Part A. PERSONAL INFORMATION

First Name	Fco. Javier		
Family Name	Heredia Cervera		
Sex	Male	Date of Birth	02/03/1965
ID number Social Security, Passport	46533591Z		
URL Web	http://www-eio.upc.es/~heredia/		
Email Address	f.javier.heredia@upc.edu		
Open Researcher and Contributor ID (ORCID)		0000-0003-4613-957X	

A.1. Current position

Job Title	Associate professor	
Starting date	1998	
Institution	Universitat Politècnica de Catalunya	
Department / Centre	Department of Statistics and Operations Research	
Country		Phone Number	
Keywords	Inquiry management; Prize predictions; Complementary services; Programation of short therm generation; Management of electric markets; Linear programming; Planification of the generation systems; Models of determinist nets and stochastics; Non linear programming	

A.2. Previous positions (Research Career breaks included)

Period	Job Title / Name of Employer / Country
1993 - 1998	University school associate professor / Universitat Politècnica de Catalunya
1991 - 1993	University school associate professor / Universitat Politècnica de Catalunya
1989 - 1991	Adjunct lecturer / Universitat Politècnica de Catalunya
1989 - 1989	Assistant / Universitat Politècnica de Catalunya

A.3. Education

Degree/Master/PhD	University / Country	Year
Informática	Universitat Politècnica de Catalunya / Spain	1995
Licenciado en Ciencias Físicas	Universitat de Barcelona	1988

Part B. CV SUMMARY

I hold a BSc. degree in Physics from the University of Barcelona (1988) and a PhD. in Operations Research from the Universitat Politècnica de Catalunya (UPC) (1995). Currently I am associate professor (Profesor Titular de Universidad) at the Department of Statistics and Operational Research of the UPC. My teaching activity is developed mainly in the Faculty of Mathematics and Statistic (FME) and the Faculty of Informatics of Barcelona (FIB), lecturing courses on mathematical optimization and on stochastic optimization in energy markets in the degrees of mathematics, statistics and data science and in the masters of statistics and operations research, data science and energy engineering. I have also contributed to the academic organization of my university holding several institutional position as Vicedean for International Relations and vicedean for the coordination of the degree of Statistics at the Faculty of Mathematics and Statistics the Faculty of Mathematics and Statistics. I have also been intensively involved in the design of the syllabus of the BSc degree of Statistics of the

UPC and its adaptation to the European Space of Higher Education, coordinating the pilot test project at the UPC.

I am the current coordinator of the Group on Numerical Optimization and Modeling (GNOM) of the UPC (5 full time researchers), recognized as a consolidated research group by the Agency for Management of University and Research Grants of the Government of Catalonia. My research interests are focusing around multistage stochastic programming, with special emphasis on the generation of scenario trees, their resolution through optimization techniques for Mixed Integer Non-Linear Programming and the statistical evaluation of the solutions of the stochastic programming models. I have been applied this methodology to real life problems arising mainly on the optimal bid to energy markets, but also on the design of supply chain, logistics and optimal design of shopping centers for real state companies. This research activity deserved four recognized six-years periods of investigation ("sexenios"), the last comprising the period 2012-2017.

My research production includes 32 publications, including journal papers, chapters of book and indexed proceedings papers. The majority of these publications are papers in some of the most relevant journals in operations research, mathematical optimization and its applications (SIAM Journal on Optimization, Annals of Operations Research, Computers and Operations Research, International Journal of Production Research, IEEE Transactions on Power Systems, IEEE Transactions on Smart Grids,…). I have 61 contributions to congresses, almost all international and invited.

I participated in a total of 18 funded research projects: 9 projects with national public funding (the last seven as IP), 2 European projects and 7 contracts (3 as IP) with some of the major Spanish and worldwide companies in energy (Naturgy, FECSA-ENDESA), consulting (Accenture), manufacturing (Top Cable) and real state (CBRE).

I supervised 3 PhD thesis, and 3 more are in progress, and 39 MSc/BSc thesis. One of my former PhD students is associate professor of operations research (tenure-track position) at Universidad Juan Carlos, Madrid; another is the head of the Energy Analytics group in the Institute for Energy Research of Catalonia (IREC), one of the reference institutions for energy research in Spain, and the third one is working in the dept. of Algorithmic research and development in Hoop Solutions S.L., a company for the development of mobile apps for car sharing.

Editor of the journal Statistics and Operations Research Transactions (SORT) (2003-2007).

Referee several journals on OR and applications: Operations Research, IEEE Transactions on Power Systems, IEEE Systems Journal, Annals of Operations Research, TOP, Statistics and Operations Research Transactions, European Journal of Operational Research, Statistical and Operations Research, Energy Economics, Science of the Total Environment, Computers and Operations Research, Applied Energy, Journal of Environmental Management, Journal of Energy Storage.

I was reviewer of the following evaluation committees: Comisión de evaluación del Programa de Diseño y Producción Industrial (DPI), Subdirección General de Proyectos de Investigación. Ministerio de Ciencia e Innovación (since 2009); Agencia Nacional de Evaluación y Prospectiva (ANEP), Ministerio de Ciencia e Innovación (since 2008). Agència de Gestió d'Ajuts Universitaris i de Recerca de la Generalitat de Catalunya (AGAUR), Generalitat de Catalunya (since 2008).

Part C. RELEVANT ACCOMPLISHMENTS

C.1. Most important publications in national or international peer-reviewed journals, books and conferences

AC: corresponding author. (nº x / nº y): position / total authors. If applicable, indicate the number of citations

1 **Scientific paper**. Ramon-Lumbierres, Daniel.; Heredia, F.-Javier; Minguella-Canela, J.; Muguruza, A.(2/4). 2020. Optimal postponement in supply chain network design under uncertainty: an application for additive manufacturing International journal of production research. Taylor & Francis Group. ISSN 0020-7543. (10) https://doi.org/10.1080/00207543.2020.1775908

2 **Scientific paper**. Barbero, M.; Corchero, C.; Canals Casals, L.; Igualada , L.; Heredia, F.-Javier. (5/5). 2020. Critical evaluation of European balancing markets to enable the participation of Demand Aggregators Applied energy. 264-114707, pp.1-23. ISSN 0306-2619. (30) https://doi.org/10.1016/j.apenergy.2020.114707

3 **Scientific paper**. Heredia, F.-Javier; Cifuentes, J.; Corchero, C.(1/3). 2018. Stochastic optimal generation bid to electricity markets with emissions risk constraints Journal of environmental management. 207-1, pp.432-443. ISSN 0301-4797. (7) https://doi.org/10.1016/j.jenvman.2017.11.010

4 **Scientific paper**. Heredia, F.-Javier; Cuadrado, M.; Corchero, C.(1/3). 2018. On optimal participation in the electricity markets of wind power plants with battery energy storage systems Computers & operations research. 96, pp.316-329. ISSN 0305-0548. (48) https://doi.org/10.1016/j.cor.2018.03.004

5 **Scientific paper**. Igualada , L.; Corchero, C.; Cruz-Zambrano, M.; Heredia, F.-Javier. (4/4). 2014. Optimal energy management for a residential microgrid including a vehicle-to-grid system IEEE transactions on smart grid. Institute of Electrical and Electronics Engineers (IEEE). 5-4, pp.2163-2172. ISSN 1949-3053. (182) https://doi.org/10.1109/TSG.2014.2318836

6 **Scientific paper**. Heredia, F.-Javier; Rider, M.; Corchero, C.(1/3). 2012. A stochastic programming model for the optimal electricity market bid problem with bilateral contracts for thermal and combined cycle units Annals of operations research. 1-193, pp.107-127. ISSN 0254-5330. (11) https://doi.org/10.1007/s10479-011-0847-x

7 **Scientific paper**. Corchero, C.; Heredia, F.-Javier. (2/2). 2011. A stochastic programming model for the thermal optimal day-ahead bid problem with physical futures contracts Computers & operations research. 38-11, pp.1501-1512. ISSN 0305-0548. (11) https://doi.org/10.1016/j.cor.2011.01.008

8 **Scientific paper**. Heredia, F.-Javier; Rider, M.; Corchero, C.(1/3). 2010. Optimal bidding strategies for thermal and generic programming units in the day-ahead electricity market IEEE transactions on power systems. 25-3, pp.1504-1518. ISSN 0885-8950. (37) https://doi.org/10.1109/TPWRS.2009.2038269

9 **Scientific paper**. Beltran, C.; Heredia, F.-Javier. (2/2). 2005. An effective line search for the subgradient method Journal of optimization theory and applications. 125-1, pp.1-18. ISSN 0022-3239. (10) https://doi.org/10.1007/s10957-004-1708-4

10 **Scientific paper**. Beltran, C.; Heredia, F.-Javier. (2/2). 2002. Unit commitment by augmented lagrangian relaxation: testing two decomposition approaches Journal of optimization theory and applications. 112-2, pp.295-314. ISSN 0022-3239. (38) https://doi.org/10.1023/A:1013601906224

11 **Scientific paper**. Heredia, F.-Javier; Nabona, N.(1/2). 1995. Optimum short-term hydrothermal scheduling with spinning reserve through network flows IEEE transactions on power systems. 10-3, pp.1642-1651. ISSN 0885-8950. (39) https://doi.org/10.1109/59.466476

C.2. Conferences and meetings

1 Heredia, F.-Javier; Mañé, I.; Cuadrado, M.. Multistage stochastic programming for the optimal bid of a wind-thermal power production pool with battery storage.. 32nd European Conference on Operational Research. 2022. Finland. Participatory - invited/keynote talk.

2 Cuadrado, M.; Heredia, F.-Javier. Multistage scenario trees generation for electricity markets optimization. 31st European Conference on Operational Research. 2021. Greece. Participatory - invited/keynote talk.

3 Ramon-Lumbierres, Daniel.; Heredia, F.-Javier. A multistage stochastic programming model for the strategic supply chain design. 29th European Conference on Operational Research. 2018. Spain. Participatory - oral communication.

4 Ramon-Lumbierres, Daniel.; Heredia, F.-Javier; Gimeno, R.; Buil, R.; Consola, J.. A multistage stochastic programming model for the strategic supply chain design. ISMP2018 - 23th International Symposium on Mathematical Programming. 2018. France. Participatory - oral communication.

5 Corchero, C.; Homs, Josep; Heredia, F.-Javier; Igualada , L.; de Prada, M.. A MIP formulation of a hybrid AC-DC offshore wind power plant topology. ISMP2018 - 23th International Symposium on Mathematical Programming. 2018. France. Participatory - oral communication.

6 Heredia, F.-Javier; Cuadrado, M.; Sanchez, J.. A multistage stochastic programming model for the optimal bid of a wind producer. ISMP2018 - 23th International Symposium on Mathematical Programming. 2018. France. Participatory - oral communication.

7 Minguella-Canela, J.; Muguruza, A.; Bonada, J.; Ramon-Lumbierres, Daniel.; Heredia, F.-Javier; Gimeno, R.; Guo, P.; Hamilton, M.; Shastry, K.; Webb, S.. Comparison of production strategies and degree of postponement when incorporating additive manufacturing to product supply chains. 7th Manufacturing Engineering Society International Conference. 2017. Participatory - oral communication.

8 Heredia, F.-Javier; Cuadrado, M.. A multistage stochastic programming model for the optimal management of wind-BESS virtual power plants. Windfarms2017. 2017. Spain. Participatory - invited/keynote talk.

9 Ramon-Lumbierres, Daniel.; Muguruza, A.; Minguella-Canela, J.; Heredia, F.-Javier. Optimal supply chain strategy and postponement degree with 3D printing. 28th European Conference on Operational Research. 2016. Poland. Participatory - oral communication.

10 Heredia, F.-Javier; Corchero, C.; Cuadrado, M.. On the optimal participation in electricity markets of wind power plants with battery energy storage systems. 28th European Conference on Operational Research. 2016. Poland. Participatory - oral communication.

C.3. Research projects and contracts

1 **Project**. TED2021-131365B-C44, Unified multi-market participation of energy communities in energy markets. AGENCIA ESTATAL DE INVESTIGACION. Fco. Javier Heredia Cervera. (Department of Statistics and Operations Research). 01/12/2022-30/11/2024. 149.500 €.

2 **Project**. 2019 DI 098, Modelos de optimización matemática en la gestión de centros comerciales. AGAUR. Agència de Gestió d'Ajuts Universitaris i de Recerca. Fco. Javier Heredia Cervera. (Department of Statistics and Operations Research). 07/09/2020-07/09/2023. 33.960 €.

3 **Project**. RTI2018-097580-B-I00, Modelling and optimization of large-scale structured problems and applications. AGENCIA ESTATAL DE INVESTIGACION. Fco. Javier Heredia Cervera. (Department of Statistics and Operations Research). 01/01/2019-31/12/2022. 82.885 €.

4 **Project**. MTM2013-48462-C2-1-R, Forecasting and optimization of wind generation in energy markets - 1. MIN DE ECONOMIA Y COMPETITIVIDAD. Fco. Javier Heredia Cervera. (Department of Statistics and Operations Research). 01/01/2014-31/12/2017. 59.290 €.

5 **Project**. 2009 SGR 1122, GNOM: GROUP OF NUMERICAL OPTIMIZATION AND MODELLING. AGAUR. Agència de Gestió d'Ajuts Universitaris i de Recerca. (Department of Statistics and Operations Research). 23/09/2009-30/04/2014. 42.640 €.

6 **Project**. DPI2008-02153, PLANIFICACIÓN ÓPTIMA DE LA GENERACIÓN ELÉCTRICA A CORTO Y MEDIO PLAZO EN ENTORNOS DE MERCADOS MÚLTIPLES CON RESTRICCIONES DE RIESGO. Ministerio de Ciencia e Innovación (MICINN). Fco. Javier Heredia Cervera. (Department of Statistics and Operations Research). 01/01/2009-30/03/2013. 155.721,62 €.

7 **Contract**. Strategic analytical models in supply chain design through mathematical optimization ACCENTURE TECHNOLOGY LABS. Fco. Javier Heredia Cervera. (Department of Statistics and Operations Research). 16/11/2016-01/01/2020. 70.255,02 €.