Duehee Lee

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EDUCATION

Ph.D., Electrical and Computer Engineering (Advisor: Dr. Ross Baldick) — Jan 2010 - May 2015
University of Texas at Austin, Austin, TX — GPA 3.62 / 4.0
THESIS : Wind Power Forecasting and Its Application to Power System

M.S.E., Electrical and Computer Engineering (Advisor: Dr. Surya Santoso) — Sep 2007 - Dec 2009
University of Texas at Austin, Austin, TX — GPA 3.70 / 4.0
THESIS : Design and Implementation of Three Phase Inverters using the TMS320F2812 DSP

Bachelor of Science, Electrical and Computer Engineering — Mar 2000 - Feb 2004
Pohang University of Science and Technology, Pohang, Republic of Korea — GPA 3.45 / 4.3

Daegu Science High School, Daegu, Republic of Korea — Mar 1997 - Feb 2000

PROFESSIONAL EXPERIENCE

KonKuk University, Seoul, Republic of Korea — Mar 2021 - Current
Electrical and Electronic Engineering — Associate Professor

- **Recent research Topics :**
  - **Transmission expansion cost allocation**
  - **DSO-ISO Configuration**
  - **Transmission expansion plan with unit commitment**

Sargent & Lundy, Chicago, IL — Mar 2022 - Feb 2023
Transmission Expansion and Renewable Energy Integration — Senior Researcher

KonKuk University, Seoul, Republic of Korea — Mar 2017 - Feb 2020
Electrical and Electronic Engineering — Assistant Professor

Arizona State University, Tempe, AZ — Nov 2016 - Feb 2017
Electrical, Computer, and Energy Engineering (Dr. Kory Hedman) — Post-Doctorial Researcher

- **ARPA-E Network Optimized Distributed Energy Systems (NODES)**: Develop the advisory tool for PJM, MISO, and ERCOT so that the stochastic two-stage Security Constraint Economic Dispatch programs can generate proper price signals.

KPMG Dallas, Dallas, TX — July 2015 - Oct 2016
KPMG Lighthouse in the Business Process Group Department — Senior Associate

- **Audit**: Calculate the Risk Insurance and Risk Adjustment payments for the Affordable Care Act (ACA), and Extract statistical evidences to evaluate the performance of ACA projects.
- **Analysis**: Study the effect of issuers' individual strategies and skills on the performance of ACA projects, payments neutralization, and risk and premium reduction.
- **New Business Proposal**: Develop the framework for the health care fraud, abuse, and waste detection through the anomaly detection algorithms.

E. On Climate & Renewable North America, Austin, TX — Jun 2014 - Aug 2014
Transmission and Market Department — Market Analyst

- Forecast the long-term renewable energy credit (REC) price in the ERCOT, MISO, and PJM through the demand and supply analysis

Argonne National Laboratory, Chicago, IL — Jun 2013 - Aug 2013
Center for Energy, Environmental, and Economic system — Research Assistant
- Forecast the day-ahead solar irradiance by collecting big weather data on Toll-way remote weather sensors around Chicago.

Sun Power , Austin, TX — Jun 2012 - Aug 2012
Electrical Engineering Team — Electrical Engineer
- Analyze the stability of multi-input and multi-output solar farm controller.

Xtreme Power, Austin, TX — Sep 2011 - Dec 2011
Strategic Planning Team — Business Model Developer
- Develop the electricity price arbitrage algorithm to optimize the storage operation based on the forecasted price and solar power outputs by solving the quadratic optimization problem.

Naval Ship Yard, Jinhae, Republic of Korea — Mar 2004 - Jun 2007
Naval Maintenance and Research Center — Lieutenant Junior, Senior Researcher
- Develop test bench for a navigation system using MC68000 CPU.

ACADEMICAL EXPERIENCE

University of Texas at Austin, Austin, TX — Sept 2011 - May 2015
Dr. Baldick's Research Group — Graduate Research Assistant
- **Analyze the wind power variability and its affect to the power system**

University of Texas at Austin, Austin, TX — May 2009 - Dec 2010
Dr. Santoso's Research Group — Graduate Research Assistant
- **Analyze voltage phase angle from phasor measurement units (PMU) using Short Time Fourier Transform (STFT) and Wavelet Analysis (WA)**

HONORS

- **Korea young professional in power academy** — Nov. 2022
- **Best Editor of Journal of Electrical Engineering and Technology** — Nov. 2022
- **Best Reviewer of Journal of Electrical Engineering and Technology** — Nov. 2022
- **Best Editor of Journal of Electrical Engineering and Technology** — Nov. 2021
- **Best Reviewer of Journal of Electrical Engineering and Technology** — Nov. 2021
- **H Energy Solar Power Forecasting Competition with team A 1st** — Aug. 2021
- **H Energy Solar Power Forecasting Competition with team B 4th** — Aug. 2021
- **Fuzz-IEEE Explainable Energy Prediction Competition 3rd** — Aug. 2021
- **IEEE Forecasting Competition: Day-Ahead Electricity Demand Forecasting: Post-Covid Paradigm 4th** — Aug. 2021
- **Weather Big Data Forecasting Contest, Winner** — Aug. 2020
- **Korea Power Exchange Solar Power Forecasting Competition, 2nd** — Aug. 2019
- **Korea Power Exchange Wind Power Forecasting Competition, 3rd** — Aug. 2019
- **World young professional in power academy** — Mar. 2017
- **IEEE Transactions on Smart Grid Best Reviewer 2015 by PES** — Jan. 2016
- **2016 European Energy Market Price Forecasting Competition (8 th)** — April. 2016
- **2015 Global Energy Forecasting Competition (Wind Power) by Power and Energy Society (PES) (6 th)** — Jan. 2015
- **2015 Global Energy Forecasting Competition (Solar Power) by Power and Energy Society (PES) (4 th / $500)** — Jan. 2015
- **2012 Global Energy Forecasting Competition (Wind Power) by Power and Energy Society (PES) (4 th / $800)** — Jul. 2013

- **Scholarship by Korea Institute of Energy and Resources ($60,000)** Jun. 2007
- **Cum Lade Graduation Award, Pohang University of Science and Technology (POSTECH)** Feb. 2004

WORKING PAPERS

1. W. Choi, D. Lee, "Detouring Bottleneck Transmission Expansion Plans by using the Fair Cost Allocation Algorithm based on the Stochastic Cooperative Game Theory," *IEEE Transactions on Power System*, In Preparation.
2. Y. Cho, D. Lee, R. Baldick "Wind Power Scenario Generation based on the Generalized Dynamic Factor Model and 3D-Deep Convolutaional Generative Adversarial Network," in *IEEE Transactions on Sustainable Energy*, In Preparation

PUBLICATIONS: JOURNALS

1. Chung, Jin-Ho, Duehee Lee, and Dongsup Jin. 2026. "Optimal One-Coincidence Sequence Sets with a Large Alphabet and Prime Length" Mathematics 14, no. 2: 214. https://doi.org/10.3390/math14020214
2. T.-U. Go, Y.-J. Go, J.-H. Im, and D. Lee,"Long-Term Demand Forecasting: Novel Decomposition-Linear Exponential-Smoothing Algorithm with Long Short-Term Memory." J. Electr. Eng. Technol., vol. 20, no. 3, Art. no. 02226-1, Mar. 2025, doi:10.1007/s42835-025-02226-1.
3. Lee, D.; Lee, S.; Chung, J.-H. Design of Balanced Wide Gap No-Hit Zone Sequences with Optimal Auto-Correlation. *Mathematics* 2025, *13*, 2454. https://doi.org/10.3390/math1315245
4. W.-S. Choi, J.-H. Im, J.-H. Lee, J.-H. Chung and D. Lee,"Operating strategy for load service entities using flexible real-time pricing through stochastic dual dynamic programming."Sci Rep 15, 33576 (2025). https://doi.org/10.1038/s41598-025-18679-3
5. Y.-H. Cho, H. Zhu, J. Im, D. Lee, and R. Baldick, "Wind Power Scenario Generation Based on the Generalized Dynamic Factor Model and Generative Adversarial Network." IEEE Transactions on Power Systems, early access, Jan. 2025, doi: 10.1109/TPWRS.2025.3615610.
6. Y.-J. Go, J.-H. Im, T.-U. Go, and D. Lee,"Developing Multiple-ESSs Operation Strategies by Participating in the FTR Market to Maximize Profits."Trans. Korean Inst. Electr. Eng., vol. 74, no. 10, pp. 1652–1664, Oct. 2025.
7. Lee, S., Kim, G., Lee, D. et al. "Robust low complexity multisurface super twisting sliding mode control for DFIG systems." Sci Rep 15, 45525 (2025). https://doi.org/10.1038/s41598-025-29985-1
8. Kim, Hyeonjin, et al. "A Contextually Supervised Optimization-Based HVAC Load Disaggregation Methodology." *IEEE Transactions on Smart Grid* (2024).
9. Ramalingam, M. and Selvi, G. Chemmalar and Victor, Nancy and Chengoden, Rajeswari and Bhattacharya, Sweta and Maddikunta, Praveen Kumar Reddy and Lee, Duehee and Piran, Md. Jalil and Khare, Neelu and Yenduri, Gokul and Gadekallu, Thippa Reddy, "A Comprehensive Analysis of Blockchain Applications for Securing Computer Vision Systems" *IEEE Access, doi: 10.1109/ACCESS.2023.3319089*
10. Sharifi, Elham and Feghhi, Mahmood Mohassel and Azarnia, Ghanbar and Nouri, Sajjad and Lee, Duehee and Piran, Md. Jalil,"Channel Estimation Based on Compressed Sensing for Massive MIMO Systems With Lens Antenna Array" *IEEE Access, doi: 10.1109/ACCESS.2023.3297884*
11. Nouri, Mahdi and Jafarieh, Alireza and Behroozi, Hamid and Mallat, Nazih Khaddaj and Iqbal, Amjad and Piran, Md. Jalil and Lee, Duehee,"A Compact Filter and Dipole Antenna With Its Phased Array Filtenna and ADMM-BO Learning for Use-Case Analog/Hybrid Beamforming in 5G mmWave Communications" *IEEE Access, doi: 10.1109/ACCESS.2023.3276883*
12. Kim Sookyung and Oh Byoungryul and Lee Duehee,"Application of an Operating Reserve Demand Curve in ERCOT in the South Korean Electricity Market to Accommodate High Penetration Levels of Renewable Energy" *Journal of Electrical Engineering & Technology, doi:10.1007/s42835-023-01417-y*

13. Negar Rahimi, Sejun Park, Wonseok Choi, Byoungryul Oh, Sookyung Kim, Young-ho Cho, Sunghyun Ahn, Chulho Chong, Daewon Kim, Cheong Jin & Duehee Lee,"A Comprehensive Review on Ensemble Solar Power Forecasting Algorithms" *Journal of Electrical Engineering & Technology, https://doi.org/10.1007/s42835-023-01407-0*

14. Oh, B., Lee, D,"Cooperative P2P Transaction Framework Between DSO and PMO Based on Consensus ADMM Against Path-Sharing Distribution Network Congestion" *Journal of Electrical Engineering & Technology, https://doi.org/10.1007/s42835-023-01419-w*

15. Oh, Byoungryul and Kim, Sooyeon and Lee, Duehee,"Wind Power Scenario Synthesis With Smoothing Effect Through Spectral Decomposition and Its Application to Flexible Resource Adequacy" *IEEE Transactions on Sustainable Energy, doi: 10.1109/TSTE.2022.3225272*

16. Se-Jun Park, Won-Seok Choi, Duehee Lee,"Enhancing Accuracy of Solar Power Forecasting by Input data Preprocessing and Competitive Model Selection Methods" *The Transactions of the Korean Institute of Electrical Engineers, https://doi.org/10.5370/KIEE.2022.71.9.1201*

17. Cho, Young-Ho and Chae, Joong-Guen and Lee, Duehee,"Similarity-Based Optimization Framework for Curtailment Service Providers Through Collaborative Filtering and Generalized Dynamic Factor Model" *IEEE Transactions on Smart Grid, doi: 10.1109/TSG.2022.3204797*

18. Oh, Byoungryul and Lee, Da-Han and Lee, Duehee,"Oil-Price Based Long-Term Hourly System Marginal Electricity Price Scenario Generation" *IEEE Access, doi: 10.1109/ACCESS.2022.3155819*

19. Byoungryul Oh, Da-Han Lee, Woo-Cheol Jeong & Duehee Lee,"Distributed Optimal Power Flow for Distribution System Using Second Order Cone Programming and Consensus Alternating Direction Method of Multipliers" *Journal of Electrical Engineering & Technology, https://doi.org/10.1007/s42835-021-00963-7*

20. Seonghyeon Ahn, Yeryeong Kim, Kwon Kim, Seonghee Suk, Sejun Park, Duehee Lee,"Developing the New Flexibility Index for Stable Power System Operation Under the High Penetration Level of Renewable Energy" *The Transactions of the Korean Institute of Electrical Engineers, https://doi.org/10.5370/KIEE.2022.71.2.300*

21. Seongmi Park, Chanwoo Oh, Sejun Park, Balho Kim, Duehee Lee," Optimal Distribution Investment Plan Based on the New Value Based Distribution System Reliability Assessment using Reliability Index" *The Transactions of the Korean Institute of Electrical Engineers, https://doi.org/10.5370/KIEE.2022.71.2.450*

22. Sejun Park, Hyunjin Kim, Duehee Lee,"Probabilistic Electricity Load Forecasting Algorithm Based on the Gradient Boosting Machine and Laplace Distribution" *The Transactions of the Korean Institute of Electrical Engineers, http://doi.org/10.5370/KIEE.2021.70.11.1625*

23. Kim, Hyeonjin and Lee, Duehee,"Probabilistic Solar Power Forecasting Based on Bivariate Conditional Solar Irradiation Distributions" *IEEE Transactions on Sustainable Energy, doi: 10.1109/TSTE.2021.3077001*

24. Kim, Sooyeon and Lee, Duehee,"A Demand Forecasting Framework With Stagewise, Piecewise, and Pairwise Selection Techniques" *IEEE Access, doi: 10.1109/ACCESS.2021.3085667*

25. Kim, Sooyeon and Lee, Duehee,"A Demand Forecasting Framework With Stagewise, Piecewise, and Pairwise Selection Techniques" *IEEE Access, doi: 10.1109/ACCESS.2021.3085667*

26. Sooyeon Kim, Jae Hyun Kwak, Byoungryul Oh, Da-Han Lee and Duehee Lee,"An Optimal Routing Algorithm for Unmanned Aerial Vehicles" *Sensors, https://doi.org/10.3390/s21041219*

27. Kim, Hyeon-Jin and Kwon, Wookhyun and Kim, Sooyeon and Lee, Duehee,"MPC-Based Optimal Operation for a PV Farm With Dual ESSs Using Spectral Density Analysis of Market Signals" *IEEE Access, doi: 10.1109/ACCESS.2020.3041593*

28. Han, Sini and Lee, Duehee and Park, Jong-Bae,"Optimal Bidding and Operation Strategies for EV Aggegators by Regrouping Aggregated EV Batteries" *IEEE Transactions on Smart Grid, doi: 10.1109/TSG.2020.2999887*

29. Sini Han, Hyeon-Jin Kim and Duehee Lee,"A Long-Term Evaluation on Transmission Line Expansion Planning with Multistage Stochastic Programming" *Energies, https://doi.org/10.3390/en13081899*

30. Seungwoo Son, Kyemyung Jung, Gi Soo Kim, Duehee Lee,"A Study on Optimal Operations of an Energy Storage System by Using the Multi-Stage Stochastic Optimization and Progressive Hedging Algorithm" *The Transactions of the Korean Institute of Electrical Engineers, https://doi.org/10.5370/KIEE.2019.68.12.1542*

31. Eunchong Park, kim su yeon, Son Seungwoo, Seoyoung Park, Duehee Lee,"Developing Wind Power Forecasting Algorithm Based on the Support Vector Machine and Gradient Boosting Machine for the KPX Wind Power Forecasting Competition" *The Transactions of the Korean Institute of Electrical Engineers*

32. Yurim Lee, HYEONJIN KIM, DaHan Lee, LEE CHAI JUNG, Duehee Lee,"Validation of Forecasting Performance of Two-Stage Probabilistic Solar Irradiation and Solar Power Forecasting Algorithm using XGBoost" *The Transactions of the Korean Institute of Electrical Engineers*

33. Sooyeon Kim, Wook-Hyun Kwon, Hyeon-Jin Kim, Kyemyung Jung, Gi Soo Kim, Taehyoung Shim & Duehee Lee,"Offer Curve Generation for the Energy Storage System as a Member of the Virtual Power Plant in the Day-Ahead Market" *Journal of Electrical Engineering & Technology, https://doi.org/10.1007/s42835-019-00271-1*

34. Sooyeon Kim, Myeongsu Son, Kuduck Kwon, Duehee Lee,"Electricity Demand Forecasting Algorithm Development Based on the Gradient Boosting Machine by Selecting the Optimal Combination of Weather Data and Stations" *The Transactions of the Korean Institute of Electrical Engineers, https://doi.org/10.5370/KIEE.2019.68.7.834*

35. Wook Hyun Kwon, Yong-Gi Park, Jae Hyung Roh, Jong-Bae Park, Duehee Lee,"Calculating the Benefit of Distributed Combined Heat Power Generators from Avoiding a Transmission Expansion Cost by Solving a Mixed Integer Linear Programming" *The Transactions of the Korean Institute of Electrical Engineers, http://doi.org/10.5370/KIEE.2019.68.4.513*

36. Yong-Gi Park, Jae Hyung Roh, Duehee Lee, Jong-Bae Park,"Transmission Congestion Relief Benefits of CHP Located in the Metropolitan Area in Korea Electricity Market" *The Transactions of the Korean Institute of Electrical Engineers, http://doi.org/10.5370/KIEE.2019.68.5.605*

37. Dong-gu Lee, Duehee Lee, Kuduck Kwon,"A CMOS Wideband RF Energy Harvester Employing Tunable Impedance Matching Network for Video Surveillance Disposable IoT Applications" *The Transactions of the Korean Institute of Electrical Engineers, http://doi.org/10.5370/KIEE.2019.68.2.304*

38. Son Seungwoo,Han sinei, Jae Hyung ROH, Duehee Lee,"Optimal Offer Strategies for Energy Storage System Integrated Wind Power Producers in the Day-Ahead Energy and, Regulation Markets" *Journal of Electrical Engineering & Technology*

39. Lee, Duehee and Shin, Hunyoung and Baldick, Ross,"Bivariate Probabilistic Wind Power and Real-Time Price Forecasting and Their Applications to Wind Power Bidding Strategy Development" *IEEE Transactions on Power Systems, doi: 10.1109/TPWRS.2018.2830785*

40. Shin, Hunyoung and Lee, Duehee and Baldick, Ross,"An Offer Strategy for Wind Power Producers That Considers the Correlation Between Wind Power and Real-Time Electricity Prices" *IEEE Transactions on Sustainable Energy, doi: 10.1109/TSTE.2017.2757501*

41. Bai, Wenlei and Lee, Duehee and Lee, Kwang Y.,"A multivariate time series forecast model for wind and storage integrated system operation" *IEEE General Meeting Power& Energy Society, doi: 10.1109/PESGM.2017.8274436*

42. Min-Kyu Baek and Duehee Lee,"Spatial and Temporal Day-Ahead Total Daily Solar Irradiation Forecasting: Ensemble Forecasting Based on the Empirical Biasing" *Energies, https://doi.org/10.3390/en11010070*

43. Wenlei Bai, Duehee Lee and Kwang Y. Lee,"Stochastic Dynamic AC Optimal Power Flow Based on a Multivariate Short-Term Wind Power Scenario Forecasting Model" *Energies, https://doi.org/10.3390/en10122138*

44. Lee Duehee, Park Yong-Gi, Park Jong-Bae, Roh Jae Hyung,"Very Short-Term Wind Power Ensemble Forecasting without Numerical Weather Prediction through the Predictor Design" *Journal of Electrical Engineering and Technology, https://doi.org/10.5370/JEET.2017.12.6.2177*

45. Lee, Duehee and Baldick, Ross,"Load and Wind Power Scenario Generation Through the Generalized Dynamic Factor Model" *IEEE Transactions on Power Systems, doi: 10.1109/TPWRS.2016.2562718*
46. Wenlei Bai, Duehee Lee, Kwang Lee,"Stochastic Dynamic Optimal Power Flow Integrated with Wind Energy Using Generalized Dynamic Factor Model" *IFAC-PapersOnLine, https://doi.org/10.1016/j.ifacol.2016.10.731*
47. Chvez, Hctor and Lee, Duehee and Baldick, Ross,"CPS1-Compliant Regulation Using a PSD Analysis of Wind Expansion in a Single Balancing Authority" *IEEE Transactions on Sustainable Energy, doi: 10.1109/TSTE.2015.2417311*
48. Lee, Duehee and Baldick, Ross,"Future Wind Power Scenario Synthesis Through Power Spectral Density Analysis" *IEEE Transactions on Smart Grid, doi: 10.1109/TSG.2013.2280650*
49. Lee, Duehee and Baldick, Ross,"Short-Term Wind Power Ensemble Prediction Based on Gaussian Processes and Neural Networks" *IEEE Transactions on Smart Grid, doi: 10.1109/TSG.2013.2280649*
50. Lee, Duehee and Kim, Joonhyun and Baldick, Ross,"Stochastic Optimal Control of the Storage System to Limit Ramp Rates of Wind Power Output" *IEEE Transactions on Smart Grid, doi: 10.1109/TSG.2013.2285524*

Funding

1. **Ministry of Small and Medium Enterprises and Startups Research Fund**:
   - Develop the business model for curtailment service providers.
   - Principle Investigator // Jul 2019 - Feb 2020 // $ 20,000
2. **Korea Power Exchange Research Fund**:
   - Calculate the flexibility index of power system
   - Principle Investigator // Apr 2019 - Mar 2020 // $ 120,000
3. **National Research Foundation of Korea Research Fund**:
   - Develop the ESS control algorithm by using the stochastic dual dynamic programming
   - Principle Investigator // Mar 2019 - Feb 2020 // $ 50,000
4. **Korea Institute of Energy Technology Evaluation and Planning Research Fund**:
   - Develop the algorithm for the open automatic demand response in large-scale buildings.
   - Principle Investigator // Jan 2019 - Dec 2019 // $ 312,000
5. **Korea Power Exchange Research Fund**:
   - Suggest the future research direction for Korean power system.
   - Principle Investigator // Oct 2017 - Jul 2018 // $ 139,000

Research Projects

1. **Project title:** (Phase 1) Development of power system operation strategies considering prosumer-based clusters of small distributed generators in the era of energy transition
   Total research funding (cash): KRW 150,000,000
   Period: 2020-03-01 – 2021-02-28
2. **Project title:** (Phase 4) Multi-stage regional frequency regulation of energy storage systems using stochastic dual dynamic programming
   Total research funding (cash): KRW 12,500,000
   Period: 2020-03-01 – 2020-05-31
3. **Project title:** (Phase 3) Development of power system operation strategies considering prosumer-based clusters of small distributed generators in the era of energy transition
   Total research funding (cash): KRW 100,000,000
   Period: 2022-03-01 – 2023-02-28

4. **Project title:** (1/3) Development of KPX dispatch instruction methods capable of accommodating optimal ESS bidding strategies in the price-based day-ahead electricity market
   Total research funding (cash): KRW 65,343,000
   Period: 2024-09-01 – 2025-08-31
5. **Project title:** (2/3) Development of KPX dispatch instruction methods capable of accommodating optimal ESS bidding strategies in the price-based day-ahead electricity market
   Total research funding (cash): KRW 65,343,000
   Period: 2025-09-01 – 2026-08-31
6. **Project title:** (Phase 2) Development of power system operation strategies considering prosumer-based clusters of small distributed generators in the era of energy transition
   Total research funding (cash): KRW 50,000,000
   Period: 2021-03-01 – 2022-02-28
7. **Project title:** (2/4) Development and demonstration of an AI-based safety management integrated platform and remote control technologies for distributed and idle resources
   Total research funding (cash): KRW 70,000,000
   Period: 2025-04-01 – 2026-03-31
8. **Project title:** Researcher support project
   Total research funding (cash): KRW 240,000
   Period: 2022-01-01 – 2022-12-31
9. **Project title:** SMENC Co., Ltd. / Development of a solar PV generation forecasting system
   Total research funding (cash): KRW 88,000,000
   Period: 2021-10-01 – 2022-03-31
10. **Project title:** 2021 Lab-Specialized Startup Leading University Program (MSIT follow-up R&D funds; Prof. Doohee Lee)
    Total research funding (cash): KRW 64,300,000
    Period: 2021-09-01 – 2022-02-28
11. **Project title:** Research service on establishing a Smart Grid promotion roadmap to achieve carbon neutrality
    Total research funding (cash): KRW 56,210,602
    Period: 2021-07-01 – 2021-12-31
12. **Project title:** Research service on developing a supply reliability assessment framework considering conditions for transitioning to a low-carbon generation mix (Contract No. C0112320086)
    Total research funding (cash): KRW 90,844,835
    Period: 2021-10-01 – 2022-03-31
13. **Project title:** (1/1) KJ Power Co., Ltd. / Development of a management program
    Total research funding (cash): KRW 11,000,000
    Period: 2021-08-01 – 2021-09-30
14. **Project title:** Gangneung Eco Power, Samcheok Blue Power, and Korea Southern Power / Research service on impacts on reliability and economics of the Korean power system due to relaxation of transmission network operating reliability criteria
    Total research funding (cash): KRW 76,989,000
    Period: 2019-08-01 – 2020-01-31
15. **Project title:** POSCO Management Research Institute / Technical study to relieve East Coast transmission constraints
    Total research funding (cash): KRW 22,000,000
    Period: 2019-09-01 – 2020-02-29
16. **Project title:** Samcheok Blue Power Co., Ltd. / Feasibility study on operating criteria for the East Coast power system
    Total research funding (cash): KRW 11,000,000
    Period: 2019-07-01 – 2019-12-31
17. **Project title:** Service study on future preparedness of the power market and generation development strategies

Total research funding (cash): KRW 139,000,000
Period: 2020-05-01 – 2020-12-31

18. **Project title:** (Phase 1) Study on price signals and portfolio for EV frequency regulation services using game theory
Total research funding (cash): KRW 54,997,800
Period: 2018-05-01 – 2019-04-30

19. **Project title:** Development of MATLAB-based simulation software for modeling renewable generation facilities
Total research funding (cash): KRW 27,000,000
Period: 2019-05-01 – 2019-10-31

20. **Project title:** Development of a flexibility adequacy assessment method for mid- to long-term generation expansion planning
Total research funding (cash): KRW 111,365,258
Period: 2019-05-01 – 2020-04-30

21. **Project title:** (Phase 2) Study on price signals and portfolio for EV frequency regulation services using game theory
Total research funding (cash): KRW 54,997,800
Period: 2019-05-01 – 2020-04-30

22. **Project title:** (Phase 3) Study on price signals and portfolio for EV frequency regulation services using game theory
Total research funding (cash): KRW 54,997,800
Period: 2020-05-01 – 2021-04-30

23. **Project title:** (Phase 4) Development and demonstration of an OpenADR standards-based ADR system interoperable with advanced BAS/BEMS in medium/large buildings
Total research funding (cash): KRW 89,000,000
Period: 2020-04-01 – 2021-03-31

24. **Project title:** (1/4) Development and demonstration of an AI-based safety management integrated platform and remote control technologies for distributed and idle resources (KETEP)
Total research funding (cash): KRW 40,000,000
Period: 2024-04-01 – 2025-03-31

25. **Project title:** (Phase 3) Development of a national electrical safety management technology based on IoT adaptive to changes in climate and electrical environment
Total research funding (cash): KRW 100,000,000
Period: 2019-04-01 – 2020-03-31

26. **Project title:** (Phase 1) Development and demonstration of an OpenADR standards-based ADR system interoperable with advanced BAS/BEMS in medium/large buildings
Total research funding (cash): KRW 265,000,000
Period: 2017-04-01 – 2018-03-31

27. **Project title:** (Phase 2) Development and demonstration of an OpenADR standards-based ADR system interoperable with advanced BAS/BEMS in medium/large buildings
Total research funding (cash): KRW 297,500,000
Period: 2018-04-01 – 2019-03-31

28. **Project title:** (Phase 4) Development of a national electrical safety management technology based on IoT adaptive to changes in climate and electrical environment
Total research funding (cash): KRW 100,000,000
Period: 2020-04-01 – 2021-03-31

29. **Project title:** Analysis of DR resources for small and medium manufacturing industries and development of an operation system
Total research funding (cash): KRW 20,000,000
Period: 2021-06-01 – 2022-05-31

30. **Project title:** (Phase 3) Development and demonstration of an OpenADR standards-based ADR system interoperable with advanced BAS/BEMS in medium/large buildings

Total research funding (cash): KRW 297,500,000
Period: 2019-04-01 – 2020-03-31

31. **Project title:** (Phase 1) Multi-stage regional frequency regulation of energy storage systems using stochastic dual dynamic programming
Total research funding (cash): KRW 37,500,000
Period: 2023-03-01 – 2024-02-29

32. **Project title:** (Phase 2) Multi-stage regional frequency regulation of energy storage systems using stochastic dual dynamic programming
Total research funding (cash): KRW 50,000,000
Period: 2024-03-01 – 2025-02-28

33. **Project title:** (Phase 3) Multi-stage regional frequency regulation of energy storage systems using stochastic dual dynamic programming
Total research funding (cash): KRW 50,000,000
Period: 2025-03-01 – 2026-02-28

34. **Project title:** (1/1) Bae, Kim & Lee LLC / Advisory report on determining whether a transmission line constitutes a common (shared) transmission network
Total research funding (cash): KRW 11,000,000
Period: 2024-01-01 – 2024-02-29

35. **Project title:** (3/4) Development and demonstration of an AI-based safety management integrated platform and remote control technologies for distributed and idle resources
Total research funding (cash): KRW 70,000,000
Period: 2026-01-01 – 2026-12-31

36. **Project title:** Current status and outlook of domestic FACTS and HVDC transmission
Total research funding (cash): KRW 25,000,000
Period: 2020-07-22 – 2021-02-21

37. **Project title:** KJ Power Co., Ltd. / Development of a web service system for managing equipment, tools, consumables, and labor costs
Total research funding (cash): KRW 39,600,000
Period: 2020-10-12 – 2021-04-11