Roderick Go

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ENERGY AND ENVIRONMENTAL ECONOMICS, INC.   San Francisco, CA
Senior Associate   June 2016 – Present

Mr. Go's work at E3 has spanned the planning, market analysis, and distributed energy resources (DERs) practice areas, helping to enhance and continue development of multiple E3 analytical tools. He joined E3 in 2016 upon receiving both his M.S.E. in Environmental Management and Economics and his B.S. in Environmental Engineering from the Johns Hopkins University. His education also included receiving a Minor in Engineering for Sustainable Development, with specific interest in urban development. Prior to E3, Mr. Go's research experiences focused on developing novel power systems optimization models and solution algorithms to investigate operational and planning questions for transmission-constrained systems under high renewables. Select projects at E3 include:

o **Locational Net Benefits Analysis Tool, 2016.** Developed an Excel-based tool for the three California IOUs to estimate the location-specific avoided costs of installing various distributed energy resources.
o **Portland General Electric EIM Benefits Analysis, 2016.** Provided PLEXOS production simulation modeling support to estimate the potential benefits to PGE of joining the Western EIM.
o **Hawaiian Electric Companies Power Supply Improvement Plan Update, 2016.** Developed E3's RESOLVE model for specific application in the Hawaiian Electric Companies' December 2016 Power Supply Improvement Plan update. The model provided a set of least cost investment pathways to reach 100% renewables under different stakeholder assumptions out to 2045, helping guide policy and investment decision-making on Hawai'i, Maui, and Oahu islands.
o **E3 RESTORE Storage Dispatch Model, 2016-2017.** Updated E3's storage dispatch optimization model, which investigates the value of behind-the-meter storage to customers and utilities under customer- and utility-control regimes.

SANDIA NATIONAL LABORATORIES   Albuquerque, NM
Technical Intern—Discrete Math & Optimization   June 2015 – June 2016

o Created a two-stage, stochastic model in Python and Pyomo to co-optimize transmission, generation, and energy storage investments on a large-scale power network
o Studied the economic value of simultaneously considering bulk energy storage investments with transmission and generation expansion planning decisions for high renewables scenarios
o Implemented and investigated the use of Bender's decomposition and Lagrangian relaxation methods to accelerate solution of large-scale expansion planning models

JOHNS HOPKINS UNIVERSITY   Baltimore, MD
Research Assistant   October 2014 – June 2016

- o Developed a model in GAMS to compare siting and sizing decisions of a merchant energy storage investor recovering costs via energy arbitrage to those of a welfare-maximizing centralized planner
- o Investigated possible issues of market power from energy storage merchants in transmission-constrained networks

CITY OF BALTIMORE, OFFICE OF SUSTAINABLE ENERGY   Baltimore, MD
Energy Analyst Intern   February 2015 – May 2015

- o Investigated energy storage applications and opportunities for co-locating with solar PV project in Baltimore City based on case studies of existing projects around the US

COMILLAS PONTIFICAL UNIVERSITY   Madrid, Spain
Visiting Researcher   June 2014 – August 2014, January 2015

- o Developed and compared various unit commitment approximations in GAMS for generation expansion planning models for systems with significant renewables
- o Implemented *k*-means clustering methods in Matlab to estimate system states for use in expansion planning models
- o Organized one-day, workshop on linear and mixed-integer linear programming in power systems for participating students

Education

The Johns Hopkins University   Baltimore, MD
M.S.E. Environmental Management and Economics   May 2016

The Johns Hopkins University   Baltimore, MD
B.S. Environmental Engineering   May 2015
Minor in Engineering for Sustainable Development – Urban Development

Citizenship
United States

Presentations
1. "Optimal Portfolio Investment of an Energy Storage Merchant in the Energy Imbalance Market." INFORMS Annual Meeting, Philadelphia, PA. November 2015.

Refereed Publications
1. R. Go, F. D. Munoz, J-P. Watson, *"Assessing the Economic Value of Co-Optimized Grid-Scale Energy Storage Investments in Supporting High Renewable Portfolio Standards"*, Applied Energy, 183, 2016, 902-913. http://dx.doi.org/10.1016/j.apenergy.2016.08.134.