

# Applied Energy Highly Cited Paper Awards 2020

The Editor-in-Chief and the Publisher of Applied Energy are pleased to present the 2018-2019 Highly Cited Paper Awards published in *Applied Energy*.

The awards will be presented during the [ICAIE 2020 conference](#).

## Highly Cited Research Papers published in 2018

- [Designing microgrid energy markets: A case study: The Brooklyn Microgrids](#)  
Mengelkamp E., Gärttner J., Rock K., Kessler S., Orsini L., Weinhardt C.
- [Peer-to-Peer energy trading in a Microgrid](#)  
Zhang C., Wu J., Zhou Y., Cheng M., Long C.
- [Robust sliding-mode control of wind energy conversion systems for optimal power extraction via nonlinear perturbation observers](#)  
Yang B., Yu T., Shu H., Dong J., Jiang L.
- [Reinforcement learning-based real-time power management for hybrid energy storage system in the plug-in hybrid electric vehicle](#)  
Xiong R., Cao J., Yu Q.
- [Micro electrostatic energy harvester with both broad bandwidth and high normalized power density](#)  
Zhang Y., Wang T., Luo A., Hu Y., Li X., Wang F.
- [Predicting electricity consumption for commercial and residential buildings using deep recurrent neural networks](#)  
Rahman A., Srikumar V., Smith A.D.
- [Forecasting spot electricity prices: Deep learning approaches and empirical comparison of traditional algorithms](#)  
Lago J., De Ridder F., De Schutter B.
- [A realistic and integrated model for evaluating oil sands development with Steam Assisted Gravity Drainage technology in Canada](#)  
Rui Z., Wang X., Zhang Z., Lu J., Chen G., Zhou X., Patil S.
- [Total cost of ownership and market share for hybrid and electric vehicles in the UK, US and Japan](#)  
Palmer K., Tate J.E., Wadud Z., Nellthorp J.
- [Optimization of unit commitment and economic dispatch in microgrids based on genetic algorithm and mixed integer linear programming](#)  
Nemati M., Braun M., Tenbohlen S.
- [Water-energy nexus: A review of methods and tools for macro-assessment](#)  
Dai J., Wu S., Han G., Weinberg J., Xie X., Wu X., Song X., Jia B., Xue W., Yang Q.

- [Optimal distributed generation planning in active distribution networks considering integration of energy storage](#)  
Li Y., Feng B., Li G., Qi J., Zhao D., Mu Y.
- [Optimal design of multi-energy systems with seasonal storage](#)  
Gabrielli P., Gazzani M., Martelli E., Mazzotti M.
- [Optimal residential community demand response scheduling in smart grid](#)  
Nan S., Zhou M., Li G.
- [Global energy flows embodied in international trade: A combination of environmentally extended input–output analysis and complex network analysis](#)  
Chen B., Li J.S., Wu X.F., Han M.Y., Zeng L., Li Z., Chen G.Q.
- [Optimal coordinated energy dispatch of a multi-energy microgrid in grid-connected and islanded modes](#)  
Li Z., Xu Y.
- [Optimal operation of an energy management system for a grid-connected smart building considering photovoltaics' uncertainty and stochastic electric vehicles' driving schedule](#)  
Thomas D., Deblecker O., Ioakimidis C.S.
- [The Water-Energy-Food Nexus in East Asia: A tele-connected value chain analysis using inter-regional input-output analysis](#)  
White D.J., Hubacek K., Feng K., Sun L., Meng B.
- [Effect of organic type and moisture on CO<sub>2</sub>/CH<sub>4</sub> competitive adsorption in kerogen with implications for CO<sub>2</sub> sequestration and enhanced CH<sub>4</sub> recovery](#)  
Huang L., Ning Z., Wang Q., Zhang W., Cheng Z., Wu X., Qin H.
- [Energy storage capacity optimization for autonomy microgrid considering CHP and EV scheduling](#)  
Liu Z., Chen Y., Zhuo R., Jia H.
- [Numerical simulation of heat extraction performance in enhanced geothermal system with multilateral wells](#)  
Song X., Shi Y., Li G., Yang R., Wang G., Zheng R., Li J., Lyu Z.
- [Teaching–learning–based artificial bee colony for solar photovoltaic parameter estimation](#)  
Chen X., Xu B., Mei C., Ding Y., Li K.
- [Energy Demand Side Management within micro-grid networks enhanced by blockchain](#)  
Noor S., Yang W., Guo M., van Dam K.H., Wang X.
- [Characterizing the energy flexibility of buildings and districts](#)  
Junker R.G., Azar A.G., Lopes R.A., Lindberg K.B., Reynders G., Relan R., Madsen H.
- [Incorporating seller/buyer reputation-based system in blockchain-enabled emission trading application](#)  
Khaqqi K.N., Sikorski J.J., Hadinoto K., Kraft M.
- [Environmental benefits of bike sharing: A big data-based analysis](#)  
Zhang Y., Mi Z.

- [Evaluation of peer-to-peer energy sharing mechanisms based on a multiagent simulation framework](#)  
Zhou Y., Wu J., Long C.
- [Solidification enhancement of PCM in a triplex-tube thermal energy storage system with nanoparticles and fins](#)  
Mahdi J.M., Nsofor E.C.
- [Mixed-integer linear programming-based optimal configuration planning for energy hub: Starting from scratch](#)  
Wang Y., Zhang N., Zhuo Z., Kang C., Kirschen D.
- [Short term load forecasting based on phase space reconstruction algorithm and bi-square kernel regression model](#)  
Fan G.-F., Peng L.-L., Hong W.-C.

### **Highly Cited Reviews published in 2018**

- [Microgrids energy management systems: A critical review on methods, solutions, and prospects](#)  
Zia M.F., Elbouchikhi E., Benbouzid M.
- [A review of the applications of phase change materials in cooling, heating and power generation in different temperature ranges](#)  
Du K., Calautit J., Wang Z., Wu Y., Liu H.
- [Optimal integration and planning of renewable distributed generation in the power distribution networks: A review of analytical techniques](#)  
Ehsan A., Yang Q.
- [Is it really the end of internal combustion engines and petroleum in transport?](#)  
Kalghatgi G.
- [Waste heat recovery from diesel engines based on Organic Rankine Cycle](#)  
Hoang A.T.
- [A review of solidified natural gas \(SNG\) technology for gas storage via clathrate hydrates](#)  
Veluswamy H.P., Kumar A., Seo Y., Lee J.D., Linga P.
- [Energy harvesting technologies in roadway and bridge for different applications – A comprehensive review](#)  
Wang H., Jasim A., Chen X.
- [Power-to-heat for renewable energy integration: A review of technologies, modeling approaches, and flexibility potentials](#)  
Bloess A., Schill W.-P., Zerrahn A.
- [A review of automotive proton exchange membrane fuel cell degradation under start-stop operating condition](#)  
Zhang T., Wang P., Chen H., Pei P.
- [Review on improvement for air source heat pump units during frosting and defrosting](#)  
Song M., Deng S., Dang C., Mao N., Wang Z.
- [Vibration energy harvesting in automotive suspension system: A detailed review](#)  
Abdelkareem M.A.A., Xu L., Ali M.K.A., Elagouz A., Mi J., Guo S., Liu Y., Zuo L.

- [Progress and prospects in reverse electro dialysis for salinity gradient energy conversion and storage](#)  
Tufa R.A., Pawlowski S., Veerman J., Bouzek K., Fontananova E., di Profio G., Velizarov S., Goulão Crespo J., Nijmeijer K., Curcio E.
- [A survey of artificial neural network in wind energy systems](#)  
Marugán A.P., Márquez F.P.G., Perez J.M.P., Ruiz-Hernández D.
- [State-of-the-art generation expansion planning: A review](#)  
Koltsaklis N.E., Dagoumas A.S.
- [Optimization of energy management system for fuel-cell hybrid electric vehicles: Issues and recommendations](#)  
Sulaiman N., Hannan M.A., Mohamed A., Ker P.J., Majlan E.H., Wan Daud W.R.
- [Modeling, simulation and performance analysis of parabolic trough solar collectors: A comprehensive review](#)  
Yilmaz İ.H., Mwesigye A.
- [Progress in solid oxide fuel cell-gas turbine hybrid power systems: System design and analysis, transient operation, controls and optimization](#)  
Azizi M.A., Brouwer J.
- [Review of applications and developments of ultra-thin micro heat pipes for electronic cooling](#)  
Tang H., Tang Y., Wan Z., Li J., Yuan W., Lu L., Li Y., Tang K.
- [A review of durability test protocols of the proton exchange membrane fuel cells for vehicle](#)  
Chen H., Song Z., Zhao X., Zhang T., Pei P., Liang C.
- [A review on pulsating heat pipes: From solar to cryogenic applications](#)  
Alhuyi Nazari M., Ahmadi M.H., Ghasempour R., Shafii M.B., Mahian O., Kalogirou S., Wongwises S.

### **Highly Cited Research Papers published in 2019**

- [Is a 100% renewable European power system feasible by 2050?](#)  
Zappa W., Junginger M., van den Broek M.
- [Reliability, economic and environmental analysis of a microgrid system in the presence of renewable energy resources](#)  
Adefarati T., Bansal R.C.
- [Thermal conductivity enhancement of phase change materials with 3D porous diamond foam for thermal energy storage](#)  
Zhang L., Zhou K., Wei Q., Ma L., Ye W., Li H., Zhou B., Yu Z., Lin C.-T., Luo J., Gan X.
- [A performance-guided JAYA algorithm for parameters identification of photovoltaic cell and module](#)  
Yu K., Qu B., Yue C., Ge S., Chen X., Liang J.
- [A novel two-stage forecasting model based on error factor and ensemble method for multi-step wind power forecasting](#)  
Hao Y., Tian C.

- [Day-ahead building-level load forecasts using deep learning vs. traditional time-series techniques](#)  
Cai M., Pipattanasomporn M., Rahman S.
- [Role of porous metal foam on the heat transfer enhancement for a thermal energy storage tube](#)  
Yang X., Yu J., Guo Z., Jin L., He Y.-L.
- [Pontryagin's Minimum Principle based model predictive control of energy management for a plug-in hybrid electric bus](#)  
Xie S., Hu X., Xin Z., Brighton J.
- [Carbon emissions of cities from a consumption-based perspective](#)  
Mi Z., Zheng J., Meng J., Zheng H., Li X., Coffman D.M., Woltjer J., Wang S., Guan D.
- [Ag-graphene/PEG composite phase change materials for enhancing solar-thermal energy conversion and storage capacity](#)  
Zhang Y., Wang J., Qiu J., Jin X., Umair M.M., Lu R., Zhang S., Tang B.
- [Flow regime aspects in determining environmental flows and maximising energy production at run-of-river hydropower plants](#)  
Kuriqi A., Pinheiro A.N., Sordo-Ward A., Garrote L.
- [A hybrid forecasting system based on a dual decomposition strategy and multi-objective optimization for electricity price forecasting](#)  
Yang W., Wang J., Niu T., Du P.
- [Deep learning framework to forecast electricity demand](#)  
Bedi J., Toshniwal D.
- [Form-stable and thermally induced flexible composite phase change material for thermal energy storage and thermal management applications](#)  
Wu W., Wu W., Wang S.
- [A hybrid forecasting system based on fuzzy time series and multi-objective optimization for wind speed forecasting](#)  
Jiang P., Yang H., Heng J.
- [A combined model based on data preprocessing strategy and multi-objective optimization algorithm for short-term wind speed forecasting](#)  
Niu X., Wang J.
- [Probabilistic individual load forecasting using pinball loss guided LSTM](#)  
Wang Y., Gan D., Sun M., Zhang N., Lu Z., Kang C.
- [Catalytic effects of potassium on biomass pyrolysis, combustion and torrefaction](#)  
Safar M., Lin B.-J., Chen W.-H., Langauer D., Chang J.-S., Raclavska H., Pétrissans A., Rousset P., Pétrissans M.
- [Assessment of deep recurrent neural network-based strategies for short-term building energy predictions](#)  
Fan C., Wang J., Gang W., Li S.
- [Thermal response of annuli filled with metal foam for thermal energy storage: An experimental study](#)  
Yang X., Wei P., Cui X., Jin L., He Y.-L.

- [Investigating the thermal runaway mechanisms of lithium-ion batteries based on thermal analysis database](#)  
Feng X., Zheng S., Ren D., He X., Wang L., Cui H., Liu X., Jin C., Zhang F., Xu C., Hsu H., Gao S., Chen T., Li Y., Wang T., Wang H., Li M., Ouyang M.
- [A hierarchical interdigitated flow field design for scale-up of high-performance redox flow batteries](#)  
Zeng Y., Li F., Lu F., Zhou X., Yuan Y., Cao X., Xiang B.
- [Effect of inclination on the thermal response of composite phase change materials for thermal energy storage](#)  
Yang X., Guo Z., Liu Y., Jin L., He Y.-L.
- [Examining the spatial variations of determinants of energy-related CO<sub>2</sub> emissions in China at the city level using Geographically Weighted Regression Model](#)  
Wang S., Shi C., Fang C., Feng K.
- [Incentive-based demand response for smart grid with reinforcement learning and deep neural network](#)  
Lu R., Hong S.H.
- [Feasibility study of CO<sub>2</sub> huff 'n' puff process to enhance heavy oil recovery via long core experiments](#)  
Zhou X., Yuan Q., Rui Z., Wang H., Feng J., Zhang L., Zeng F.
- [A novel deep learning method for the classification of power quality disturbances using deep convolutional neural network](#)  
Wang S., Chen H.
- [Optimal energy management strategies for energy Internet via deep reinforcement learning approach](#)  
Hua H., Qin Y., Hao C., Cao J.
- [Carbon dioxide absorption in aqueous alkanolamine blends for biphasic solvents screening and evaluation](#)  
Liu F., Fang M., Dong W., Wang T., Xia Z., Wang Q., Luo Z.
- [Achieving the carbon intensity target of China: A least squares support vector machine with mixture kernel function approach](#)  
Zhu B., Ye S., Jiang M., Wang P., Wu Z., Xie R., Chevallier J., Wei Y.-M.

### **Highly Cited Reviews published in 2019**

- [Novel strategies and supporting materials applied to shape-stabilize organic phase change materials for thermal energy storage—A review](#)  
Umair M.M., Zhang Y., Iqbal K., Zhang S., Tang B.
- [Enhancement of methane production in anaerobic digestion process: A review](#)  
Li Y., Chen Y., Wu J.
- [Radiative cooling: A review of fundamentals, materials, applications, and prospects](#)  
Zhao B., Hu M., Ao X., Chen N., Pei G.

- [Reinforcement learning for demand response: A review of algorithms and modeling techniques](#)  
Vázquez-Canteli J.R., Nagy Z.
- [Recent development of membrane for vanadium redox flow battery applications: A review](#)  
Shi Y., Eze C., Xiong B., He W., Zhang H., Lim T.M., Ukil A., Zhao J.
- [Phase change solvents for post-combustion CO<sub>2</sub> capture: Principle, advances, and challenges](#)  
Zhang S., Shen Y., Wang L., Chen J., Lu Y.
- [Potentials of porous materials for energy management in heat exchangers – A comprehensive review](#)  
Rashidi S., Kashefi M.H., Kim K.C., Samimi-Abianeh O.
- [Enhanced oil recovery techniques for heavy oil and oilsands reservoirs after steam injection](#)  
Dong X., Liu H., Chen Z., Wu K., Lu N., Zhang Q.
- [Smart energy systems for sustainable smart cities: Current developments, trends and future directions](#)  
O'Dwyer E., Pan I., Acha S., Shah N.
- [Enhancing the optical and thermal efficiency of a parabolic trough collector – A review](#)  
Manikandan G.K., Iniyar S., Goic R.
- [A comprehensive review of ejector design, performance, and applications](#)  
Tashtoush B.M., Al-Nimr M.A., Khasawneh M.A.
- [A review and discussion of decomposition-based hybrid models for wind energy forecasting applications](#)  
Qian Z., Pei Y., Zareipour H., Chen N.
- [Strategies for optimizing the power output of microbial fuel cells: Transitioning from fundamental studies to practical implementation](#)  
Chen S., Patil S.A., Brown R.K., Schröder U.
- [Review of models for integrating renewable energy in the generation expansion planning](#)  
Dagoumas A.S., Koltsaklis N.E.
- [Microgrids as a resilience resource and strategies used by microgrids for enhancing resilience](#)  
Hussain A., Bui V.-H., Kim H.-M.
- [Human-in-the-loop HVAC operations: A quantitative review on occupancy, comfort, and energy-efficiency dimensions](#)  
Jung W., Jazizadeh F.
- [Advances in seasonal thermal energy storage for solar district heating applications: A critical review on large-scale hot-water tank and pit thermal energy storage systems](#)  
Dahash A., Ochs F., Janetti M.B., Streicher W.
- [Mechanical modulations for enhancing energy harvesting: Principles, methods and applications](#)

Zou H.-X., Zhao L.-C., Gao Q.-H., Zuo L., Liu F.-R., Tan T., Wei K.-X., Zhang W.-M.

- [A review on various temperature-indication methods for Li-ion batteries](#)  
Raijmakers L.H.J., Danilov D.L., Eichel R.-A., Notten P.H.L.
- [Recent advances in fuel cells based propulsion systems for unmanned aerial vehicles](#)  
Pan Z.F., An L., Wen C.Y.

### **Selection Criteria:**

1. Data source: [Scopus](#) - Elsevier's abstract and citation database of peer-review literature, covering 50 million documents published in over 21,000 journals, book series and conference proceedings by some 5,000 publishers
2. The analysis is limited to articles published in *Applied Energy* between 2018-2019
3. 2 categories were considered for the prize: "research papers" and "reviews"
4. The most highly cited 30 research papers and 20 reviews published in respectively 2018 and 2019 have been selected (measured as total cites by 20<sup>th</sup> August 2020).