CURRICULUM VITAE

Personal Information:

Name: Ali Karimi

Position: Associate Professor in Electrical Power Systems

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Education:

B.Sc. in Electrical Engineering (Power) from University of Kashan, Kashan, Iran, 2007

- Thesis Title: Design and Modeling of a Single Phase Inverter for Photovoltaic Applications
- Supervisor: Dr. Abbas Ketabi

M.Sc. in Electrical Engineering (Power Systems) from University of Tehran, Tehran, Iran, 2009

- Thesis Title: Evaluation of Wind Resources in Power Market Considering Uncertainty in Production
- Supervisor: Dr. Hassan Monsef

Ph.D. in Electrical Engineering (Power Systems) from Tarbiat Modares University, Tehran, Iran, 2014

- Thesis Title: Mechanism Design of Energy and Reserve Markets in Multi-Area Power Systems
- Supervisor: Dr. Hossein Seifi, Advisor: Dr. Mohammad Kazem Sheikh-El-Eslami

Teaching Experience:

Undergraduate courses:

1. Power System Analysis
2. High Voltage Substations Design
3. Power Generation in Power Plants
4. Principles of Measurement Systems
5. Fundamentals of Electrical Engineering

Graduate courses:

1. Electricity Market
2. Electric Distribution System
3. Structural and Economy Management of Electric Energy

Professional Experience:

- Associate Professor, University of Kashan, Sept. 2014 to date.
- Head of Department of Electrical Power, Faculty of Electrical & Computer Engineering, University of Kashan, December 2018 to January2026.
- Researcher, Iran Power System Engineering Research Centre (IPSERC), July 2008 to July 2016.

Research Interests:

- Power Systems Operation and Planning
- Electricity Market
- Smart Grids
- Distribution Networks

Honors and Awards

❖ **Teaching Honors:**

- Distinguished Teaching Professor, University of Kashan, 2025
- Distinguished Teaching Professor, University of Kashan, 2023
- Outstanding Teaching Professor, Faculty of Electrical and Computer Engineering, University of Kashan, 2022
- Distinguished Teaching Professor, University of Kashan, 2019
- Distinguished Teaching Professor, University of Kashan, 2015

❖ **Research Honors:**

- Top Faculty Member in Community and Industry Engagement (Awarded by the Iran Ministry of Science, Research and Technology), 2024
- Distinguished Researcher, University of Kashan, 2022
- Top Principal Investigator in Industry Collaboration Projects, University of Kashan, 2022
- Top Principal Investigator in Industry Collaboration Projects, University of Kashan, 2021

❖ **Other:**

- Promotion from Assistant Professor to Associate Professor, 2022
- Ranked 1st among PhD students in Electrical Engineering-Power, Tarbiat Modares University, 2014.
- Ranked 1st among undergraduate students in Electrical Engineering, University of Kashan, 2007.

Publications:

❖ **Journal Papers**

1. Sepehr Mardani, Ali Karimi, Mehran Memari, "A Complex Networks Framework for Cyber-Physical Power System Critical Node Identification Considering Various Communication Structures and Coupling Relationships", *International Journal of Critical Infrastructure Protection*, vol. 53, May 2026, 100853, (https://doi.org/10.1016/j.ijcip.2026.100853).
2. Mehran Memari, Ali Karimi, S.Mehdi Vahidipour, "Identifying Critical Transmission Lines in Power Systems: A Hybrid Complex Network and Power Flow Methodology", *Electric Power Systems Research*, vol. 258, September 2026, 113105 (https://doi.org/10.1016/j.epsr.2026.113105).
3. Mojtaba Zamanpour, Ali Karimi, "A Vickrey Auction-Based Non-Cooperative Game Framework for P2P Electricity Trading in a Community", *IET Smart Grid*, vol. 9, no. 1, 2026 (https://doi.org/10.1049/stg2.70063).
4. Nader Tarashandeh, Ali Karimi, "A novel framework for simultaneous energy, reactive power, and reserve exchange in decentralized P2P markets with renewable agents", *Renewable Energy*, vol. 256, Part G, 124484, 1 January 2026.
5. Alireza Shoferpour, R Ghaffarpour, S Zamanian, Ali Karimi, "A multi-objective NCUC model co-optimizing GHG emissions and market costs using multiple ancillary services in high-renewable systems", *Energy*, vol. 336, 138379, Nov. 2025.

6. Saeid Setamkesh, Ali Karimi, Mohsen Rahimi, "Harmonic Mitigation in Power Systems With High Wind Sources Penetration by Placing Passive Filters Considering Resonance Issues: A Case Study of the Sistan Power Grid", *IET Renewable Power Generation*, vol. 19, no. 1, 2025, https://doi.org/10.1049/rpg2.70031
7. Nader Tarashandeh, Ali Karimi, "Peer-to-peer energy trading under distribution network constraints with preserving independent nature of agents", *Applied Energy*, vol. 355, February 2024, https://doi.org/10.1016/j.apenergy.2023.122240.
8. Ali Karimi, Amirmasoud Kouchakzadeh, Seyyed Aliasghar Ghappani, Alireza Shoferpour, "Proposing a Model for the Formation and Development of a Regional Electricity Market with a Focus on Iran", *Iranian Journal of Energy*, vol. 26, no. 2, 2023 (in Persian).
9. Seyyed Aliasghar Ghappani, Ali Karimi, "Economic-environmental operation of a CHHP energy hub considering uncertainties and demand response programs", *IET Generation, Transmission & Distribution*, vol. 17, no. 19, 2023, pp. 4399-4422, https://doi.org/10.1049/gtd2.12984.
10. Alireza Shoferpour, Ali Karimi, "Improving the flexibility of power systems using transportable battery, transmission switching, demand response, and flexible ramping product market in the presence of high wind power", *IET Renewable Power Generation*, vol. 17, no. 6, 2023, pp. 1413-1435, https://doi.org/10.1049/rpg2.12684.
11. Seyyed Aliasghar Ghappani, Ali Karimi, "Optimal operation framework of an energy hub with combined heat, hydrogen, and power (CHHP) system based on ammonia", *Energy*, vol. 266, March 2023, 126407, https://doi.org/10.1016/j.energy.2022.126407.
12. Alireza Tavakoli, Ali Karimi, "Development of Monte-Carlo-based Stochastic Scenarios to Improve Uncertainty Modeling for Optimal Energy Management of a Renewable Energy Hub", *IET Renewable Power Generation*, vol. 17, no. 5, 2023, pp. 1139-1164, https://doi.org/10.1049/rpg2.12671.
13. Mehran Memari, Ali Karimi, Hamed Hashemi-Dezak, "Clustering-based Reliability Assessment of Smart Grids by Fuzzy C-means Algorithm Considering Direct Cyber-physical Interdependencies and System Uncertainties", *Sustainable Energy Grids and Networks*, vol 31, 2022, https://doi.org/10.1016/j.segan.2022.100757
14. Alireza Tavakoli, Ali Karimi, Miadreza Shafie-Khah, "Stochastic Optimal Operation Framework of an Integrated Methane-Based Zero-CO2 Energy Hub in Energy Markets", *Electric Power Systems Research*, vol. 209, April 2022 , https://doi.org/10.1016/j.epsr.2022.108005.
15. Alireza Tavakoli, Ali Karimi, Miadreza Shafie-Khah, "Optimal probabilistic operation of energy hub with various energy converters and electrical storage based on electricity, heat, natural gas, and biomass by proposing innovative uncertainty modeling methods", *Journal of Energy Storage*, vol. 51, 104344, 2022, https://doi.org/10.1016/j.est.2022.104344.
16. Ali Karimi, Nader Tarashandeh, Amirmasoud Kouchakzadeh, Farshad Kouchakmohseni, Mitra Naghiloo, "Iran's day-ahead electricity market: Structural assessment and solutions", *Utilities Policy*, vol. 75, 101347, 2022, https://doi.org/10.1016/j.jup.2022.101347.
17. Alireza Tavakoli, Ali Karimi, Miadreza Shafie-Khah, "Linearized stochastic optimization framework for day-ahead scheduling of a biogas-based energy hub under uncertainty", *IEEE Access*, vol. 9, pp. 136045 – 136059, 2021, https://doi.org/10.1109/ACCESS.2021.3116028.
18. Mehran Memari, Ali Karimi, Hamed Hashemi-Dezak, "Reliability evaluation of smart grid using various classic and metaheuristic clustering algorithms considering system uncertainties", *International Transactions on Electrical Energy Systems*, vol 31, no. 6, 2021 (DOI: 10.1002/2050-7038.12902).
19. Nader Tarashandeh, Ali Karimi, "Utilization of energy storage systems in congestion management of transmission networks with incentive-based approach for investors", *Journal of Energy Storage*, vol. 33, 2021.
20. Fereshteh Moghateli, Seyed Abbas Taher, Ali Karimi, Mohammad Shahidehpour, "A consensus-based Operational Framework for Self-Healing in Multi-Microgrid systems", *IET Generation, Transmission & Distribution*, In press, 2020 (DOI: 10.1049/iet-gtd.2020.0387).
21. Fereshteh Moghateli, Seyed Abbas Taher, Ali Karimi, Mohammad Shahidehpour, "Multi-objective design method for construction of multi-microgrid systems in active distribution networks", *IET Smart Grid*, vol. 3, no. 3, pp. 331-341, 2020.
22. Fereshteh Moghateli, Seyed Abbas Taher, Ali Karimi, Mohammad Shahidehpour, "Conceptual design of multi-microgrid structure in active distribution networks", *Computational Intelligence in Electrical Engineering*, In press, 2020 (in Persian) DOI: 10.22108/ISEE.2020.119439.1285.

23. Hassan Esmaili, Ali Karimi, “A hybrid method for transmission cost allocation based on effect of transmission facilities in system reliability and merchant value”, *Iranian Journal of Electrical and Computer Engineering (IJECE),* vol. 18, no. 1, 2020 (in Persian).
24. Omid Honarfar, Ali Karimi, “Very fast load flow calculation using fast-decoupled reactive power compensation method for radial active distribution networks in smart grid environment based on zooming algorithm”, *Iranian Journal of Electrical and Electronic Engineering*, vol. 16, no. 3, pp. 412-424, 2020.
25. Ali Karimi, Seyed Loghman Heydari, Farshad Kouchakmohseni, Mitra Naghiloo, “Scheduling and value of pumped storage hydropower plant in Iran power grid based on fuel-saving in thermal units”, *Journal of Energy Storage*, vol. 24, 2019.
26. Abbas Ali Salimi, Ali Karimi, Yousef Noorizadeh, “Simultaneous operation of wind and pumped storage hydropower plants in a linearized security-constrained unit commitment model for high wind energy penetration”, *Journal of Energy Storage*, vol. 29, pp. 318-330, 2019.
27. Mohamad Shabani, Ali Karimi, “A robust approach for coordination of directional overcurrent relays in active radial and meshed distribution networks considering uncertainties”, *International Transactions on Electrical Energy Systems*, vol. 28, no. 5, May 2018.
28. Ali Karimi, Hossein Seifi, “Power Exchange Management for Multi-Area Systems Considering Participation of External Bus Players in Multiple Markets”, *Iranian Journal of Electrical and Computer Engineering (IJECE),* vol. 15, no. 3, 2017 (in Persian).
29. M. Rahimi, M. Fotuhi-Firuzabad, A. Karimi, “Short term voltage-based risk assessment by incorporating reactive power adequacy”, *Ain Shams Engineering Journal*, vol. 7, pp. 131-141, 2016.
30. A. Karimi, H. Seifi, M.K. Sheikh-El-Eslami, “Market-based mechanism for multi-area power exchange management in a multiple electricity market”, *IET Generation, Transmission & Distribution*, vol. 9, no. 13, pp. 1662–1671, 2015.
31. A. Karimi Varkani, H. Seifi, M.K. Sheikh-El-Eslami, “Locational marginal pricing-based allocation of transmission capacity in multiple electricity markets”, *IET Generation, Transmission & Distribution*, vol. 8, Iss. 5, pp. 983–994, 2014.
32. A. Karimi Varkani, H. Seifi, M.K. Sheikh-El-Eslami, "A Framework for Congestion Management and Clearing of Energy and Reserve in Multiple Markets", *Iranian Journal of Electrical and Computer Engineering (IJECE),* vol. 12, no. 2, pp. 109-118, 2014 (in Persian).
33. A. Karimi Varkani, A. Daraeepour, H. Monsef, “A new self-scheduling strategy for integrated operation of wind and pumped-storage power plants in power markets”, *Applied Energy*, vol. 88, issue 12, pp. 5002-5012, 2011.
34. A. Karimi Varkani, H. Monsef, H.R. Baghaee, “Strategy for participation of wind power in power market considering the uncertainty in production”, *International Review of Electrical Engineering*, vol. 4, issue 5, 2009.

❖ Book Chapter

1. Ali Karimi, Nader Tarashandeh, Yousef Noorizadeh، *Chapter 7- Electricity market issues in future power systems*، Editor(s): Mohsen Parsa Moghaddam and et al., *Decentralized Frameworks for Future Power System*s, Academic Press, 2022 (https://doi.org/10.1016/B978-0-323-91698-1.00005-4).

❖ Conference Papers

1. Sepehr Mardani, Ali Karimi, Mehran Memari, "Identification of important nodes in the power system using complex networks and centralities based on community detection", *33rd International Conference on Electrical Engineering (ICEE 2025)*, May 1404 (in Persian).
2. Seyyed Aliasghar Ghappani, Ali Karimi, “Day-ahead energy management scheme for a hydrogen-based energy hub considering ammonia fuel and demand response programs”, *8th Annual Clean Energy Conference (ACEC2023)*, May 2023.
3. Amirmasoud Kouchakzadeh, Ali Karimi, “A framework for managing inter-area exchanges and supplying flexibility in multiple markets”, *37th International Power System Conference (PSC 2022)*, Tehran, Iran, 2022 (in Persian).
4. M. Memari, S. Nikandish, M. Vahidipour, A. Karimi, "Presenting a method for centralized-decentralized hybrid control of virtual power plants and its analysis using complex network

parameters", *The First Conference on Artificial Intelligence Smart Computing*, Semnan University, Sep. 2022 (in Persian).

5. Ali Asghar Ghapani, Ali Karimi, "Optimum operation of a hydrogen-based energy hub in energy distribution networks considering the uncertainties of renewable resources and demand response program", *26th International Electrical Power Distribution Conference*, May 2022 (in Persian).
6. Mehran Memari, Ali Karimi, Hamed Hashemi-Dezaki, "Reliability evaluation of active distribution networks based on scenario reduction method using PSO algorithm," *2020 10th Smart Grid Conference (SGC)*, Kashan, Iran, 2020, pp. 01-06, doi: 10.1109/SGC52076.2020.9335770.
7. Alireza Tavakoli, Ali Karimi, Miadreza Shafie-khah, "Optimal bidding strategy of energy hubs in electricity, heat and natural gas markets and investigating the improvement of uncertainty modeling methods in its performance", *2020 10th Smart Grid Conference (SGC)*, Kashan, Iran, 2020 (in Persian).
8. Yousef Noorizadeh, Ali Karimi, "Decentralized coordinated tie-line scheduling based on decomposition methods in case of multiple markets", *28th Iranian Conference on Electrical Engineering (ICEE)*, 2020.
9. Saeed Setamkesh, Ali Karimi, Mohsen Rahimi, "Placement and optimization of passive filters in Mill Nader area of Sistan in condition of high wind power connected to national power grid", *34th International Power System Conference (PSC 2019)*, Tehran, Iran, 2019 (in Persian).
10. Nader Tarashandeh, Ali Karimi, "Expansion Planning of Transmission Lines and Energy Storage Systems for Congestion Management of Transmission Networks", *33th International Power System Conference (PSC 2018)*, Tehran, Iran, 2018 (in Persian).
11. A. Karimi, S. L.oghman Heydari, F. Kuchak Mohseni, M. Naghiloo, "Determination of Operation Model and Economic Benefit of Siahbishe Pumped-Storage Power Plant in Iran Power Grid from Load Shifting Viewpoint", *32th International Power System Conference (PSC 2017)*, Tehran, Iran, 2017 (in Persian).
12. A. A. Salimi, A. Karimi, "Comparison of Fixed and Adjustable Speed Pumped-Storage Units in Day-Ahead Market from System Operator Viewpoint", *32th International Power System Conference (PSC 2017)*, Tehran, Iran, 2017 (in Persian).
13. F. Moghateli, S. A. Taher, A. Karimi, "Placement and Sizing of Energy Storage Systems in Active Distribution Network with Objective of Minimizing Network Loss and Upstream Energy Purchasing", *32th International Power System Conference (PSC 2017)*, Tehran, Iran, 2017 (in Persian).
14. A. Karimi, H. Seifi, "Mechanism design for participation of external bus players in separate multiple markets", *30th International Power System Conference (PSC 2015)*, Tehran, Iran, 2015 (in Persian).
15. A. Daraeepour, A. Karimi Varkani, "Simultaneous Sensing cum Actuating DC Motor", *4th Power Electronics, Drive Systems & Technologies Conference (PEDSTC)*, 2013.
16. A. Karimi Varkani, A. Daraeepour, "Simultaneous Sensing cum Actuating Linear Motor", *4th Power Electronics, Drive Systems & Technologies Conference (PEDSTC)*, 2013.
17. A. Karimi, M. Parsa Moghadam, "Optimal operation of energy storage resources for participation of wind power in power market", *26th International Power System Conference (PSC 2011)*, Tehran, Iran, 2011 (in Persian).
18. A. Karimi, H. Monsef, "Integrated operation of wind power and pumped-storage plants for trading in power market", *24th International Power System Conference (PSC 2009)*, Tehran, Iran, 2009 (in Persian).

Industrial Research Projects:

Faculty of Electrical & Computer Engineering, University of Kashan:

1. Research on various ISO structures: Determining and presenting a strategic model for implementation, Iran Grid Management Co. (IGMC), 2023-2024.

2. Development of regional electricity markets, policy and determining essential tools for these markets with a focus on Iran, *Niroo Research Institute (NRI)*, 2021-2022.
3. Developing procedures related to generation planning in mid-term and short-term horizons, *Iran Grid Management Co. (IGMC)*, 2021-2022.
4. Investigation of the optimal startup and shutdown numbers for Iranian power plant units considering network security Constraint, *Iran Grid Management Co. (IGMC)*, 2019-2020.
5. Billing synchronization in order to improvement of losses calculation and detection of fraud consumers, *Charmahal & Bakhtiari Electric Distribution Company*, 2019-2020.
6. Determination of different load components by tariff, social level and welfare in the peak load and off peak using smart methods in different area of Charmahal & Bakhtiari, *Charmahal & Bakhtiari Electric Distribution Company*, 2019.
7. 30 MW Wind Farm Feasibility Studies-Milnader region in Sistan, *Saba Mehr Afarin Kosar Co.*, 2018.
8. Mechanism design for effective operation of Siahbishe pumped-storage power plant, *Iran Grid Management Co. (IGMC)*, 2017.

Iranian Power System Engineering Research Center (IPSERC):

9. Adequacy and security assessment of Tehran Regional Transmission and Subtransmission Electric System, *Tehran Regional Electric Co. (TREC)*, 2016.
10. Development of Metering Code for the Iranian Power Grid, *Iran Grid Management Co. (IGMC)*, 2015.
11. Technical-economical pre-feasibility study for construction of distributed generation in the Hormozgan Power Grid, *Hormozgan Regional Electric Co.*, 2014.
12. Development of operation standards for the Iranian Power Grid, *Iran Grid Management Co. (IGMC)*, 2013.
13. Development of power system restoration procedures for the Iranian Power Grid, *Iran Grid Management Co. (IGMC)*, 2013.
14. Value of loss load (VOLL) calculations for the Iranian electrical consumers, *Iran Grid Management Co. (IGMC)*, 2012.
15. T-off technical-economic studies for the Iranian Power Grid, *Iran Grid Management Co. (IGMC)*, 2010.
16. Transient stability analysis of Hormozgan Utility Transmission System, *Hormozgan Regional Electric Co.*, 2010.
17. Short-circuit current reduction of Ahvaz and Ramin high voltage substations in Khuzestan Power Grid, *Khuzestan Regional Electric Co.*, 2009.