September 10, 2011

ZIA A. YAMAYEE, Ph.D., P.E., SMIEEE
Br. Godfrey Vassallo Distinguished Professor of Engineering
Professor of Electrical Engineering
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EDUCATION

B.S.E.E., Faculty of Engineering
Kabul University, Afghanistan, 1972

M.S.E.E., Purdue University, 1976

Ph.D., Purdue University, 1978

QUALIFICATIONS SUMMARY AND RESEARCH INTERESTS

Dr. Yamayee's current professional interests include outcomes assessment in engineering education; design in engineering education; engineering design methodologies; and application of design methods to electric power distribution, transmission, and generation. Dr. Yamayee's work to date has included projects in power system planning, maintenance scheduling, hydro-thermal simulations, unit commitment, operational and financial impacts of integrating new technologies with power systems, probabilistic production simulations, and integrated resource planning. In recent years, he has authored a number of articles and has given numerous presentations on outcomes-based engineering curriculum development and the implementation of the ABET Criteria for Accrediting Engineering Programs. He has authored and/or co-authored over 45 articles, a textbook which has been translated into Chinese as well, 22 technical reports, 12 summary papers, and 15 discussions and reviews.

His professional experience include: (1) over 30 years of university administration, teaching, consulting and research, and (2) five years of full-time work in industry.

PROFESSIONAL EXPERIENCE

<u>June 1996 - Present University of Portland</u>

<u>July 2011- Present: Br. Godfrey Vassallo Distinguished Professor of Engineering</u>

In July, 2011 Dr. Yamayee was appointed Br. Godfrey Vassallo Distinguished Professor of Engineering. In this role he teaches courses in the Electrical Engineering program, conducts research in assessment and evaluation as it relates to ABET accreditation and engineering education, he participates in mentoring junior faculty, assists in fund raising specially as it relates to Br. Godfrey Vassallo Professorship Endowment, and assists with expanding relations with industry in the Portland Metro area.

June 1996 - July 2011: Dean of the Shiley School of Engineering and professor of electrical engineering

Dr. Yamayee joined the University of Portland as dean of the School of Engineering and professor of electrical engineering in 1996. As dean he served as the chief administrator of the School of Engineering for 15 years. Dean of the School is appointed by the President of the University and oversees all academic activities, programs, school-wide committees, councils, and is the chief administrator of the personnel and financial matters of the school. The dean promotes intellectual excellence, high academic standards, and innovative programs to meet the diverse needs of both the student body and engineering community.

Below are some of the School's accomplishments during Dr. Yamayee's tenure as dean.

Student Related

- **Quality and number of Students**

In 1998 after a thorough review, the School of Engineering set a goal of enrolling 475 full-time undergraduate engineering and computer science students. This was a lofty goal, given that at the time there were 319 full-time undergraduate students in the School.

Undergraduate engineering enrollment at the University of Portland increased from 319 full-time students in 1998 to 508 in 2009, an increase of 59%. In the fall of 2010, undergraduate engineering enrollment approached 580 (574 full-time and 5 part-time undergraduate students). The quality of students enrolled in the School of Engineering continues to be excellent, with SAT scores well above the average for all UP students. For example, in the fall of 2010, the average SAT score for new engineering students was 1255, while the University average was 1191.

- **Student accomplishments**

School of Engineering students have been progressively more involved in professional societies over the last decade, participating in conferences and competitions. The students have also performed well over the national norms in the Fundamentals of

Engineering Exams. For example in 2008-2009 academic year:

> UP engineering students scored a 92 percent passing rate among recent graduates who took the FE examination. The 92 percent success rate was considerably higher than the national average of 77 percent. The steel bridge design team placed sixth out of 14 teams in the Regional ASCE Conference and Competition in April 2009. In addition, sophomore civil engineering student Carla Norris received third place in the technical paper competition. Two groups of engineering seniors took first and second place in the undergraduate division of the ASM International Annual Student Presentation Competition on April 14, 2009. On April 18, 2009, the team "Neptune Biomechanics" bested 28 teams of University of Portland students to win the Center for Entrepreneurship $16K Business Plan Challenge sponsored by the UP Center for Entrepreneurship and the E-Scholars Program. The Tau Beta Pi Oregon Gamma chapter was commended for punctual Headquarters Reports at the organization's 103rd Convention in Sacramento on October 23-25, 2008. Oregon Gamma also won one of 33 Chapter Project Awards, presented for outstanding performance during 2007-08. The UP Aero Team -- Portland Aeronautics -- placed fourth in a field of 43 competitors at the Lockheed Martin/SAE Aero-Design International Competition in Marietta, Georgia, April 3-5, 2009. At the 2009 SAE Baja Competition, Pilot Racing finished 32nd out of 99 teams.

- **Improving The Student Experience**

In 1998, the Engineering Project Development Fund endowment was established, with an initial value of about $30,000. This fund was created to promote and support collaboration between faculty and students on engineering projects that would result in innovative and publishable work. In addition, the fund was created to encourage and support student participation in professional conferences and competitions, and support design projects sponsored by the industry. In July 2010 we had over $1.2 million in the following endowment funds which provide support for our students:

- Engineering Project Development Fund
- Gates Engineering Fund
- Galarneau Engineering Fund, and
- Carlo Bruno Engineering Fund.

In 1997 a local chapter of the Tau Beta Pi, the national engineering honor society, was established in the School of Engineering. In 2002, the honor society was officially installed as the 230th chapter of the national Tau Beta Pi (Oregon Gamma) honor society. Over the years, Oregon Gamma has enriched the educational experience of our students through its service activities such as free tutoring for engineering students, and mentoring the first-year student design project teams.

Faculty

As new faculty were recruited and hired over the last 15 years, the following were used as profile of an ideal faculty member for the School:

- Supports the University's mission of providing a value-centered education.
- Has two to five years of industrial experience.
- Is interested in working as a consultant on state-of-the art applied research projects leading to publications and/or patents.
- Is interested in including undergraduates in her/his projects.
- Is a self-starter and team player.
- Has degrees from more than one institution.

As a result of these hiring practices as well as supporting similar values in promotion and tenure, today the School of Engineering faculty members are very collegial. They are involved in the University community, are productive scholars and teachers, and are involved in the engineering community as well as the community at-large. For example, in 2008-2009, 16 of 21 faculty members published and/or presented papers in a variety of venues. Twenty faculty members, the largest number in the School's history, provided professional community service by reviewing manuscripts, consulting, or serving as committee chairs and/or members. Five faculty members received grants in support of their scholarship activities.

Expanding Relations with the Engineering Community

One of the major goals of the School of Engineering has been to expand relations with the engineering community, especially in the Portland Metro area. In 1997, a School of Engineering Advisory Council was established, consisting of industry leaders. Also, one Industry Committee was established for each of the ABET-accredited programs. In addition, industry sponsors have been recruited to provide expertise for the senior design projects. The Industry council and committees have assisted the School with fundraising (for the building project, equipment and computing facilities, student projects, scholarships, etc.), student recruitment, internships and temporary jobs for students, and permanent jobs for the graduates. Over 100 engineers and managers serve on the industry council and committees, and many more serve as industry mentors on our senior design projects. For example, in 2008-2009, 16 senior design projects were assisted by industry advisors and mentors.

External Recognition of the School of Engineering Programs

- **ABET Accreditation**

Since 1997, the School's programs have been reviewed three times by ABET, the accreditation body for the engineering and computer science programs:

- In fall of 1997, an accreditation team from ABET visited the School to review the degree programs in civil, electrical, and mechanical engineering. The three programs received reaccreditation for the maximum time allowed under ABET policy.

- The second ABET visit took place in 2003. The Engineering Accreditation Commission (EAC) team reviewed the civil, electrical, and mechanical engineering programs. The Computing Accreditation Commission (CAC) team reviewed the computer science program for first-time accreditation. The engineering programs were reaccredited for the maximum period allowed under ABET policy. The computer science program was accredited for the first time in 2004, and for the maximum period allowed under the ABET policy.

- The third ABET visit took place in 2009. The EAC team reviewed the civil, electrical, and mechanical engineering programs. The CAC team reviewed the computer science program for reaccreditation. All programs were reaccredited for the maximum number of years allowed under ABET policy. Furthermore, the Computer Science Self Study report was selected as one of the best by ABET, and was displayed as a model report in two successive ABET Symposia (2010 and 2011) .

- **US News and World Report Ranking**

U.S. News and World Report ranks the schools of engineering in the U.S. The UP School of Engineering is compared with all other engineering schools that offer undergraduate degrees and master's degree programs, but no Ph.D. programs. Since 2003, the School's programs have consistently rated in the top 34 peer schools of engineering in the nation. In 2008, the University of Portland's engineering program ranked 27th nationwide among schools whose highest degree is a bachelor's or master's. The number of schools in this category was 178.

Physical Plant, Labs, and Computing Facilities

In 1997, the expansion and renovation of the engineering building was identified as one of the School of Engineering's top priorities. A comprehensive space needs analysis was completed by the school faculty, staff, and School Advisory Council during the 1998-99 academic year. The space analysis was done with the objective of providing quality space in support of an excellent engineering program. Afterward, an architectural assessment for engineering facility was completed by Soderstrom Architects. Fundraising for engineering building expansion and renovation became a top priority of the School. By early 2007, about $1.1 million had been raised in support of the building expansion and renovation project. The largest gift in the history of the University, a $12

million gift from Donald and Darlene Shiley, was announced in March of 2007. The Shileys' gift made the expansion and renovation of the engineering building a reality.

In the fall of 2007, work began on a $20 million transformation of Engineering Hall. The plan was to preserve the architectural heritage of the building, built in 1948-1949, while enhancing the internal space through a reconfiguration of classrooms, laboratories and faculty and staff offices. The expansion and renovation increased the physical space by 40 percent.

The three-story Shiley Hall features state-of-the art smart classrooms, a room with videoconferencing capabilities, and 17, 000 square feet for labs. The 1,100 square foot metal shop and 300 square foot wood shop support labs and student projects. In addition, there are three 40-seat classrooms, two 30-seat computer classrooms and two 75-seat tiered lecture halls. The 30-seat open computer lab offers specialized software for engineering and computer science. Sustainable aspects of the building include a green roof, a bioswale for storm water retention and treatment, a roof rainwater diversion to the bioswale, energy efficient lighting, sage glass, efficient water fixtures, reuse of some materials and equipment, energy efficient windows and dual flush toilets. A two story atrium with seating for socializing and studying offers an expansive view of Forest Park across the Willamette River, while The Vollum Center offers two floors dedicated to student study and meetings.

The building achieved LEED (Leadership in Energy and Environmental Design) Platinum Certification. This is the highest level of LEED certification possible.

In January 2010, Shiley Hall was awarded a Grand Award for Building Technology Systems from the American Council of Engineering Companies of Oregon. The ACECO recognized Shiley Hall for innovations with its mechanical and electrical systems such as radiant heating and cooling, coils in the gallery floor, the night flush system, and the use of irrigation water for cooling cycles.

In April 2010, the University of Portland was one of seven organizations from the Portland metropolitan region recognized at the 18th Annual BEST (Businesses for an Environmentally Sustainable Tomorrow) Awards Breakfast.

<u>August 1988 - June 1996 Gonzaga University</u>

Dr. Yamayee joined Gonzaga University as dean of the School of Engineering and professor of electrical engineering in 1988. As dean, he reported to the academic vice president. He was the usual channel of communication for all official business of the School of Engineering. He had responsibility for the budget of the school and had the immediate responsibility for the direction and supervision of the academic programs, both undergraduate and graduate, and for the faculty and students of the school. After consultation with the department chairpersons, he advised the academic vice president on matters of appointments, reappointments, promotion and tenure, salaries and

budgets, and curriculum. The faculty of the school was responsible, through their department chairpersons, to him. The department chairpersons and the school staff reported to him directly.

As an electrical engineering (EE) faculty member, he taught EE courses and performed research in the area of power engineering and engineering design.

In addition to performing his duties as dean of engineering at Gonzaga University, Dr. Yamayee's activities and accomplishments included:

1. Dr. Yamayee led the effort to develop a *Vision for the Future: A Five Year Plan* for the School of Engineering. The implementation of this plan resulted in the following:

    A. The school raised approximately 2 million dollars in support of scholarships for engineering students, resources for faculty development, funds for equipment, and resources for engineering research and development.

    B. The professional activities of the faculty members in the school surpassed any past level of accomplishment.

    C. Establishment of the Society of Women Engineers student section at Gonzaga University.

    D. Establishment of a Tau Beta Pi National Engineering Honor Society chapter at Gonzaga University.

    E. Establishment of the Center for Engineering Design with the goal of enhancing the design content of engineering programs at Gonzaga and promoting interaction between the industrial and academic communities in eastern Washington. This center organizes, supports, and provides guidance to engineering students undertaking design projects defined by industry sponsors.

2. Authored, with another colleague, a textbook entitled <u>Electromechanical Energy Devices and Power Systems</u>, published by John Wiley and Sons. The textbook is intended to serve as a book for a junior level course in electrical engineering programs. The book was adopted by some 40 universities in the United States and Canada during its first year of publication and was also printed in an international edition. In addition, the book has been translated into Chinese. The Chinese version of the book was published by Chuan Hwa Science and Technology Book Co. in Taipei, Taiwan in 1994.

3. Instituted the publication of an annual report with the purpose of keeping stakeholders of the school, both inside and outside the University, informed about activities of the faculty, staff, students, and the engineering advisory council.

4. Developed an environmental engineering option for civil engineering students. Offering this option positively impacted growth in the civil engineering program.

5. Developed an annual goal setting process for the departments and the school with the objective of continually improving the quality of the engineering programs.

6. Streamlined the mission of the school's computer center, SPOCAD educational center:

   A. To provide students, faculty, and staff of the School of Engineering with a state-of-the-art facility in computer aided design and computer aided engineering (CAD/CAE).

   B. To provide CAD/CAE services to the SPOCAD membership and the technical community in the inland Northwest.

7. Completed a planning exercise which began in 1992 in collaboration with the School of Engineering Advisory Council to review earlier plans and develop a comprehensive long-range plan for the remainder of the twentieth century. This plan was presented to the University's Board of Trustees in September 1995.

8. Served as a member of the State Board of Directors of Washington Mathematics, Engineering, and Science Achievement (MESA). The goal of the MESA program is to increase participation in engineering and science related fields by under-represented groups, namely women, African Americans, Hispanics, and American Indians.

9. Served as a member of the Advisory Board to the Spokane Intercollegiate Research and Technology Institute (SIRTI). By merging local higher education resources with regional business/industrial interests, SIRTI brings people and ideas together to create solutions and advance economic development interests. SIRTI was created to assist business and industry to gain a competitive edge in new world markets through applied research and technology development, demonstration, and deployment.

10. Served as an IEEE-Accreditation Board for Engineering and Technology (ABET) Engineering Accreditation Commission program evaluator for five (5) years. As members of different ABET evaluating teams, he reviewed a number of electrical engineering programs in the country.

August 1987 - August 1988 University of New Orleans

Dr. Yamayee joined the University of New Orleans as professor and chairperson of the electrical engineering department. As chairperson, he provided leadership in the development of research programs and the maintenance of quality undergraduate programs. As a faculty member, he taught undergraduate and graduate courses, directed theses and independent research, served on university committees and advised students. In addition to his normal responsibilities, he served on the search committee for the vice chancellor for graduate studies and research and dean of graduate school, and the search committee for the dean of the College of Engineering. He prepared ABET self-study questionnaire's Volume II for the ABET fall 1988 site visit, and he obtained a research grant titled, "Substation Layout Reliability Analysis" from Louisiana Power and Light Company ($24,000).

June 1987 - August 1988 Louisiana Power and Light Co.

Dr. Yamayee worked for the Systems Engineering Section of Louisiana Power and Light Company on a part-time basis. He developed methodologies and analytical techniques to develop optimum resource (supply/demand) plans. Both supply-side (coal, nuclear, oil/gas, solar, wind, cogeneration) and demand-side alternatives (conservation, load management, time-of-day rates, etc.) were modeled.

August 1985 - June 1987 Gonzaga University

Dr. Yamayee joined Gonzaga University as associate professor of electrical engineering in August of 1985, responsible for the power engineering program. Later, he was promoted to full professor.

In addition to full-time teaching, he developed a power program consisting of a coherent set of required and elective courses, and a set of power labs. He developed four undergraduate and graduate courses.

August 1983 - August 1985 Clarkson University

Dr. Yamayee joined Clarkson as associate professor of electrical and computer engineering in August 1983. He taught graduate and undergraduate courses, and developed two graduate courses.

His research included: application of computationally efficient optimization methods and simulation methods to power system planning and operations planning problems, application of probability theory to engineering problems, and distribution system harmonics modeling and analysis. He was principal investigator of the project, "Measurement and Analysis of Distribution System Harmonics Unique to New York State." The Empire State Electric Energy Research Corporation sponsored this project.

He served on numerous departmental committees, and served as chairperson of the Systems Engineering Seminar series. He supervised the research of a Ph.D. student and a number of master's students. He obtained two grants, one internal for $10,000 and one external (with Drs. Hammam and Ortmeyer) for $282,500.

November 1981 - July 1983 Pacific Northwest Utilities Conference Committee (Senior Engineer)

The passage of the Pacific Northwest Electric Power Planning and Conservation Act in 1980 required the utilities of the Columbia River Basin to perform joint regional electric resource planning. Dr. Yamayee worked on different pieces of the regional planning model. This model evaluated cost, reliability, and operability of different load/resource scenarios. The model was utilized as a regional planning tool by the northwest utilities.

His specific tasks at PNUCC included:

Developing Hourly Model: The end product was a model which addressed the economics of system operations on an hourly basis, taking into account both the physics and major constraints of the hydro system.

Developing an approach to modeling wind energy availability as a random variable in a Monte-Carlo simulation.

Developing probabilistic availability models for thermal power plants using NERC/GADS data base.

Developing a stochastic model for nuclear units construction/fuel loading duration.

February 1979 - October 1981 Systems Control, Inc. (Senior Engineer)

He started as engineer, and later he was promoted to senior engineer and coordinator of the research and development group. The projects in which he was involved included:

Dr. Yamayee was a principal investigator of the DOE-sponsored project to develop a unified approach to operations scheduling for electric power under uncertainty. He was responsible for model development for the maintenance scheduling, nuclear refueling, and hydro scheduling.

He reviewed Spinning Reserve and Load Following Credits of Batteries. This project was performed in support of the Argonne National Laboratory's Photovoltaic Battery Storage Project.

He was a major contributor to a project which evaluated the feasibility of decentralized energy technology (DET). He developed a load-following and spinning-reserve requirement model for a power system with DET as part of the generating system.

Dr. Yamayee managed a DOE-sponsored study to evaluate the generation impacts of dispersed solar PV systems with distributed dedicated or system storages.

He was principal investigator responsible for the generation alternative analysis of the national electric reliability study. The cost-effectiveness of conventional and unconventional technologies for two synthetic utilities representing ECAR and WSCC regions was evaluated.

As a key developer of SCI's optimal expansion planning (OEP) program for generation planning, he modified and added to the OEP new capabilities such as hourly dispatch, load following, and spinning reserve requirement evaluation models.

He participated in cost/benefit analysis for future hydroelectric power plants and the development of the simulation-based energy storage evaluation methods projects.

March 1978 - September 1978

Head, Department of Mathematics-Electrical Engineering-Physics, Kabul University, Kabul, Afghanistan.

1977 - 1978

Teaching and research assistant, Purdue University.

Summer of 1976

Worked for a consulting firm (Sargent and Lundy Engineers) and two major electric utilities (Duke Power Co. and TVA).

Summer of 1975

Worked for Detroit Edison and Consumers Power Companies, both in Michigan.

August 1969 - December 1974

Instructor, EE department, Kabul University, Afghanistan.

Spring and Summer of 1970

Naghlu Hydro Electric Power Plant, Sarubi, Afghanistan.

PROFESSIONAL ASSOCIATIONS: Present or Past

American Society for Engineering Education,
Member, Engineering Deans Council of ASEE,
Member, Pacific Northwest Roundtable for Enhancing Engineering Education,
Senior Member, IEEE,
Power and Energy Society (PES) of IEEE,
Power Engineering Education Committee (PEEC) of the PES/IEEE,
The American Association for Artificial Intelligence (1986-1988),
Education Society of IEEE,
System Planning Subcommittee, PES/IEEE,
Work Group on Long Range System Planning, PES/IEEE,
Engineering and Planning Economics Working Group, PES/IEEE,
Vice Chairperson of Santa Clara Valley Chapter of PES/IEEE (1981),
Registered Professional Engineer in the States of California and Washington, and the Commonwealth of the Northern Mariana Islands,
National Society of Professional Engineers.

OTHER SOCIETIES AND ORGANIZATIONS

1969-1972 Student representative to the student organization at Kabul University

1977-1978 IEEE student member and member of the Power Engineering Society

1976-1978 Member of program committee of the International Center of West Lafayette, Indiana

1977-1978 Member of board of directors of the International Center of West Layette, Indiana

1989-1995 Member, state board of directors, Mathematics, Engineering, and Science Achievement (MESA) Program, State of Washington

1990-1996 Member, Spokane Intercollegiate Research and Technology Institute (SIRTI) Advisory Council

1991-1996 IEEE program evaluator, IEEE-ABET/Engineering Accreditation Commission

2004-2006 Member, ABET Disparity Task Force

LANGUAGES

English, Derry (Persian), Pashtu, and German

HONORS AND SCHOLARSHIPS

Afghan-American Scholarship for Graduate Work at Purdue,
N.S.F. Grant for Ph.D. Research,
Ranked first in both high school and B.S.E.E. graduating classes,
Finished both M.S.E.E. and Ph.D. degrees in three years,
1984 Outstanding Young Man of America,
Outstanding Adviser Award, Clarkson University, April 1985,
Member of Tau Beta Pi, the National Engineering Honor Society,
Listed in Who's Who in the West, 24th Edition (1994-95), a companion to Who's Who in America, Marquis Who's Who, 121 Chanlon Rd., New Providence, New Jersey,
Listed in Who's Who in America, beginning with the 51st edition (1996),
Listed in Who's Who in the World, beginning with the 18th edition (2001), Marquis Who's Who, New Providence, New Jersey,
Listed in Who's Who in Science and Engineering, beginning with 6th edition (2002-2003), Marquis Who's Who, New Providence, New Jersey,
Listed in Who's Who in American Education, beginning with 6th edition (2004-2005), Marquis Who's Who, New Providence, New Jersey,
Listed in Strathmore's Who's Who, 26 Bond Street, Westbury, NY (2008).

CONSULTING

Department of Energy (DOE),
Argonne National Laboratory,
Colombian Power Interconnection,
Bonneville Power Administration,
Oakridge National Laboratory,
Systems Europe, S.A.,
Electric Power Research Institute (EPRI),
A group of electric cooperatives in the states of Washington, Oregon, Idaho and Montana,
A group of municipality-owned utilities in the states of Washington, Oregon, Idaho and Montana,
A group of public utility districts in the states of Washington, Oregon, Idaho and Montana,
Direct Service Industries (aluminum, metallurgical, and chemical companies) in the Pacific Northwest,
A group of investor-owned electric utilities in the northwest (Idaho Power, Montana Power, Pacific Power and Light, Portland General Electric, Puget Sound Power and Light, and Washington Water Power),
Engineering and Consulting Services, Inc. (ECSI),

A number of Universities-reviewed Engineering programs for ABET accreditation compliance.

MISCELLANEOUS

He has refereed numerous technical papers for PES and Power Industry Computer Application (PICA) conferences, and Journal of Operations Research. Also has reviewed proposed books for John Wiley and Sons, McGraw-Hill, and CRC Press.

He has presented over forty papers at IEEE/PES, PICA, and other technical conferences.

He has given numerous seminars on Power System Planning/Operations Planning at universities, electric utility industry, and governmental organizations around the country.

He has given numerous talks on outcomes-based curriculum development, and assessment and evaluation of engineering programs.

PUBLICATIONS

A. PAPERS, THESES, AND BOOKS

1. Optimization for Power System Operations and Planning, Ph.D. Thesis, Purdue University, 1978.

2. "A Hybrid Dynamic Programming/Branch-and-Bound Approach for Generation Planning," A.H. El-Abiad, T.L. Morin, Z.A. Yamayee, Proceedings of the Ninth Annual Pittsburgh Conference on Simulation and Modeling, pp. 111-117 Pittsburgh, Pennsylvania, April 1978.

3. "Optimal and Near-Optimal Unit Commitment Scheduling," Z.A. Yamayee, A.H. El-Abiad, T.L. Morin, Proceedings of the Sixth Power System Computation Conference, pp. 517-529, Darmstadt, West Germany, August 21-25, 1978.

4. "Alternative Methods for Achieving Given Power System Reliability Levels," Z.A. Yamayee, et. al., Proceedings of the 1980 Midwest Power Symposium, pp. 3.3.1-3.3.8, October 27-28, 1980.

5. "Demonstration of the Use of a DC Link to Increase Import and Export Capabilities," Z.A. Yamayee, Proceedings of the 1980 Midwest Power Symposium, pp. 7.2.1-7.2.6, October 27-28, 1980.

6. "Electric System Impacts on Disperse Energy Technologies," National Conference on Renewable Energy Technologies, 8 pages, contributing author, Honolulu, Hawaii, December 7-11, 1980.

7. “Load-Following and Spinning-Reserve Penalties for Intermittent Generation," S.T. Lee and Z.A. Yamayee, IEEE Transactions on Power Apparatus and Systems, Vol. PAS-100, No. 3, pp. 1203-1211, March 1981.

8. "System Reliability Implications of Distributed Power Sources in the Electric Grid," contributing author, Conference on New Energy Conservation Technologies and Their Commercialization, 9 pages, Berlin, West Germany, April 6-10, 1981.

9. "Utility Integration Issues of Residential Photovoltaic System," Z.A. Yamayee and J. Peschon, IEEE Transactions on Power Apparatus and Systems, Vol. PAS-100, No. 5, pp. 2365-2373, May 1981.

10. "Financial Transactions Between the Electric Utility and the Solar Photovoltaic System Owner," Z.A. Yamayee and J. Peschon, IEEE Transactions on Power Apparatus and Systems, Vol. PAS-100, No. 8, pp. 3950-3958, August 1981.

11. “Transactions Between the Electric Utility and the Photovoltaic Owner," Z.A. Yamayee and J. Peschon, International Journal of Electrical Power and Energy Systems, Vol. 3, No. 4, pp. 187-191, October 1981.

12. "Analytical Treatment of Hydro Units with Random Energy in Stochastic Production Simulation," C. Dechamps, Z.A. Yamayee, M.L. Chan, IEEE Transactions on Power Apparatus and Systems, Vol. PAS-101, No. 1, pp. 113-119, January 1982.

13. "Maintenance Scheduling: Description, Literature Survey, and Interface with Overall Operations Scheduling,” Z.A. Yamayee, IEEE Transactions on Power Apparatus and Systems, Vol. PAS-101, pp. 2770-2779, August 1982.

14. "Long-Range Planning in the Northwest: Use of Mathematical Programming with Computationally Efficient Simulation Methods," Zia A. Yamayee, Invited Paper, ORSA/TIMS 1982 Joint National Meeting, San Diego, California, October 25-27, 1982.

15. "A Computationally Efficient Optimal Maintenance Scheduling Approach," Z.A. Yamayee, K. Sidenblad, M. Yoshimura, IEEE Transactions on Power Apparatus and Systems, Vol. PAS-102, No. 2, pp. 330-338, February 1983.

16. "Effect of Size and Dispersion of Conventional and Intermittent Generation on System Reliability," Z.A. Yamayee and F.S. Ma, International Journal of Electrical Power and Energy Systems, Volume 5, No. 2, pp. 94-100, April 1983.

17. "Thermal Unit Availability Modeling in a Regional Simulation Model," Z.A. Yamayee, W. Robinett, and J. Port, IEEE Transactions on Power Apparatus and Systems, Vol. PAS-102, No. 12, pp. 3885-3892, December 1983.

18. "Nuclear Unit Construction/Fuel-Loading Duration," Z.A. Yamayee and D. Anderson, IEEE Transactions on Power Apparatus and Systems, Vol. PAS-102, No. 12, pp. 3736-3743, December 1983.

19. "Modeling Intermittent Generation (IG) in a Monte-Carlo Regional System Analysis Model," Z.A. Yamayee, IEEE Transactions on Power Apparatus and Systems, Vol. PAS-103, No. 1, pp. 174-182, January 1984.

20. "A Flexible Generation Planning Approach Recognizing Long-Term Load Growth Uncertainty," Z.A. Yamayee and H. Hakimmahhadi, IEEE Transactions on Power Apparatus and Systems, Vol. PAS-103, No. 8, pp. 1990-1996, August 1984.

21. "Long-Range Generation Planning: The Use of Optimization and Simulation-Based Computer Programs," Z.A. Yamayee, International Journal of Electrical Power and Energy Systems, Vol. 7, No. 1, pp. 21-27, January 1985.

22. "Production Simulation for Power System Studies," Z.A. Yamayee, H. Hakimmashhadi, IEEE Transactions on Power Apparatus and Systems, Vol. PAS-104, No. 12, pp. 3376-3381, December 1985.

23. "Long-Range Generation Planning in a Predominantly Hydro System," Z.A. Yamayee, H. Hakimmashhadi, 1985 IFAC Symposium on Planning and Operation of Electric Energy Systems, 6 pages, Brazil, July 1985.

24. "Solar Energy Prospects in the Northwest U.S.," Z.A. Yamayee, ENERGY: The International Journal, Vol. 10, No. 10, pp. 1159-1164, October 1985.

25. "Electric Resource Planning in a Predominantly Hydro System: Optimization and Simulation," Z.A. Yamayee, Proceedings of the International Association of Science and Technology for Development (IASTED) Conference, pp. 8-12, Bozeman, Montana, August 20-22, 1986.

26. "Maximum Harmonic Currents and Voltages on Transmission Lines: A Stochastic Approach," W.E. Kazibwe, Z.A. Yamayee, Proceedings of the Second International Conference on Harmonics in Power Systems, pp. 330-338, Winnipeg, Manitoba, Canada, October 6-7, 1986.

27. "Probabilistic Modeling of Distribution Harmonics: Data Collection and Analysis," Z.A. Yamayee, W. Kazibwe, International Journal of Electrical Power and Energy Systems, Vol. 9, No. 3, pp. 189-192, July 1987.

28. "Stochastic Modeling of Harmonics Due to Existing and Prospective Harmonic Sources," Zia A. Yamayee, International Journal of Electrical Power and Energy Systems, Vol. 1, No.2, pp. 134-136, April 1988.

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