Jack Gregory, PhD

Economist & Data Scientist

Composite Indicator Research Section
Department for Economics and Data Analytics
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KEY SKILLS

- **Computer Skills**
  - Significant experience with Microsoft Office Suite, R, Stata, MySQL, MariaDB, Git, LaTeX and Markdown
  - Experience with AWS, including EC2, S3 and RDS
  - Intermediate ability with VBA, Julia, Python, SAS, HTML, XML, and CSS
- **Modeling Skills**
  - Econometric analysis and prediction (incl. timeseries and panel data)
  - Linear and non-linear optimization models
  - Data management and maintenance
- **Knowledge Areas**

  Microeconomics and econometrics; Utility regulation, including electricity, gas & water; Electricity industry; Commodity markets; Natural resource economics; Industrial organization; Climate change policy and greenhouse gas emissions; and, Policy analysis.
- **Languages**
  - English: Native
  - French: Fluent (speaking, reading & writing)

EDUCATION

University of California, Davis, Davis, CA, USA 2014 – 2021

Doctor of Philosophy (Ph.D.) in *Agricultural & Resource Economics*

- Dissertation: Essays on Electricity Economics – Three essays discussing (1) the impacts of COVID restrictions and federal assistance on business activity in Southern California; (2) how government ownership and market power intersect in the Queensland regional electricity market; and, (3) the effects of the Clean Air Act's grandfathering provisions.
- Advisers: Prof James Bushnell, Prof Katrina Jessoe, Prof Kevin Novan and Prof Erich Muehlegger
- Areas of study: natural resource & environmental economics; energy economics & policy; industrial organization; and, econometrics.
- Through my research, it was necessary to develop a data scraping, organisation, and analysis workflow; R and Python were used to collect the data and perform the analysis, while MySQL was used to organize hundreds of millions of data points. The analysis incorporated sophisticated panel regressions and machine learning to identify causal relationships.

Australian National University, Canberra, ACT, Australia 2010 – 2011

Master of Environmental & Resource Economics (MERE) and *Graduate Certificate in International & Development Economics*

- Attended the *Crawford School of Public Policy*
- Thesis: Fuel Choices in Rural Maharashtra – Analysed energy choice in rural India from a unique data set, hypothesised a model and applied econometric techniques with STATA to discern its validity
- Adviser: Prof David Stern
- Areas of Study: Microeconomics; econometrics; industrial organization; agricultural & resource economics; and, energy & climate change policy

Queen's University, Kingston, ON, Canada 2003 – 2008

Bachelor of Science (B.Sc.)

- Major in Physics, minor in Economics
- Graduated with Honours

EMPLOYMENT HISTORY

World Intellectual Property Organization (WIPO), Geneva, Switzerland 2021 – Present

Economist & Data Analyst, Department for Economics and Data Analytics

- Primary responsibility: Data management and analysis for the Global Innovation Index (GII), the preeminent indicator for global innovation benchmarking and WIPO's flagship report.
- Project Manager – *GII Data Workflow*
  - Developed and implemented a transition to a collaborative, integrated, reproducible, redundant, standardized, dynamic and documented GII workflow from data collection through result dissemination primarily in R, SQL and GitHub.
  - Built, maintained and administered a cloud relational database using AWS RDS, MariaDB and R.
  - Managed the development of standardized data collection, cleaning and auditing code in R, Python and Stata.
  - Advised and audited the internal R package built to assemble the GII composite indicator.
  - Led the development of GII data outputs, including but not limited to: economy briefs generated with Rmarkdown; and, economy profiles populated through a bespoke workflow integrating R, XML and Adobe InDesign.
  - Administered a GitHub repository – including the development of a reference manual outlining its contents and operation – to structure the workflow by subprojects and allow for seamless collaboration between contributors.
- Other responsibilities
  - Commenced a process of extending the GII to micro data sources with respect to the Index itself as well as metropolitan clusters.
  - Fostered a relationship with GitHub to develop open source coding metrics relevant to the GII, which up until then lacked measures of digital innovation.
  - Initiated and completed indicator methodology reviews for "high-tech net exports," "venture capital deals" and "joint venture strategic alliance deals."
  - Developed inputs to the GII Global Innovation Tracker using corporate R&D data from the Orbis database.

Center for Water-Energy Efficiency, University of California, Davis, CA, USA 2020 – 2021

Graduate Student Researcher

- Performed data maintenance and independent analysis on the East Bay Municipal Utility District (EBMUD) project which aimed to determine the effects of smart meters and varying levels of customer engagement on water, gas, and electricity consumption.
- Project involved maintaining an SQL database and developing causal analysis through the application of difference-in-differences techniques.

California Independent System Operator (CAISO), Folsom, CA, USA 2016 – 2017

Analyst, Department of Market Monitoring

- Primary responsibility: monitoring the efficiency and effectiveness of the ancillary service, congestion management, and electricity spot markets.
- *Downward flexibility metrics*
  - Analytic work addressed the issue of downward flexibility within the ISO energy markets in order to highlight the main drivers of non-economic bidding and resultant market outcomes.
  - Identified errors and developed a new methodology for determining the percentage of economic downward flexibility by generation type.
  - The revised methodology was adopted as the standard for all similar metrics within the ISO.
- *Intertie analysis*
  - Designed and coded a program in SAS and SQL which combined disparate data sources in order to analyse activity on system interties.
  - The project required a synthesis of CAISO's optimisation model and economic theory.

Independent Competition & Regulatory Commission, Canberra, ACT, Australia 2011 – 2014

Senior Regulatory Officer, Economics Division

- Primary responsibilities: providing economic advice to the Commission, analysing market competitiveness, and pricing utility services in the ACT.
- Project Manager & Climate Change Subject Expert – *ACT GHG Inventory 2009–10 to 2011–12*
  - Advised the Commission and external stakeholders on highly complex, technical subjects, including: climate change, greenhouse gas emissions, and renewable energy policy.
  - Independently determined appropriate resources for data collection and interpreted technical data concerning the Territory's greenhouse gas emissions and renewable energy consumption.
  - Developed data management models using Excel Visual Basic for Applications, which processed and analysed large databases to assess the Territory's progress towards its climate change targets.
  - Thoroughly documented the model, including the creation of a manual, and instructed fellow co-workers on its operation and maintenance.
  - Independently authored an annual report cataloging the changes in Territory emissions and renewable energy consumption and presented it along with the models to both internal and external stakeholders.
- Project Manager – *Franchise Electricity Customers Price Reset 2013–14*
  - Regularly collaborated with the Economics Team to set priorities, delegate responsibilities and organise the project timeline.
  - Advised the Commissioners and colleagues on highly complex technical issues surrounding the reset, including the effects of the federal price on carbon in financial markets (i.e. spot and futures).
  - Developed and documented a regulated retail price model using Excel Visual Basic for Applications based on a cost build-up approach.
  - Determined the appropriate resources for data collection; cleaned and prepared the data; and analyzed and interpreted results related to the Australian electricity industry.
  - Independently authored all external publications, including the Information Paper and Final Report, which required distilling complex electricity issues for a non-technical audience.
- Project Manager – *Feed-in Tariff Summary Reports*
  - Independently developed a replicable process to collect and analyse Territory feed-in tariff data, including a model using Excel Visual Basic for Applications and a quarterly report distributed publicly.
  - Investigated serious data anomalies by initiating a discourse with electricity distributors and retailers, discussing and explaining controversial material, and negotiating more representative data and better reporting procedures.

Australian Energy Regulator, Melbourne, VIC, Australia 2013

Analyst, Wholesale Markets Branch

- Member of the Wholesale Markets Branch responsible for monitoring the East coast Australian electricity and gas markets.
- *Electricity market power metrics*
  - Managed project priorities and collaborated with senior personnel to achieve strategic objectives on a short timeframe.
  - Researched and applied industrial organization theory to design metrics appropriate for measuring and tracking market power in the Australian National Electricity Market.
  - Designed a data collection process and model using Excel to generate competition metrics for the annual State of the Energy Market Report.
  - Prepared legacy documentation and presented to superiors at the conclusion of my contract.
- *Medium-Term Projected Assessment of System Adequacy*
  - Developed a methodology and an Excel model to evaluate the accuracy of generator outage projections, which resulted in consultations with potentially non-compliant generators.

PAPERS

Gregory, J. and D.I. Stern. 2014. "Fuel choice in rural Maharashtra." *Biomass & Bioenergy*, 70: 302–314.

Gregory, J. 2016. "Grace period literature review." IP Australia Economic Research Paper 06-01.

Gregory, J. 2016. "Amazing Grace: How grace periods influence innovation." IP Australia Economic Research Paper 06-02.

Brown, A., Fuller, S. and Gregory, J. 2019. "State-of-the-Knowledge White Paper Series: How Zero-Emission Vehicle Incentives and Related Policies Affect the Market." University of California, Davis, Institute of Transportation Working Paper 2018-43.

Gregory, J. 2021. "Essays on Electricity Economics." Dissertation. University of California, Davis.

PRESENTATIONS

Invited Speaker 2013. "Retail electricity pricing in the ACT." **Presentation at the Australian Energy Regulator**, Melbourne, VIC, Australia.

Invited Speaker 2013. "Engagement with regulated utilities." **Presentation at the Australian Energy Regulator**, Melbourne, VIC, Australia.

Panel Speaker 2021. "COVID restrictions, federal assistance and small businesses." **Energy Policy Conference**, Boise, ID, USA.

Panel Speaker 2022. "COVID restrictions, federal assistance and small businesses." **Mannheim Conference on Energy and the Environment**, Mannheim, Germany.

Panel Speaker 2022. "Still your grandfather's boiler." **Atlantic Workshop on Energy and Environmental Economics**, A Toxa, Galicia, Spain.

REFERENCES

- Available upon request.

[*CV compiled on 2022-09-25*]