

REFERENCES

- [1] R. Billinton and Y. Gao, “Multistate wind energy conversion system models for adequacy assessment of generating systems incorporating wind energy,” *IEEE Transactions on Energy Conversion*, vol. 23, no. 1, pp. 163–170, 2008.
- [2] World Energy Council, “Variable renewables integration in electricity systems: how to get it right,” 2016.
- [3] I. E. AGENCY, “Renewables 2023, analysis and forecast to 2028,” 2024.
- [4] Sri Lanka Sustainable Energy Authority, “Battle for Solar Energy,” <https://www.energy.gov.lk/index.php/en/soorya-bala-sangramaya>, accessed: 2021-03-20.
- [5] R. Allan and R. Billinton, “Concepts of power system reliability evaluation,” *International Journal of Electrical Power & Energy Systems*, vol. 10, no. 3, pp. 139–141, 1988.
- [6] L. Wang and C. Singh, “Population-based intelligent search in reliability evaluation of generation systems with wind power penetration,” *IEEE transactions on power systems*, vol. 23, no. 3, pp. 1336–1345, 2008.
- [7] L. Geng, Y. Zhao, and G. Chen, “Simplified sequential simulation of bulk power system reliability via chronological probability model of load supplying capability,” *IEEE Transactions on Power Systems*, vol. 33, no. 3, pp. 2349–2358, 2017.
- [8] A. A. Sallam, M. Desouky, and H. Desouky, “Evaluation of optimal-reliability indices for electrical distribution systems,” *IEEE transactions on reliability*, vol. 39, no. 3, pp. 259–264, 1990.
- [9] C. Singh, P. Jirutitijaroen, and J. Mitra, *Electric power grid reliability evaluation: models and methods*. John Wiley & Sons, 2018.
- [10] Ø. S. Laengen and V. V. Vadlamudi, “Dc and ac contingency solvers in composite power system adequacy assessment,” in *Advances in RAMS Engineering*. Springer, 2020, pp. 3–48.
- [11] D. Wu, G. Li, M. Javadi, A. M. Malyscheff, M. Hong, and J. N. Jiang, “Assessing impact of renewable energy integration on system strength using site-dependent short circuit ratio,” *IEEE Transactions on Sustainable Energy*, vol. 9, no. 3, pp. 1072–1080, 2017.
- [12] NREL, “Explained: Fundamentals of power grid reliability and clean electricity,” United States, 2024.

- [13] G. Golding, “Surging renewable energy in texas prompts electricity generation adequacy questions,” 2021.
- [14] D. S. Kumar, S. Maharjan, D. Srinivasan *et al.*, “Ramp-rate limiting strategies to alleviate the impact of pv power ramping on voltage fluctuations using energy storage systems,” *Solar Energy*, vol. 234, pp. 377–386, 2022.
- [15] M. P. Wand and M. C. Jones, *Kernel smoothing*. CRC press, 1994.
- [16] B. Hu, Y. Li, H. Yang, and H. Wang, “Wind speed model based on kernel density estimation and its application in reliability assessment of generating systems,” *Journal of Modern Power Systems and Clean Energy*, vol. 5, no. 2, pp. 220–227, 2017.
- [17] P. M. Subcommittee, “Ieee reliability test system,” *IEEE Transactions on power apparatus and systems*, no. 6, pp. 2047–2054, 1979.
- [18] IEA, “World energy outlook 2019–analysis-ia,” *World Energy Outlook 2019*, 2019.
- [19] M. Hasheminamin, V. G. Agelidis, V. Salehi, R. Teodorescu, and B. Hredzak, “Index-based assessment of voltage rise and reverse power flow phenomena in a distribution feeder under high pv penetration,” *IEEE Journal of Photovoltaics*, vol. 5, no. 4, pp. 1158–1168, 2015.
- [20] L. Wu, J. Park, J. Choi, A. El-Keib, M. Shahidehpour, and R. Billinton, “Probabilistic reliability evaluation of power systems including wind turbine generators using a simplified multi-state model: A case study,” in *2009 IEEE Power & Energy Society General Meeting*. IEEE, 2009, pp. 1–6.
- [21] F. Vallee, J. Lobry, and O. Deblecker, “System reliability assessment method for wind power integration,” *IEEE Transactions on Power Systems*, vol. 23, no. 3, pp. 1288–1297, 2008.
- [22] A. S. Dobakhshari and M. Fotuhi-Firuzabad, “A reliability model of large wind farms for power system adequacy studies,” *IEEE Transactions on energy conversion*, vol. 24, no. 3, pp. 792–801, 2009.
- [23] C. D’Annunzio, S.-H. Huang, and S. Santoso, “Generation adequacy assessment of power systems with wind generation: A system operations perspective,” in *2009 IEEE Power & Energy Society General Meeting*. IEEE, 2009, pp. 1–7.
- [24] R. Karki, P. Hu, and R. Billinton, “A simplified wind power generation model for reliability evaluation,” *IEEE transactions on Energy conversion*, vol. 21, no. 2, pp. 533–540, 2006.

- [25] W. Li *et al.*, *Reliability assessment of electric power systems using Monte Carlo methods*. Springer Science & Business Media, 2013.
- [26] R. Ghajar and R. Billinton, "A monte carlo simulation model for the adequacy evaluation of generating systems," *Reliability Engineering & System Safety*, vol. 20, no. 3, pp. 173–186, 1988.
- [27] R. Billinton and R. Karki, "Application of monte carlo simulation to generating system well-being analysis," *IEEE Transactions on Power systems*, vol. 14, no. 3, pp. 1172–1177, 1999.
- [28] R. Billinton and L. Gan, "Wind power modeling and application in generating adequacy assessment," in *IEEE WESCANEX 93 Communications, Computers and Power in the Modern Environment-Conference Proceedings*. IEEE, 1993, pp. 100–106.
- [29] R. Billinton and G. Bai, "Generating capacity adequacy associated with wind energy," *IEEE transactions on energy conversion*, vol. 19, no. 3, pp. 641–646, 2004.
- [30] P. Chen, T. Pedersen, B. Bak-Jensen, and Z. Chen, "Arima-based time series model of stochastic wind power generation," *IEEE transactions on power systems*, vol. 25, no. 2, pp. 667–676, 2009.
- [31] M. Mosadeghy, R. Yan, and T. K. Saha, "A time-dependent approach to evaluate capacity value of wind and solar pv generation," *IEEE transactions on sustainable energy*, vol. 7, no. 1, pp. 129–138, 2015.
- [32] Z. Shu and P. Jirutitijaroen, "Latin hypercube sampling techniques for power systems reliability analysis with renewable energy sources," *IEEE Transactions on Power Systems*, vol. 26, no. 4, pp. 2066–2073, 2011.
- [33] A. M. L. Da Silva, R. A. Fernandez, and C. Singh, "Generating capacity reliability evaluation based on monte carlo simulation and cross-entropy methods," *IEEE Transactions on Power Systems*, vol. 25, no. 1, pp. 129–137, 2010.
- [34] R. A. Gonzalez-Fernandez and A. M. L. da Silva, "Reliability assessment of time-dependent systems via sequential cross-entropy monte carlo simulation," *IEEE Transactions on Power Systems*, vol. 26, no. 4, pp. 2381–2389, 2011.
- [35] L. de Magalhães Carvalho, R. A. Gonzalez-Fernandez, A. M. L. Da Silva, M. A. Da Rosa, and V. Miranda, "Simplified cross-entropy based approach for generating capacity reliability assessment," *IEEE Transactions on Power Systems*, vol. 28, no. 2, pp. 1609–1616, 2012.

- [36] E. Tomasson and L. Söder, “Generation adequacy analysis of multi-area power systems with a high share of wind power,” *IEEE Transactions on Power Systems*, vol. 33, no. 4, pp. 3854–3862, 2017.
- [37] L. Wang and C. Singh, “Genetic algorithm based adequacy evaluation of hybrid power generation system including wind turbine generators,” in *2007 International Conference on Intelligent Systems Applications to Power Systems*. IEEE, 2007, pp. 1–5.
- [38] N. Samaan and C. Singh, “Adequacy assessment of power system generation using a modified simple genetic algorithm,” *IEEE Transactions on Power Systems*, vol. 17, no. 4, pp. 974–981, 2002.
- [39] L. Wang, C. Singh, and K. C. Tan, “Reliability evaluation of power-generating systems including time-dependent sources based on binary particle swarm optimization,” in *2007 IEEE Congress on Evolutionary Computation*. IEEE, 2007, pp. 3346–3352.
- [40] V. Miranda, L. de Magalhaes Carvalho, M. A. Da Rosa, A. M. L. Da Silva, and C. Singh, “Improving power system reliability calculation efficiency with eps variants,” *IEEE Transactions on Power Systems*, vol. 24, no. 4, pp. 1772–1779, 2009.
- [41] A. Ali Kadhemi, N. I. Abdul Wahab, I. Aris, J. Jasni, and A. N. Abdalla, “Reliability assessment of power generation systems using intelligent search based on disparity theory,” *Energies*, vol. 10, no. 3, p. 343, 2017.
- [42] A. Keane, M. Milligan, C. J. Dent, B. Hasche, C. D’Annunzio, K. Dragoon, H. Holttinen, N. Samaan, L. Soder, and M. O’Malley, “Capacity value of wind power,” *IEEE Transactions on Power Systems*, vol. 26, no. 2, pp. 564–572, 2010.
- [43] X. Fang, Q. Guo, D. Zhang, and S. Liang, “Capacity credit evaluation of photovoltaic generation based on system reserve capacity,” in *2012 Asia-Pacific Power and Energy Engineering Conference*. IEEE, 2012, pp. 1–4.
- [44] R. M. Castro and L. A. Ferreira, “A comparison between chronological and probabilistic methods to estimate wind power capacity credit,” *IEEE Transactions on Power Systems*, vol. 16, no. 4, pp. 904–909, 2001.
- [45] M. Milligan and K. Porter, “Determining the capacity value of wind: An updated survey of methods and implementation,” National Renewable Energy Lab.(NREL), Golden, CO (United States), Tech. Rep., 2008.

- [46] G. R. Pudaruth and F. Li, "Capacity credit evaluation: A literature review," in *2008 Third International Conference on Electric Utility Deregulation and Restructuring and Power Technologies*. IEEE, 2008, pp. 2719–2724.
- [47] S. G. Gossagne and O. Vishwamitra, "Assessing capacity credit of a solar photovoltaic farm in an island power system," in *2017 IEEE PES Asia-Pacific Power and Energy Engineering Conference (APPEEC)*. IEEE, 2017, pp. 1–6.
- [48] L. Ferreira and P. Carvalho, "Capacity credit for renewable energy resources," in *IEEE Power Engineering Society. 1999 Winter Meeting (Cat. No. 99CH36233)*, vol. 1. IEEE, 1999, pp. 471–475.
- [49] S. Samadi and C. Singh, "Capacity credit evaluation of solar power plants," in *2014 IEEE PES General Meeting| Conference & Exposition*. IEEE, 2014, pp. 1–5.
- [50] S. Sulaeman, M. Benidris, Y. Tian, and J. Mitra, "Modeling and evaluating the capacity credit of pv solar systems using an analytical method," in *2016 IEEE/PES Transmission and Distribution Conference and Exposition (T&D)*. IEEE, 2016, pp. 1–5.
- [51] Y. Lyu, S. Sun, P. Zeng, J. Yan, Z. Yu, G. Lu, and C. Xie, "Capacity credit value calculation for centralized wind and pv bundled power," 2015.
- [52] S. H. Madaeni, R. Sioshansi, and P. Denholm, "The capacity value of solar generation in the western united states," in *2012 IEEE Power and Energy Society General Meeting*. IEEE, 2012, pp. 1–8.
- [53] Y. H. Kim, S. H. Kim, E. H. Kim, and J. Y. Kang, "The capacity credit of wind power in korea-jeju," in *2009 Transmission & Distribution Conference & Exposition: Asia and Pacific*. IEEE, 2009, pp. 1–4.
- [54] S. Subramaniyan, M. Mathew, and J. Hossain, "Renewable energy capacity value estimation using peak period method in rajasthan," in *2018 3rd International Conference for Convergence in Technology (I2CT)*. IEEE, 2018, pp. 1–6.
- [55] S. Awara, H. Zareipour, and A. Knight, "Solar power capacity value evaluation-a review," in *2018 IEEE Canadian Conference on Electrical & Computer Engineering (CCECE)*. IEEE, 2018, pp. 1–5.
- [56] C. Dent, R. Sioshansi, J. Reinhart, A. Wilson, S. Zachary, M. Lynch, C. Bothwell, and C. Steele, "Capacity value of solar power: Report of the ieee pes task force on capacity value of solar power," in *2016 International Conference on*

- Probabilistic Methods Applied to Power Systems (PMAPS)*. IEEE, 2016, pp. 1–7.
- [57] A. Blakers, B. Lu, M. Stocks, K. Anderson, and A. Nadolny, “Pumped hydro energy storage to support 100% renewable electricity,” in *2018 IEEE 7th World Conference on Photovoltaic Energy Conversion (WCPEC)(A Joint Conference of 45th IEEE PVSC, 28th PVSEC & 34th EU PVSEC)*. IEEE, 2018, pp. 3672–3675.
 - [58] H. Wang and X. Bai, “Adequacy assessment of generating systems incorporating wind, pv and energy storage,” in *IEEE PES Innovative Smart Grid Technologies*. IEEE, 2012, pp. 1–6.
 - [59] G. Edwards, S. Sheehy, C. J. Dent, and M. C. Troffaes, “Assessing the contribution of nightly rechargeable grid-scale storage to generation capacity adequacy,” *Sustainable Energy, Grids and Networks*, vol. 12, pp. 69–81, 2017.
 - [60] R. Zheng and J. Zhong, “Generation adequacy assessment for power systems with wind turbine and energy storage,” in *2010 Innovative Smart Grid Technologies (ISGT)*. IEEE, 2010, pp. 1–6.
 - [61] U. Oh, J. Choi, and H.-h. Kim, “Capacity credit and reasonable ess evaluation of power system including wtgs combined with bess,” in *2016 International Conference on Probabilistic Methods Applied to Power Systems (PMAPS)*. IEEE, 2016, pp. 1–6.
 - [62] G. Prashanti and C. Venkaiah, “Impact of energy storage integration on composite system reliability,” in *2016 National Power Systems Conference (NPSC)*. IEEE, 2016, pp. 1–6.
 - [63] M. Abogaleela and K. Kopsidas, “Reliability evaluation framework incorporating energy storage systems,” in *2017 Nineteenth International Middle East Power Systems Conference (MEPCON)*. IEEE, 2017, pp. 490–495.
 - [64] R. Billinton *et al.*, “Impacts of energy storage on power system reliability performance,” in *Canadian Conference on Electrical and Computer Engineering, 2005*. IEEE, 2005, pp. 494–497.
 - [65] W. Li and B. Bagen, “Reliability evaluation of integrated wind/diesel/storage systems for remote locations,” in *2010 IEEE 11th International Conference on Probabilistic Methods Applied to Power Systems*. IEEE, 2010, pp. 791–795.

- [66] L. Koh, W. Peng, K. Tseng, and G. ZhiYong, "Reliability evaluation of electric power systems with solar photovoltaic & energy storage," in *2014 International Conference on Probabilistic Methods Applied to Power Systems (PMAPS)*. IEEE, 2014, pp. 1–5.
- [67] S. S. Singh and E. Fernandez, "Reliability evaluation of a solar photovoltaic system with and without battery storage," in *2015 Annual IEEE India Conference (INDICON)*. IEEE, 2015, pp. 1–6.
- [68] Y. Xu and C. Singh, "Power system reliability impact of energy storage integration with intelligent operation strategy," *IEEE Transactions on smart grid*, vol. 5, no. 2, pp. 1129–1137, 2013.
- [69] J. R. Ubeda and R. Allan, "Sequential simulation applied to composite system reliability evaluation," in *IEE Proceedings C (Generation, Transmission and Distribution)*, vol. 139, no. 2. IET, 1992, pp. 81–86.
- [70] R. Billinton, R. Karki, Y. Gao, D. Huang, P. Hu, and W. Wangdee, "Adequacy assessment considerations in wind integrated power systems," *IEEE Transactions on Power Systems*, vol. 27, no. 4, pp. 2297–2305, 2012.
- [71] Y. Zhao, Y. Tang, W. Li, and J. Yu, "Composite power system reliability evaluation based on enhanced sequential cross-entropy monte carlo simulation," *IEEE Transactions on Power Systems*, vol. 34, no. 5, pp. 3891–3901, 2019.
- [72] Z. Shu, P. Jirutitijaroen, A. M. L. da Silva, and C. Singh, "Accelerated state evaluation and latin hypercube sequential sampling for composite system reliability assessment," *IEEE Transactions on Power Systems*, vol. 29, no. 4, pp. 1692–1700, 2014.
- [73] L. Geng, Y. Zhao, and W. Li, "Enhanced cross entropy method for composite power system reliability evaluation," *IEEE Transactions on Power Systems*, vol. 34, no. 4, pp. 3129–3139, 2019.
- [74] E. Tomasson and L. Söder, "Improved importance sampling for reliability evaluation of composite power systems," *IEEE Transactions on Power Systems*, vol. 32, no. 3, pp. 2426–2434, 2016.
- [75] P. Jirutitijaroen and C. Singh, "Comparison of simulation methods for power system reliability indexes and their distributions," *IEEE transactions on power systems*, vol. 23, no. 2, pp. 486–493, 2008.

- [76] R. A. González-Fernández, A. M. L. da Silva, L. C. Resende, and M. T. Schilling, “Composite systems reliability evaluation based on monte carlo simulation and cross-entropy methods,” *IEEE Transactions on Power Systems*, vol. 28, no. 4, pp. 4598–4606, 2013.
- [77] J. He, Y. Sun, D. Kirschen, C. Singh, and L. Cheng, “State-space partitioning method for composite power system reliability assessment,” *IET generation, transmission & distribution*, vol. 4, no. 7, pp. 780–792, 2010.
- [78] C. Singh and J. Mitra, “Composite system reliability evaluation using state space pruning,” *IEEE Transactions on Power Systems*, vol. 12, no. 1, pp. 471–479, 1997.
- [79] C. L. Borges, D. M. Falcao, J. C. O. Mello, and A. C. Melo, “Composite reliability evaluation by sequential monte carlo simulation on parallel and distributed processing environments,” *IEEE Transactions on power systems*, vol. 16, no. 2, pp. 203–209, 2001.
- [80] F. Chen, F. Li, W. Feng, Z. Wei, H. Cui, and H. Liu, “Reliability assessment method of composite power system with wind farms and its application in capacity credit evaluation of wind farms,” *Electric Power Systems Research*, vol. 166, pp. 73–82, 2019.
- [81] D. Urgun and C. Singh, “A hybrid monte carlo simulation and multi label classification method for composite system reliability evaluation,” *IEEE Transactions on Power Systems*, vol. 34, no. 2, pp. 908–917, 2018.
- [82] A. M. L. da Silva, L. C. de Resende, L. A. da Fonseca Manso, and V. Miranda, “Composite reliability assessment based on monte carlo simulation and artificial neural networks,” *IEEE Transactions on Power Systems*, vol. 22, no. 3, pp. 1202–1209, 2007.
- [83] N. M. Pindoriya, P. Jirutitijaroen, D. Srinivasan, and C. Singh, “Composite reliability evaluation using monte carlo simulation and least squares support vector classifier,” *IEEE Transactions on Power Systems*, vol. 26, no. 4, pp. 2483–2490, 2011.
- [84] B. Bordeerath and P. Jirutitijaroen, “Techniques for improving precision and construction efficiency of a pattern classifier in composite system reliability assessment,” *Electric power systems research*, vol. 88, pp. 33–41, 2012.
- [85] R. C. Green II, L. Wang, M. Alam, and C. Singh, “Intelligent state space pruning for monte carlo simulation with applications in composite power system

- reliability,” *Engineering applications of artificial intelligence*, vol. 26, no. 7, pp. 1707–1724, 2013.
- [86] W. Liu, D. Guo, Y. Xu, R. Cheng, Z. Wang, and Y. Li, “Reliability assessment of power systems with photovoltaic power stations based on intelligent state space reduction and pseudo-sequential monte carlo simulation,” *Energies*, vol. 11, no. 6, p. 1431, 2018.
 - [87] M. Benidris, S. Elsaiah, and J. Mitra, “Power system reliability evaluation using a state space classification technique and particle swarm optimisation search method,” *IET Generation, Transmission & Distribution*, vol. 9, no. 14, pp. 1865–1873, 2015.
 - [88] B. Hua, Z. Bie, C. Liu, G. Li, and X. Wang, “Eliminating redundant line flow constraints in composite system reliability evaluation,” *IEEE Transactions on Power Systems*, vol. 28, no. 3, pp. 3490–3498, 2013.
 - [89] X. Luo, A. Patton, and C. Singh, “Real power transfer capability calculations using multi-layer feed-forward neural networks,” *IEEE Transactions on Power Systems*, vol. 15, no. 2, pp. 903–908, 2000.
 - [90] Y. Wang, C. Guo, Q. Wu, and S. Dong, “Adaptive sequential importance sampling technique for short-term composite power system adequacy evaluation,” *IET Generation, Transmission & Distribution*, vol. 8, no. 4, pp. 730–741, 2014.
 - [91] Q. Chen and L. Mili, “Composite power system vulnerability evaluation to cascading failures using importance sampling and antithetic variates,” *IEEE transactions on power systems*, vol. 28, no. 3, pp. 2321–2330, 2013.
 - [92] A. L. Da Silva, L. De Resende, L. da Fonseca Manso, and V. Miranda, “Well-being analysis for composite generation and transmission systems based on pattern recognition techniques,” *IET generation, transmission & distribution*, vol. 2, no. 2, pp. 202–208, 2008.
 - [93] N. Samaan and C. Singh, “A new method for composite system annualized reliability indices based on genetic algorithms,” in *IEEE Power Engineering Society Summer Meeting*, vol. 2. IEEE, 2002, pp. 850–855.
 - [94] —, “Assessment of the annual frequency and duration indices in composite system reliability using genetic algorithms,” in *2003 IEEE Power Engineering Society General Meeting (IEEE Cat. No. 03CH37491)*, vol. 2. IEEE, 2003, pp. 692–697.

- [95] W. Liu, R. Cheng, Y. Xu, and Z. Liu, "Fast reliability evaluation method for composite power system based on the improved eda and double cross linked list," *IET Generation, Transmission & Distribution*, vol. 11, no. 15, pp. 3835–3842, 2017.
- [96] R. K. Varma, S. A. Rahman, T. Vanderheide, and M. D. Dang, "Harmonic impact of a 20-mw pv solar farm on a utility distribution network," *IEEE Power and Energy Technology Systems Journal*, vol. 3, no. 3, pp. 89–98, 2016.
- [97] C. L. T. Borges, "An overview of reliability models and methods for distribution systems with renewable energy distributed generation," *Renewable and sustainable energy reviews*, vol. 16, no. 6, pp. 4008–4015, 2012.
- [98] A. Tabares, G. Munoz-Delgado, J. F. Franco, J. M. Arroyo, and J. Contreras, "An enhanced algebraic approach for the analytical reliability assessment of distribution systems," *IEEE Transactions on Power Systems*, vol. 34, no. 4, pp. 2870–2879, 2019.
- [99] I.-S. Bae and J.-O. Kim, "Reliability evaluation of distributed generation based on operation mode," *IEEE Transactions on power systems*, vol. 22, no. 2, pp. 785–790, 2007.
- [100] K. Zou, A. P. Agalgaonkar, K. M. Muttaqi, and S. Perera, "An analytical approach for reliability evaluation of distribution systems containing dispatchable and nondispatchable renewable dg units," *IEEE Transactions on smart grid*, vol. 5, no. 6, pp. 2657–2665, 2014.
- [101] Z. Li, W. Wu, B. Zhang, and X. Tai, "Analytical reliability assessment method for complex distribution networks considering post-fault network reconfiguration," *IEEE Transactions on Power Systems*, vol. 35, no. 2, pp. 1457–1467, 2019.
- [102] G. T. Heydt and T. J. Graf, "Distribution system reliability evaluation using enhanced samples in a monte carlo approach," *IEEE transactions on power systems*, vol. 25, no. 4, pp. 2006–2008, 2010.
- [103] A. M. L. da Silva, L. C. Nascimento, M. A. da Rosa, D. Issicaba, and J. A. P. Lopes, "Distributed energy resources impact on distribution system reliability under load transfer restrictions," *IEEE Transactions on Smart Grid*, vol. 3, no. 4, pp. 2048–2055, 2012.
- [104] K. Zou, A. P. Agalgaonkar, K. M. Muttaqi, S. Perera *et al.*, "Distribution system restoration with renewable resources for reliability improvement under system

- uncertainties,” *IEEE Transactions on Industrial Electronics*, vol. 67, no. 10, pp. 8438–8449, 2019.
- [105] X. Liang and L. Goel, “Distribution system reliability evaluation using the monte carlo simulation method,” *Electric Power systems research*, vol. 40, no. 2, pp. 75–83, 1997.
 - [106] R. Billinton and P. Wang, “Teaching distribution system reliability evaluation using monte carlo simulation,” *IEEE Transactions on Power Systems*, vol. 14, no. 2, pp. 397–403, 1999.
 - [107] J. A. Martinez-Velasco and G. Guerra, “Reliability analysis of distribution systems with photovoltaic generation using a power flow simulator and a parallel monte carlo approach,” *Energies*, vol. 9, no. 7, p. 537, 2016.
 - [108] R. Allan and M. Da Silva, “Evaluation of reliability indices and outage costs in distribution systems,” *IEEE transactions on Power Systems*, vol. 10, no. 1, pp. 413–419, 1995.
 - [109] X. Zhang, Z. Bie, and G. Li, “Reliability assessment of distribution networks with distributed generations using monte carlo method,” *Energy Procedia*, vol. 12, pp. 278–286, 2011.
 - [110] Z. Bie, P. Zhang, G. Li, B. Hua, M. Meehan, and X. Wang, “Reliability evaluation of active distribution systems including microgrids,” *IEEE Transactions on power systems*, vol. 27, no. 4, pp. 2342–2350, 2012.
 - [111] S. Su, Y. Hu, L. He, K. Yamashita, and S. Wang, “An assessment procedure of distribution network reliability considering photovoltaic power integration,” *IEEE Access*, vol. 7, pp. 60 171–60 185, 2019.
 - [112] S. Conti and S. A. Rizzo, “Monte carlo simulation by using a systematic approach to assess distribution system reliability considering intentional islanding,” *IEEE Transactions on Power Delivery*, vol. 30, no. 1, pp. 64–73, 2014.
 - [113] Y. Liu, Y. Li, M. Sheng, and S. Wang, “Reliability prediction method and application in distribution system based on genetic algorithm–back-propagation neural network,” *IET Generation, Transmission & Distribution*, vol. 13, no. 7, pp. 984–988, 2019.
 - [114] H. Shan, Y. Sun, W. Zhang, A. Kudreyko, and L. Ren, “Reliability analysis of power distribution network based on pso-dbn,” *IEEE Access*, vol. 8, pp. 224 884–224 894, 2020.

- [115] S. Frank and S. Rebennack, "An introduction to optimal power flow: Theory, formulation, and examples," *IIE transactions*, vol. 48, no. 12, pp. 1172–1197, 2016.
- [116] F. M. Rodrigues, L. R. Araujo, and D. R. Penido, "A method to improve distribution system reliability using available mobile generators," *IEEE Systems Journal*, vol. 15, no. 3, pp. 4635–4643, 2020.
- [117] R. Billinton, S. Kumar, N. Chowdhury, K. Chu, K. Debnath, L. Goel, E. Khan, P. Kos, G. Nourbakhsh, and J. Oteng-Adjei, "A reliability test system for educational purposes-basic data," *IEEE Transactions on Power Systems*, vol. 4, no. 3, pp. 1238–1244, 1989.
- [118] Ceylon Electricity Board, "Long term generation expansion plan 2022-2041," 2021.
- [119] R. N. Allan, R. Billinton, I. Sjarief, L. Goel, and K. So, "A reliability test system for educational purposes-basic distribution system data and results," *IEEE Transactions on Power systems*, vol. 6, no. 2, pp. 813–820, 1991.
- [120] I. Staffell and S. Pfenninger, "Using bias-corrected reanalysis to simulate current and future wind power output," *Energy*, vol. 114, pp. 1224–1239, 2016.
- [121] S. Pfenninger and I. Staffell, "Long-term patterns of european pv output using 30 years of validated hourly reanalysis and satellite data," *Energy*, vol. 114, pp. 1251–1265, 2016.
- [122] L. L. Garver, "Effective load carrying capability of generating units," *IEEE Transactions on Power apparatus and Systems*, no. 8, pp. 910–919, 1966.
- [123] R. N. Allan, R. Billinton, and N. Abdel-Gawad, "The ieee reliability test system-extensions to and evaluation of the generating system," *IEEE Transactions on Power Systems*, vol. 1, no. 4, pp. 1–7, 1986.
- [124] C. E. Board, "Statistical digest 2022," Ceylon Electricity Board, Sri Lanka, Tech. Rep., 2022. [Online]. Available: https://www.ceb.lk/front_img/img_reports/1687251830Statistical_Digest_2022.pdf
- [125] A. R. Panel *et al.*, "Reliability standard and reliability settings review 2014," *Final Report, Australian Energy Market Commission* <http://www.aemc.gov.au/Markets-Reviews-Advice/Reliability-Standard-and-Settings-Review-2014>, 2014.

- [126] M. J. B. Kabeyi and O. A. Olanrewaju, "The levelized cost of energy and modifications for use in electricity generation planning," *Energy Reports*, vol. 9, pp. 495–534, 2023.
- [127] I. Calero, C. A. Canizares, K. Bhattacharya, and R. Baldick, "Duck-curve mitigation in power grids with high penetration of pv generation," *IEEE transactions on smart grid*, vol. 13, no. 1, pp. 314–329, 2021.
- [128] H. Jiang, E. Du, N. Zhang, Z. Zhuo, P. Wang, Z. Wang, and Y. Zhang, "Renewable electric energy system planning considering seasonal electricity imbalance risk," *IEEE Transactions on Power Systems*, vol. 38, no. 6, pp. 5432–5444, 2022.
- [129] D. Lee, H. Shin, and R. Baldick, "Bivariate probabilistic wind power and real-time price forecasting and their applications to wind power bidding strategy development," *IEEE Transactions on Power Systems*, vol. 33, no. 6, pp. 6087–6097, 2018.
- [130] A. Likas, N. Vlassis, and J. J. Verbeek, "The global k-means clustering algorithm," *Pattern recognition*, vol. 36, no. 2, pp. 451–461, 2003.
- [131] P. J. Rousseeuw, "Silhouettes: a graphical aid to the interpretation and validation of cluster analysis," *Journal of computational and applied mathematics*, vol. 20, pp. 53–65, 1987.
- [132] C. Singh and R. Billinton, *System reliability, modelling and evaluation*. Hutchinson London, 1977, vol. 769.
- [133] J. H. Slusarewicz and D. S. Cohan, "Assessing solar and wind complementarity in texas," *Renewables: Wind, Water, and Solar*, vol. 5, no. 1, pp. 1–13, 2018.
- [134] J. H. Holland, *Adaptation in natural and artificial systems: an introductory analysis with applications to biology, control, and artificial intelligence*. MIT press, 1992.
- [135] J. Kennedy, "Swarm intelligence," in *Handbook of nature-inspired and innovative computing*. Springer, 2006, pp. 187–219.
- [136] L. Wang, *Integration of renewable energy sources: reliability-constrained power system planning and operations using computational intelligence*, 2008, vol. 70, no. 02.
- [137] N. Samaan and C. Singh, "Reliability assessment of composite power systems using genetic algorithms," in *Computational Intelligence in Reliability Engineering*. Springer, 2007, pp. 237–286.

- [138] N. A. S. Amin and I. Istadi, “Different tools on multi-objective optimization of a hybrid artificial neural network—genetic algorithm for plasma chemical reactor modeling,” *Real-World Applications of Genetic Algorithms, IntechOpen, London*, pp. 1–26, 2012.
- [139] A. E. Eiben, E. H. Aarts, and K. M. Van Hee, “Global convergence of genetic algorithms: A markov chain analysis,” in *Parallel Problem Solving from Nature: 1st Workshop, PPSN I Dortmund, FRG, October 1–3, 1990 Proceedings I*. Springer, 1991, pp. 3–12.
- [140] H. W. Dommel and W. F. Tinney, “Optimal power flow solutions,” *IEEE Transactions on power apparatus and systems*, no. 10, pp. 1866–1876, 1968.