff

1 rulemaking workshops relating to implementation of HB 142, as well as sources cited
2 therein.

3 **Q. What is your understanding of the Company's application in this case?**

4 A. As I understand the application, the Company seeks a Commission determination that the
5 Company has or soon will reach the 1% Maximum Average Retail Rate Increase ("RRI")
6 threshold provided for in HB 142 in support of its request to suspend payment of solar
7 rebates.

8 **Q. How does the Company support its assertion that it has or nearly has met the 1%
9 RRI threshold?**

10 A. To the extent that the Company supports its assertion, the data is found in Company
11 Schedule 1HC, a spreadsheet marked "Highly Confidential." In Schedule 1, the Company
12 calculation proceeds in a few steps. I have included at Exhibit KRR-3 an extract of the
13 Company Schedule 1HC. The steps used by the Company are:

14 1. The Company calculates a "Prop C Revenue Limit" equal to 1% of its projected revenue
15 requirement in each year of its RES plan, for years 2014 through 2023. Over the term of the
16 Company plan, this amounts to [REDACTED] million.

17 2. The Company sums all RES-related expenses in each year of the Plan. These expenses
18 included solar rebates, administrative costs, REC costs, and revenue requirement/purchased
19 power costs from renewable energy generation facilities. These total to [REDACTED] million.

20 3. The Company subtracts RES-related expenses from the Prop C Revenue Limit to show a
21 RES Compliance Budget in each year and for the total years in the Plan. This remaining
22 RES budget amount equals [REDACTED] million.

1 4. The Company then adds revenue requirement in years 2019-2023 for Phase 2 of its
2 Maryland Heights project (██████████), the O’Fallon Solar project (██████████),
3 unspecified “Future Solar Build” (██████████), and unspecified “Future Wind Build”
4 (██████████). The total amount of this additional revenue requirement was injected in
5 the Plan to equal the ██████████ million amount of the remaining RES budget.

6 **Q. Do you agree with the methodology utilized by the Company in its plan?**

7 A. No. The Company “reaches” the 1% RRI by loading its Plan model with costs associated
8 with facilities that are not approved or real.

9 **Q. Does the Company methodology comply with HB 142?**

10 A. No. The statute is quite clear and provides in § 393.1030.2.(1), RSMo that:

11 *A maximum average retail rate increase of one percent [is] determined by estimating and*
12 *comparing the electric utility's cost of compliance with least-cost renewable generation*
13 *and the cost of continuing to generate or purchase electricity from entirely nonrenewable*
14 *sources, taking into proper account future environmental regulatory risk including the*
15 *risk of greenhouse gas regulation. Notwithstanding the foregoing, until June 30, 2020, if*
16 *the maximum average retail rate increase would be less than or equal to one percent if*
17 *an electric utility's investment in solar-related projects initiated, owned or operated by*
18 *the electric utility is ignored for purposes of calculating the increase, then additional*
19 *solar rebates shall be paid and included in rates in an amount up to the amount that*
20 *would produce a retail rate increase equal to the difference between a one percent retail*
21 *rate increase and the retail rate increase calculated when ignoring an electric utility's*
22 *investment in solar-related projects initiated, owned, or operated by the electric utility.*

23 Hypothetical revenue requirements associated with imaginary wind and solar project builds
24 five or more years in the future do not constitute “cost of compliance” within any accepted
25 or plain meaning of the words. I see no mechanism in the Missouri law to allow the

1 Company to avoid its RES obligations under HB 142, including the payment of additional
2 rebates as mandated by statute, in the manner it proposes.

3 **Q. Do you agree with the Company methodology for calculating the RRI?**

4 A. No. First, there is no evidence in the application or Schedule IHC filed by the Company
5 that the amounts included in the RES budget are, within the meaning of the statute, the
6 “cost of compliance with least-cost renewable generation.” Second, the Company estimates
7 the RRI simply by calculating 1% of its annual revenue requirement. The statute is clear
8 that the retail rate impact is to be calculated by comparing the “cost of compliance with
9 least-cost renewable generation” with the “cost of continuing to generate or purchase
10 electricity from entirely nonrenewable sources.” There is no evidence that the Company
11 calculated its revenue requirement values from the cost of entirely non-renewable sources.
12 Finally, the Company fails to demonstrate that it took “proper account [of] future
13 environmental regulatory risk including the risk of greenhouse gas regulation” in
14 calculating the cost of entirely non-renewable resources.

15 **Q. Do you agree with the Company method to average RES compliance costs and RES**
16 **budgets over the 10-year report term from 2014-2023?**

17 A. No. There is no basis in the law for averaging expenditures as the Company proposes in its
18 plan. This is another reason why the inclusion of hypothetical revenue requirements
19 associated with imaginary generation resources is improper. Moreover, the averaging of
20 RES costs and the RRI calculation across multiple years is directly contrary to the law, as
21 provided in § 393.1045, RSMo:

22 ***Cap on increase in retail charges based on renewable mandates.***

23 *393.1045. Any renewable mandate required by law shall not raise the retail rates*
24 *charged to the customers of electric retail suppliers by an average of more than one*

1 *percent in any year, and all the costs associated with any such renewable mandate shall*
2 *be recoverable in the retail rates charged by the electric supplier. Solar rebates shall be*
3 *included in the one percent rate cap provided for in this section.*

4 The statute makes it clear that the RRI must be calculated on the basis of average rates in a
5 year, not average revenue requirements over a ten year period.

6 **Q. Based on your review of the Company's application and of the provisions of Missouri**
7 **law relating to calculating RES compliance costs and the RRI, what are your**
8 **conclusions?**

9 A. I conclude the following:

10 1. There is no evidence to support the Company's implied assertion that it has corrected
11 calculated the RRI for the Plan as submitted.

12 2. There is no basis in law for the Company to include hypothetical revenue
13 requirements associated with unspecified future resources in calculating the RRI.

14 3. The Company has produced the evidence or proven the validity of its assertions so as
15 to support a finding that it has met the 1% RRI as provided in Missouri law.

16 **Q. Do you have a recommendation based on your conclusions?**

17 A. Yes. I recommend that the Commission reject the Company's methodology and
18 calculations regarding the 1% RRI. I also recommend that the Commission deny the
19 Company's requests to find that it has or will soon meet the 1% RRI.

20 **Q. Does this conclude your testimony?**

21 A. Yes.

22

1 Rábago Direct Testimony

2 Exhibit KRR-1 – Resume for Karl R. Rabago

3 **Karl R. Rábago**

4 **Rabago Energy LLC**

5 c: +1.512.968.7543 e: karl@rabagoenergy.com

6

7 **Summary**

8 Nationally recognized leader and innovator in electricity and energy law, policy, and regulation.
9 Experienced as a public utility regulatory commissioner, educator, research and development program
10 manager, utility executive, business builder, federal executive, corporate sustainability leader,
11 consultant, and advocate. Thought leader and practice expert in organizational transformation. Highly
12 proficient in advising, managing and interacting with government agencies and committees, the
13 media, citizen groups, and business associations. Successful track record of working with US
14 Congress, state legislatures, governors, regulators, city councils, business leaders, researchers,
15 academia, and community groups. National and international contacts through experience with Austin
16 Energy, AES Corporation, US Department of Energy, Texas Public Utility Commission, Jicarilla
17 Apache Tribal Utility Authority, Cargill Dow LLC (now NatureWorks, LLC), Rocky Mountain
18 Institute, CH2M HILL, Houston Advanced Research Center, Environmental Defense Fund, and
19 others. Skilled attorney, negotiator, and advisor with more than twenty years experience working with
20 diverse stakeholder communities in electricity policy and regulation, emerging energy markets
21 development, clean energy technology development, electric utility restructuring, smart grid
22 development, and the implementation of sustainability principles. Extensive regulatory practice
23 experience. Nationally recognized speaker on energy, environment and sustainable development
24 matters. Managed staff as large as 250; responsible for operations of research facilities with staff in
25 excess of 600. Developed and managed budgets in excess of \$300 million. Law teaching experience
26 at University of Houston Law Center and U.S. Military Academy at West Point. Trial experience as a
27 Judge Advocate. Post doctorate degrees in environmental and military law. Military veteran.

28

29

30 **Employment**

31 **PACE ENERGY AND CLIMATE CENTER, PACE UNIVERSITY SCHOOL OF LAW**

32 Executive Director: May 2014—Present.

33 Leader of a team of professional and technical experts in energy and climate law, policy, and
34 regulation. Secure funding for and manage execution of research, market development support,
35 and advisory services for a wide range of funders, clients, and stakeholders with the overall goal
36 of advancing clean energy deployment, climate responsibility, and market efficiency. Supervise a
37 team of employees, consultants, and adjunct researchers. Provide learning and development
38 opportunities for law students. Coordinate efforts of the Center with and support the
39 Environmental Law Faculty. Additional activities:

- 40 • Chairman of the Board, Center for Resource Solutions (1997-present). CRS is a not-for-profit
41 organization based at the Presidio in California. CRS developed and manages the Green-e
42 Renewable Electricity Brand, a nationally and internationally recognized branding program

1 for green power and green pricing products and programs. Past chair of the Green-e
2 Governance Board (formerly the Green Power Board).

- 3 • Director, Interstate Renewable Energy Council (IREC) (2012-present). IREC focuses on
4 issues impacting expanded renewable energy use such as rules that support renewable energy
5 and distributed resources in a restructured market, connecting small-scale renewables to the
6 utility grid, developing quality credentials that indicate a level of knowledge and skills
7 competency for renewable energy professionals.

8 **RÁBAGO ENERGY LLC**

9 Principal: July 2012—Present. Consulting practice dedicated to providing expert witness and
10 policy formulation advice and services to organizations in the clean and advanced energy sectors.
11 Recognized national leader in development and implementation of award-winning “Value of
12 Solar” alternative to traditional net metering.

13 **AUSTIN ENERGY – THE CITY OF AUSTIN, TEXAS**

14 Vice President, Distributed Energy Services: April 2009—June 2012. Executive in 8th largest
15 public power electric utility serving more than one million people in central Texas. Responsible
16 for management and oversight of energy efficiency, demand response, and conservation
17 programs; low-income weatherization; distributed solar and other renewable energy technologies;
18 green buildings program; key accounts relationships; electric vehicle infrastructure; and market
19 research and product development. Executive sponsor of Austin Energy’s participation in an
20 innovative federally-funded smart grid demonstration project led by the Pecan Street Project. Led
21 teams that successfully secured over \$39 million in federal stimulus funds for energy efficiency,
22 smart grid, and advanced electric transportation initiatives. Additional activities included:

- 23 • Director, Renewable Energy Markets Association. REMA is a trade association dedicated to
24 maintaining and strengthening renewable energy markets in the United States.
- 25 • Membership on Pedernales Electric Cooperative Member Advisory Board. Invited by the
26 Board of Directors to sit on first-ever board to provide formal input and guidance on energy
27 efficiency and renewable energy issues for the nation’s largest electric cooperative.

28 **THE AES CORPORATION**

29 Director, Government & Regulatory Affairs: June 2006—December 2008. Government and
30 regulatory affairs manager for AES Wind Generation, one of the largest wind companies in the
31 country. Manage a portfolio of regulatory and legislative initiatives to support wind energy
32 market development in Texas, across the United States, and in many international markets. Active
33 in national policy and the wind industry through work with the American Wind Energy
34 Association as a participant on the organization’s leadership council. Also served as Managing
35 Director, Standards and Practices, for Greenhouse Gas Services, LLC, a GE and AES venture
36 committed to generating and marketing greenhouse gas credits to the U.S. voluntary market.
37 Authored and implemented a standard of practice based on ISO 14064 and industry best
38 practices. Commissioned the development of a suite of methodologies and tools for various
39 greenhouse gas credit-producing technologies. Also served as Director, Global Regulatory
40 Affairs, providing regulatory support and group management to AES’s international electric
41 utility operations on five continents. Additional activities:

- 42 • Director and past Chair, Jicarilla Apache Nation Utility Authority (1998 to 2008). Located in
43 New Mexico, the JAUA is an independent utility developing profitable and autonomous
44 utility services that provides natural gas, water utility services, low income housing, and
45 energy planning for the Nation. Authored “First Steps” renewable energy and energy
46 efficiency strategic plan.

1 **HOUSTON ADVANCED RESEARCH CENTER**

2 Group Director, Energy and Buildings Solutions: December 2003—May 2006. Leader of energy
3 and building science staff at a mission-driven not-for-profit contract research organization based
4 in The Woodlands, Texas. Responsible for developing, maintaining and expanding upon
5 technology development, application, and commercialization support programmatic activities,
6 including the Center for Fuel Cell Research and Applications, an industry-driven testing and
7 evaluation center for near-commercial fuel cell generators; the Gulf Coast Combined Heat and
8 Power Application Center, a state and federally funded initiative; and the High Performance
9 Green Buildings Practice, a consulting and outreach initiative. Secured funding for major new
10 initiative in carbon nanotechnology applications in the energy sector. Developed and launched
11 new and integrated program activities relating to hydrogen energy technologies, combined heat
12 and power, distributed energy resources, renewable energy, energy efficiency, green buildings,
13 and regional clean energy development. Active participant in policy development and regulatory
14 implementation in Texas, the Southwest, and national venues. Frequently engaged with policy,
15 regulatory, and market leaders in the region and internationally. Additional activities:

- 16 • President, Texas Renewable Energy Industries Association. As elected president of the
17 statewide business association, leader and manager of successful efforts to secure and
18 implement significant expansion of the state’s renewable portfolio standard as well as other
19 policy, regulatory, and market development activities.
- 20 • Director, Southwest Biofuels Initiative. Established the Initiative acts as an umbrella structure
21 for a number of biofuels related projects, including emissions evaluation for a stationary
22 biodiesel pilot project, feedstock development, and others.
- 23 • Member, Committee to Study the Environmental Impacts of Windpower, National Academies
24 of Science National Research Council. The Committee was chartered by Congress and the
25 Council on Environmental Quality to assess the impacts of wind power on the environment.
- 26 • Advisory Board Member, Environmental & Energy Law & Policy Journal, University of
27 Houston Law Center.

28 **CARGILL DOW LLC (NOW NATUREWORKS, LLC)**

29 Sustainability Alliances Leader: April 2002—December 2003. Founded in 1997, NatureWorks,
30 LLC is based in Minnetonka, Minnesota. Integrated sustainability principles into all aspects of a
31 ground-breaking biobased polymer manufacturing venture. Responsible for maintaining,
32 enhancing and building relationships with stakeholders in the worldwide sustainability
33 community, as well as managing corporate and external sustainability initiatives. NatureWorks is
34 the first company to offer its customers a family of polymers (polylactide – “PLA”) derived
35 entirely from annually renewable resources with the cost and performance necessary to compete
36 with packaging materials and traditional fibers; now marketed under the brand name “Ingeo.”

- 37 • Successfully completed Minnesota Management Institute at University of Minnesota Carlson
38 School of Management, an alternative to an executive MBA program that surveyed
39 fundamentals and new developments in finance, accounting, operations management,
40 strategic planning, and human resource management.

41 **ROCKY MOUNTAIN INSTITUTE**

42 Managing Director/Principal: October 1999–April 2002. In two years, co-led the team and grew
43 annual revenues from approximately \$300,000 to more than \$2 million in annual grant and
44 consulting income. Co-authored “Small Is Profitable,” a comprehensive analysis of the benefits of
45 distributed energy resources. Worked to increase market opportunities for clean and distributed
46 energy resources through consulting, research, and publication activities. Provided consulting and

1 advisory services to help business and government clients achieve sustainability through
2 application and incorporation of Natural Capitalism principles. Frequent appearance in media at
3 international, national, regional and local levels.

- 4 • President of the Board, Texas Ratepayers Organization to Save Energy. Texas R.O.S.E. is a
5 non-profit organization advocating low-income consumer issues and energy efficiency
6 programs.
- 7 • Co-Founder and Chair of the Advisory Board, Renewable Energy Policy Project-Center for
8 Renewable Energy and Sustainable Technology. REPP-CREST was a national non-profit
9 research and internet services organization.

10 **CH2M HILL**

11 Vice President, Energy, Environment and Systems Group: July 1998–August 1999. Responsible
12 for providing consulting services to a wide range of energy-related businesses and organizations,
13 and for creating new business opportunities in the energy industry for an established engineering
14 and consulting firm. Completed comprehensive electric utility restructuring studies for the states
15 of Colorado and Alaska.

16 **PLANERGY**

17 Vice President, New Energy Markets: January 1998–July 1998. Responsible for developing and
18 managing new business opportunities for the energy services market. Provided consulting and
19 advisory services to utility and energy service companies.

20 **ENVIRONMENTAL DEFENSE FUND**

21 Energy Program Manager: March 1996–January 1998. Managed renewable energy, energy
22 efficiency, and electric utility restructuring programs for a not-for-profit environmental group
23 with a staff of 160 and over 300,000 members. Led regulatory intervention activities in Texas and
24 California. In Texas, played a key role in crafting Deliberative Polling processes. Initiated and
25 managed nationwide collaborative activities aimed at increasing use of renewable energy and
26 energy efficiency technologies in the electric utility industry, including the Green-e Certification
27 Program, Power Scorecard, and others. Participated in national environmental and energy
28 advocacy networks, including the Energy Advocates Network, the National Wind Coordinating
29 Committee, the NCSL Advisory Committee on Energy, and the PV-COMPACT Coordinating
30 Council. Frequently appeared before the Texas Legislature, Austin City Council, and regulatory
31 commissions on electric restructuring issues.

32 **UNITED STATES DEPARTMENT OF ENERGY**

33 Deputy Assistant Secretary, Utility Technologies: January 1995–March 1996. Manager of the
34 Department's programs in renewable energy technologies and systems, electric energy systems,
35 energy efficiency, and integrated resource planning. Supervised technology research,
36 development and deployment activities in photovoltaics, wind energy, geothermal energy, solar
37 thermal energy, biomass energy, high-temperature superconductivity, transmission and
38 distribution, hydrogen, and electric and magnetic fields. Developed, coordinated, and advised on
39 legislation, policy, and renewable energy technology development within the Department, among
40 other agencies, and with Congress. Managed, coordinated, and developed international
41 agreements for cooperative activities in renewable energy and utility sector policy, regulation,
42 and market development between the Department and counterpart foreign national entities.
43 Established and enhanced partnerships with stakeholder groups, including technology firms,
44 electric utility companies, state and local governments, and associations. Supervised development
45 and deployment support activities at national laboratories. Developed, advocated and managed a
46 Congressional budget appropriation of approximately \$300 million.

1 **STATE OF TEXAS**

2 Commissioner, Public Utility Commission of Texas. May 1992–December 1994. Appointed by
3 Governor Ann W. Richards. Regulated electric and telephone utilities in Texas. Laid the
4 groundwork for legislative and regulatory adoption of integrated resource planning, electric utility
5 restructuring, and significantly increased use of renewable energy and energy efficiency
6 resources. Appointed by Governor Richards to co-chair and organize the Texas Sustainable
7 Energy Development Council. Served as Vice-Chair of the National Association of Regulatory
8 Utility Commissioners (NARUC) Committee on Energy Conservation. Member and co-creator of
9 the Photovoltaic Collaborative Market Project to Accelerate Commercial Technology (PV-
10 COMPACT), a nationwide program to develop domestic markets for photovoltaics. Member,
11 Southern States Energy Board Integrated Resource Planning Task Force. Member of the
12 University of Houston Environmental Institute Board of Advisors.

13 **LAW TEACHING**

14 **Associate Professor of Law:** University of Houston Law Center, 1990–1992. Full time, tenure
15 track member of faculty. Courses taught: Criminal Law, Environmental Law, Criminal
16 Procedure, Environmental Crimes Seminar, Wildlife Protection Law. Provided *pro bono* legal
17 services in administrative proceedings and filings at the Texas Public Utility Commission.
18 Launched a student clinical effort that reviewed and made recommendations on utility energy
19 efficiency program plans.

20 **Assistant Professor:** United States Military Academy, West Point, New York, 1988–1990.
21 Member of the faculty in the Department of Law. Honorably discharged in August 1990, as
22 Major in the Regular Army. Courses taught: Constitutional Law, Military Law, and
23 Environmental Law Seminar. Greatly expanded the environmental law curriculum and laid
24 foundation for the concentration program in law. While carrying a full time teaching load, earned
25 a Master of Laws degree in Environmental Law. Established a program for subsequent
26 environmental law professors to obtain an LL.M. prior to joining the faculty.

27 **LITIGATION**
28 Trial Defense Attorney and Prosecutor, U.S. Army Judge Advocate General’s Corps, Fort Polk,
29 Louisiana, January 1985–July 1987. Assigned to Trial Defense Service and Office of the Staff
30 Judge Advocate. Prosecuted and defended over 150 felony courts-martial. As prosecutor, served
31 as legal officer for two brigade-sized units (approximately 5,000 soldiers), advising commanders
32 on appropriate judicial, non-judicial, separation, and other actions. Pioneered use of psychiatric
33 and scientific testimony in administrative and judicial proceedings.

33 **NON-LEGAL MILITARY SERVICE**

34 Armored Cavalry Officer, 2d Squadron 9th Armored Cavalry, Fort Stewart, Georgia, May 1978–
35 August 1981. Served as Logistics Staff Officer (S-4). Managed budget, supplies, fuel,
36 ammunition, and other support for an Armored Cavalry Squadron. Served as Support Platoon
37 Leader for the Squadron (logistical support), and as line Platoon Leader in an Armored Cavalry
38 Troop. Graduate of Airborne and Ranger Schools. Special training in Air Mobilization Planning
39 and Nuclear, Biological and Chemical Warfare.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23

Formal Education

LL.M., Environmental Law, Pace University School of Law, 1990: Curriculum designed to provide breadth and depth in study of theoretical and practical aspects of environmental law. Courses included: International and Comparative Environmental Law, Conservation Law, Land Use Law, Seminar in Electric Utility Regulation, Scientific and Technical Issues Affecting Environmental Law, Environmental Regulation of Real Estate, Hazardous Wastes Law. Individual research with Hudson Riverkeeper Fund, Garrison, New York.

LL.M., Military Law, U.S. Army Judge Advocate General’s School, 1988: Curriculum designed to prepare Judge Advocates for senior level staff service. Courses included: Administrative Law, Defensive Federal Litigation, Government Information Practices, Advanced Federal Litigation, Federal Tort Claims Act Seminar, Legal Writing and Communications, Comparative International Law.

J.D. with Honors, University of Texas School of Law, 1984: Attended law school under the U.S. Army Funded Legal Education Program, a fully funded scholarship awarded to 25 or fewer officers each year. Served as Editor-in-Chief (1983–84); Articles Editor (1982–83); Member (1982) of the Review of Litigation. Moot Court, Mock Trial, Board of Advocates. Summer internship at Staff Judge Advocate’s offices. Prosecuted first cases prior to entering law school.

B.B.A., Business Management, Texas A&M University, 1977: ROTC Scholarship (3–yr). Member: Corps of Cadets, Parson’s Mounted Cavalry, Wings & Sabers Scholarship Society, Rudder’s Rangers, Town Hall Society, Freshman Honor Society, Alpha Phi Omega service fraternity.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40

Selected Publications

“The Value of Solar Tariff: Net Metering 2.0,” The ICER Chronicle, Ed. 1, p. 46 [International Confederation of Energy Regulators] (December 2013)

“A Regulator’s Guidebook: Calculating the Benefits and Costs of Distributed Solar Generation,” co-author, Interstate Renewable Energy Council (October 2013)

“The ‘Value of Solar’ Rate: Designing An Improved Residential Solar Tariff,” Solar Industry, Vol. 6, No. 1 (Feb. 2013)

“A Review of Barriers to Biofuels Market Development in the United States,” 2 Environmental & Energy Law & Policy Journal 179 (2008)

“A Strategy for Developing Stationary Biodiesel Generation,” Cumberland Law Review, Vol. 36, p.461 (2006)

“Evaluating Fuel Cell Performance through Industry Collaboration,” co-author, Fuel Cell Magazine (2005)

“Applications of Life Cycle Assessment to NatureWorks™ Polylactide (PLA) Production,” co-author, Polymer Degradation and Stability 80, 403-19 (2003)

“An Energy Resource Investment Strategy for the City of San Francisco: Scenario Analysis of Alternative Electric Resource Options,” contributing author, Prepared for the San Francisco Public Utilities Commission, Rocky Mountain Institute (2002)

“Small Is Profitable: The Hidden Economic Benefits of Making Electrical Resources the Right Size,” co-author, Rocky Mountain Institute (2002)

“Socio-Economic and Legal Issues Related to an Evaluation of the Regulatory Structure of the Retail Electric Industry in the State of Colorado,” with Thomas E. Feiler, Colorado Public Utilities Commission and Colorado Electricity Advisory Panel (April 1, 1999)

“Study of Electric Utility Restructuring in Alaska,” with Thomas E. Feiler, Legislative Joint Committee on electric Restructuring and the Alaska Public Utilities Commission (April 1, 1999)

“New Markets and New Opportunities: Competition in the Electric Industry Opens the Way for Renewables and Empowers Customers,” EEBA Excellence (Journal of the Energy Efficient Building Association) (Summer 1998)

“Building a Better Future: Why Public Support for Renewable Energy Makes Sense,” Spectrum: The Journal of State Government (Spring 1998)

“The Green-e Program: An Opportunity for Customers,” with Ryan Wisner and Jan Hamrin, Electricity Journal, Vol. 11, No. 1 (January/February 1998)

“Being Virtual: Beyond Restructuring and How We Get There,” Proceedings of the First Symposium on the Virtual Utility, Klewer Press (1997)

“Information Technology,” Public Utilities Fortnightly (March 15, 1996)

“Better Decisions with Better Information: The Promise of GIS,” with James P. Spiers, Public Utilities Fortnightly (November 1, 1993)

“The Regulatory Environment for Utility Energy Efficiency Programs,” Proceedings of the Meeting on the Efficient Use of Electric Energy, Inter-American Development Bank (May 1993)

- 1 “An Alternative Framework for Low-Income Electric Ratepayer Services,” with Danielle Jaussaud and
- 2 Stephen Benenson, Proceedings of the Fourth National Conference on Integrated Resource Planning,
- 3 National Association of Regulatory Utility Commissioners (September 1992)
- 4 “What Comes Out Must Go In: The Federal Non-Regulation of Cooling Water Intakes Under Section 316
- 5 of the Clean Water Act,” Harvard Environmental Law Review, Vol. 16, p. 429 (1992)
- 6 “Least Cost Electricity for Texas,” State Bar of Texas Environmental Law Journal, Vol. 22, p. 93 (1992)
- 7 “Environmental Costs of Electricity,” Pace University School of Law, Contributor–Impingement and
- 8 Entrainment Impacts, Oceana Publications, Inc. (1990)
- 9

1 Rábago Direct Testimony

2 Exhibit KRR-2 – Comments filed by Karl R. Rábago on behalf of MOSEIA in HB 142
3 Rulemaking

4

5

6 **BEFORE THE PUBLIC SERVICE COMMISSION**
7 **OF THE STATE OF MISSOURI**

8 In the Matter of a Working Case to Draft a Rule to)
9 Modify Commission Rules Regarding Renewable)
10 Renewable Energy Standard Requirements and)
11 Net Metering Standards)

File No. EW-2014-0092

12

13

14 **COMMENTS OF KARL R. RÁBAGO ON BEHALF OF MISSOURI SOLAR ENERGY INDUSTRIES**
15 **ASSOCIATION**

16 **Introduction**

17 The Missouri Solar Energy Industries Association (MOSEIA) appreciates this opportunity to
18 comment on a rule to modify Renewable Energy Standard Requirements and Net Metering
19 Standards.

20 [describe MOSEIA]

21 MOSEIA believes that the Commission should be guided by a few key principles in developing this
22 rule. The principles are:

- 23 1. The Commission should be guided by the plain language of the statute wherever possible.
- 24 2. The Commission rule should support the increased, orderly, efficient, and least cost
25 development of solar energy resources in Missouri, for the benefit of ratepayers, utilities,
26 and the public.
- 27 3. The Commission rule should include a structure that is flexible and adaptive to a rapidly
28 evolving solar marketplace.
- 29 4. The Commission rule should support complementary development of both utility scale
30 and distributed, customer-owned solar energy.
- 31 5. The Commission rule should strongly encourage utility efficiency in solar investments,
32 program administration, and compliance.

1

2 **Overview of Comments**

3 HB 142, as codified in Missouri Revised Statutes Chapter 393, Section 393.1030, establishes and
4 amends the Renewable Energy Standard, and therefore, compels amendments to the Electric
5 Utility Renewable Energy Standard Requirements (4 CSR 240-20.100, the "RES rule"). As
6 amended, the law is designed to ensure that utilities implement a rebate program that, in
7 cumulative spending net of utility investments in solar, equals a 1% increase in average retail
8 rates. In so doing, the law establishes a strong multiyear commitment of rebate funds around
9 which distributed solar markets may organize and become self-sustaining.

10 An added and important feature of the law is that it creates a symmetrical relationship between
11 utility investments in solar energy and the development of distributed solar energy markets.

12 The law includes additional important features that require utilities to pursue a least-cost
13 renewable energy compliance strategy, and include in the retail rate increase calculation only
14 least-cost, direct costs associated with compliance, net of the full costs associated with a non-
15 renewable resource scenario. The non-renewable resource scenario must also be increased by
16 the potential costs associated with the risk of environmental regulation.

17 The requirement in HB 142 to address the full net cost of a non-renewable resource scenario also
18 compels the amendment of the Net Metering rule (4 CSR 240.20.065 – the "NEM rule") to
19 eliminate the incorrect equating of "avoided fuel cost" with "avoided cost" in the definitions
20 section. The law also created a requirement for the transfer of renewable energy certificates
21 (RECs) as a condition of a customer receiving a rebate for installing a solar system. These RECs
22 reduce the utility RES compliance cost and should be deducted in the calculation of the maximum
23 average retail rate increase.

24 Finally, the revisiting of the RES rule and the NEM rule creates additional opportunities to revise
25 and improve those rules in order to achieve the goals described above, and to improve the rules.

26 These comments address these issues in the following order:

- 27 • The Rebate Program
- 28 • The Net Metering Rule
- 29 • Other Compliance and Administration Issues

30 References are included to the applicable sections of HB 142 (Agreed and Passed Version), and
31 Stakeholder Review Documents, January 30, 2014 for 4 CSR 240-20.100, and Undated Proposed
32 Amendment for 4 CSR 240-20.065.

33

34 **The Rebate Program and RES Requirements, 4 CSR 240-20.100**

35 The most important changes made to the RES requirements for utilities in HB 142 relate to the
36 rebate program for distributed customer-owned solar generation. Staff's proposed amendment
37 to the RES rule fails to accurately capture these changes and should be corrected accordingly.

1 Because of the importance of these changes, they are explained in detail here. MOSEIA will be
2 pleased to work with staff to craft RES rule language that comports with the discussion below.

3 First, HB 142 preserves the methodology for calculating the maximum average retail rate
4 increase. (393.1030.2.(1)) The law states that this number is calculated by subtracting the cost of
5 an entirely non-renewable resource portfolio from the estimated utility cost of compliance with
6 least-cost renewable generation. Specifically, to be consistent with the statute, these two
7 numbers should be calculated and estimated as:

8 **Compliance Cost**

- 9 • Direct costs to comply, no joint or common costs
- 10 • No costs greater than least cost
- 11 • Net of value received for assigned RECs, which avoid compliance costs

12 **Non-Renewable Scenario Cost**

- 13 • Total cost if NO renewable energy, including all costs associated with serving non-
14 renewable generation to loads (e.g. transmission, distribution, etc.)
- 15 • Estimated costs of environmental regulatory risk

16 Second, in order to effectuate the purposes of HB 142, it is also necessary to review MRS section
17 393.1045, which effectively provides a definition for the maximum average retail rate increase
18 and states that:

19 *Any renewable mandate required by law shall not raise the retail rates charged to the*
20 *customers of electric retail suppliers by an average of more than one percent in any year,*
21 *and all the costs associated with any such renewable mandate shall be recoverable in the*
22 *retail rates charged by the electric supplier. Solar rebates shall be included in the one*
23 *percent rate cap provided for in this section.*

24 The compliance cost cap tests whether the RES mandate raises rates charged, and, therefore,
25 ensures that RES compliance and rebates do not cause rates in any year to exceed 101% of rates
26 without such costs. It is important to note the statute does not limit the total amount of rebates to
27 1% or less. Nor should the Commission RES rule.

28 In fact, HB 142 includes a specific provision requiring additional rebates, until June 30, 2020, that
29 may exceed 1%, depending on proper calculation of the maximum average retail rate increase, as
30 set out above, and on the calculation performed under section 393.1030.2.(1).

31 Third, the amount of additional rebates must be calculated. Additional rebates are rebates not
32 included in the utility cost of compliance with the RES. The calculation for additional rebates that
33 “shall be paid and included in rates” starts with a test, of whether the maximum average retail
34 rate increase exceeds 1% when the value of utility investments in solar-related projects is
35 ignored. If this number does not exceed 1%, additional rebates are required by the law.

36 The amount of these additional rebates is also clearly set forth in the law. The law states that
37 additional rebates shall be paid up to the amount that results from subtracting the percentage

1 impact of utility solar-related investments from 1%. HB 142 also specifically contemplates that
 2 this calculation could produce a maximum average retail rate increase of greater than 1% when
 3 utility solar-related investments are included.

4 The following table with hypothetical values sets out the operation of the additional rebates
 5 provision in HB 142. The table uses, as an example, five different rate increase values, ranging
 6 from a minus .5% (because average rates could go down in any given year, especially as more
 7 renewable energy is added to the utility mix) up to 1.5%, and then considers four different
 8 scenarios of utility solar-related investment. As shown in the table, as the utility increases its
 9 solar-related investment, the requirement for rebates grows. For the utility that has zero
 10 average retail rate increase and does not invest in renewable energy, total rebates are 1%,
 11 noncompliance with the cap in section 393.1045.

Additional Rebates under HB 142

R = Maximum Average Retail Rate Increase, Including Utility Investment	I = Utility Solar Investment	R - I = Maximum Average Retail Rate Increase Ignoring Utility Solar Investment	If R - I <= 1.00, Additional Rebates Shall Be Paid - "YES" or "NO"	Amount of Additional Rebates = 1% - (R - I)
-0.50%	0%	-0.5%	YES	1.5%
0%	0%	0.0%	YES	1.0%
0.50%	0%	0.5%	YES	0.5%
1.00%	0%	1.0%	YES	0.0%
1.50%	0%	1.5%	NO	N/A

R = Maximum Average Retail Rate Increase, Including Utility Investment	I = Utility Solar Investment	R - I = Maximum Average Retail Rate Increase Ignoring Utility Solar Investment	If R - I <= 1.00, Additional Rebates Shall Be Paid - "YES" or "NO"	Amount of Additional Rebates = 1% - (R - I)
-0.50%	0.5%	-1.0%	YES	2.0%
0%	0.5%	-0.5%	YES	1.5%
0.50%	0.5%	0.0%	YES	1.0%
1.00%	0.5%	0.5%	YES	0.5%
1.50%	0.5%	1.0%	YES	0.0%

R = Maximum Average Retail Rate Increase, Including Utility Investment	I = Utility Solar Investment	R - I = Maximum Average Retail Rate Increase Ignoring Utility Solar Investment	If R - I <= 1.00, Additional Rebates Shall Be Paid - "YES" or "NO"	Amount of Additional Rebates = 1% - (R - I)
-0.50%	1.0%	-1.5%	YES	2.5%
0%	1.0%	-1.0%	YES	2.0%
0.50%	1.0%	-0.5%	YES	1.5%
1.00%	1.0%	0.0%	YES	1.0%
1.50%	1.0%	0.5%	YES	0.5%

R = Maximum Average Retail Rate Increase, Including Utility Investment	I = Utility Solar Investment	R - I = Maximum Average Retail Rate Increase Ignoring Utility Solar Investment	If R - I <= 1.00, Additional Rebates Shall Be Paid - "YES" or "NO"	Amount of Additional Rebates = 1% - (R - I)
-0.50%	1.5%	-2.0%	YES	3.0%
0%	1.5%	-1.5%	YES	2.5%
0.50%	1.5%	-1.0%	YES	2.0%
1.00%	1.5%	-0.5%	YES	1.5%
1.50%	1.5%	0.0%	YES	1.0%

12

13

14 Fourth, other important structural issues must be addressed:

- 1 • 20.100(3)(E), (F); (4)(C), (D), (H)(3); (5)(C) – Time periods underlying estimated costs and
2 avoided costs must be realistic. Because the RES requirement anticipates 10–year RECs,
3 it is appropriate to look at the ten–year stream of costs and avoided costs associated with
4 solar energy. However, solar energy systems have a useful life today of some 30 years.
5 Costs and benefits of solar should be amortized over the full 30–year life, even if only a
6 snapshot of the first 10 years is used. Staff should develop or obtain modeling results to
7 allow full analysis of these provisions prior to their adoption.
- 8 • 20.100(5)(A), (B) – It is not appropriate to consider historical costs in calculating the
9 maximum average retail rate impact. Historical costs cannot, in the words of section
10 393.1045, “*raise the retail rates charged to the customers of electric retail suppliers by an*
11 *average of more than one percent in any year.*” The staff proposal is at odds with the
12 statute in this regard. Current and forward–going operational, maintenance, amortization,
13 and other costs associated with solar energy resources are appropriate for use in the
14 estimation of compliance costs, and a 10–year period of estimation seems appropriate.
- 15 • (7)(B)1. – As can be seen in the table above, the statute creates a mechanism by which a
16 utility that seeks to suppress distributed solar energy investment can limit the size of the
17 rebate program to 1% by keeping its utility solar–related investments to a minimum. This
18 creates a special burden on staff and stakeholders to carefully review and fully
19 participate in utility integrated resource planning processes with a view toward full and
20 fair evaluation of least–cost renewable energy resources. MOSEIA believes that the
21 Commission and staff should revisit the integrated resource planning and RESRAM
22 processes with this reality in mind. The RESRAM should include an opportunity to fully
23 explore new information about solar energy benefits and costs notwithstanding
24 assumptions previously made in the most recent resource plan. The Commission should
25 consider the use of market tests to validate utility assumptions about the costs of both
26 renewable and non–renewable resources.
- 27 • (5)(B) – In addition, the law creates an opportunity for a utility seeking to suppress all
28 renewable energy development to try to deflate the full cost of a non–renewable resource
29 portfolio. The consequences of such manipulation, were it to occur, would be inconsistent
30 with the intent of the statute and a grave disservice to Missouri ratepayers. The RES rule
31 must be designed, particularly, to include the full risk of environmental regulation, not just
32 an estimated carbon compliance cost. To the extent that the staff rule limits the
33 environmental regulatory risk impact to a greenhouse gas compliance cost calculation
34 per ton of emissions, this is inconsistent with the statute and should be amended.
- 35 • (5)(B) – Use of an incremental total cost approach in comparing the estimated cost of
36 compliance and the non–renewable scenario is appropriate, but only to the extent that the
37 full costs of the non–renewable scenario are considered. Such costs must include
38 transmission and distribution energy and capacity costs, fuel price volatility risk costs,
39 line loss costs, and others. To the extent that the staff rule limits the non–renewable
40 portfolio cost calculation and avoided cost calculation to the avoided cost of fuel, a
41 change in the proposed rule is required.
- 42 • (5)(C) – The cost of compliance should be reduced by the compliance cost reduction
43 associated with the value of RECs required transferred to the utility under the law.

- 1 • (6) – The RES rule should be amended to make it clear that the utility bears the burden of
2 production and proof in establishing the reasonableness of its estimates, valuation, and
3 calculations under the rule.
- 4 • (5)(B) – The Commission should immediately initiate a proceeding aimed at developing a
5 “Value of Solar” methodology for correctly assessing the actual compliance cost net of
6 solar energy benefits. Such analysis should also inform the full and fair compensation rate
7 for excess energy produced by NEM customers. This analysis would also provide a useful
8 calculation for benchmarking utility solar-related investments, and utility incentives
9 above and beyond required rebates. Attached to these comments are a paper published
10 by the Interstate Renewable Energy Council setting forth guidance on such value of solar
11 analysis and a copy of the Value of Solar Methodology recently issued by the Minnesota
12 Department of Commerce pursuant to Minnesota statute.
- 13 • (1)(Q), (2), (2)(B), (C), (D), (E), (F), (3), (3)(B), (E), (F), (J), (5)(A), (B), (D), (E), (8)(C), (D) – The staff
14 proposed RES rule greatly expands use of the term “portfolio” to the RES process. This
15 term is undefined and may create unnecessary confusion. The prior language of “RES
16 requirements,” “least-cost renewable generation” or other similar language that adheres
17 to the statutory language should be used.

18

19 **The Net Metering Rule, 4 CSR 240-20.065**

20 Change to the NEM rule is required in order to implement the REC transfer provision of HB 142. As
21 discussed above, the rule should also be amended to explicitly state that the value of RECs
22 transferred to the utility in consideration of rebate payments should be deducted from the costs
23 of RES compliance.

24 (1)(A) – Revisiting the NEM rule also creates an opportunity to correct a confusing definitional
25 error in the NEM rule. The Missouri statute establishing net metering requires that compensation
26 for excess generation must be at a level of “at least avoided fuel cost.” (MRS 386.890.5.(3). The
27 same statute defines “avoided fuel cost.” (MRS 386.890.2.(1) The avoided cost rule (4 CSR 240-
28 20.060 defines “avoided cost” and makes it clear that “avoided fuel costs” are a subset of and not
29 the same as “avoided costs.” The NEM rule should be amended to correct this error. Further,
30 MOSEIA believes the Commission should review the value of excess customer-generated solar
31 energy and establish a value at least as great as full avoided cost under current rules. As
32 discussed above, this full avoided cost should be used in calculation of the process of calculating
33 the maximum average retail rate increase.

34

35 **Other Compliance and Administration Issues**

- 36 • HB 142 contains other provisions that should be reviewed in assessing their
37 potential impact on RES implementation. For example, the law exempts solar
38 systems not held for resale from taxation. (MRS 137.100.(10)) Utility compliance
39 costs should be reduced by the benefit of this tax break. In addition, regulatory

1 costs are reduced to the extent the utility supports customer-owned distributed
2 solar generation. (MRS 386.370) The value of these savings should be captured in
3 the compliance cost calculation as well. Finally, customer-generators bear the
4 costs of insurance for their solar generation systems and, for some systems, risk
5 of damage to the utility. This coverage reduces utility insurance costs, which
6 should also be reflected as a value that reduces compliance costs. (4 CSR
7 240.20.065(5))

- 8 • The Commission staff should consider the system impacts of distributed solar
9 from a DSM perspective as well. At least up to the point of exporting energy,
10 customer-owned solar behaves exactly like energy efficiency measures, and
11 receive credit for these savings in calculating compliance costs. (MRS
12 393.1075.2.(4))
- 13 • It is premature to make any determination about costs or benefits associated with
14 a hypothetical federal renewable energy standard, and RES rule provisions to that
15 effect should be deleted. (4 CSR 240.20.100 (5)(E))
- 16 • Penalties associated with failure to comply with the RES should not be counted as
17 a cost of compliance, and the RES rule should explicitly state this. (4 CSR
18 240.20.100 (8)(E))
- 19 • Numerous aspects of the rebate and net metering application process could be
20 improved in order to track with best practices in solar program administration. For
21 example, while Missouri law provides for a year between approval of an
22 interconnection application and the date a solar system must be operational, there
23 is great benefit to speeding up the average project completion time for solar
24 projects. Various incentives could be designed to encourage the most timely
25 possible project completion. Other provisions, like the requirement for
26 applications 6 months in advance should be harmonized throughout the rule.
- 27 • Numerous other comments and suggestions have been previously submitted or
28 supported by MOSEIA in the January 14, 2014 workshop. These comments are
29 adopted here by reference.

30

31