

2017 Summer Intern Project List

Title: Consortium for the Valuation of Applications Benefits Linked with Earth Science (VALUABLES) – Summer Internship

Description: RFF, in a cooperative agreement with the National Aeronautics and Space Administration (NASA), is home to the Consortium for the Valuation of Applications Benefits Linked with Earth Science (VALUABLES). The Consortium enables experts to advance the valuation of the applied benefits linked to information from space-based observations of Earth, catalyzes a community of research and practice of Earth scientists and social scientists, and disseminates findings to key stakeholders from academia, government, NGOs, and elsewhere.

The Consortium seeks candidates for a summer research internship. The intern will support the Consortium's research activities and will focus on a literature search and summary of existing studies that quantify the socioeconomic benefits of Earth science information. The intern will also provide logistical support for workshops and conferences.

Desired qualifications: Current enrollment in an undergraduate or graduate degree program; some background in economics and the environmental sciences; previous experience conducting academic literature reviews; familiarity with value of information (VOI) methods, Earth science data, or both.

Project leader: Yusuke Kuwayama

Web link to this project: None

Title: Energy Efficiency in Buildings

Description: This project is evaluating energy use in residential and commercial buildings and the role of policy in overcoming the energy efficiency gap. The intern may work on an empirical analysis of frequent interval data from a smart thermostat company or with commercial building energy use data to understand the effects of building codes, thus demonstrated skills working with large datasets will be required. Research on the effects of energy efficiency on financial performance of commercial buildings is also possible. Summary of the economic literature on the effectiveness of other energy efficiency policies may also be required.

Skills desired: Proficient in Stata and other statistical packages. Excellent writing ability. Economics major preferred. Understanding of energy use in buildings a plus. Graduate students, college grads, or rising seniors strongly preferred.

Project leaders: Karen Palmer and Margaret Walls

Web link to this project: None

Title: Deep decarbonization of the US economy

Description: Deep decarbonization of the US economy is likely to require substantial private sector investment in non-emitting electricity generation as part of a significant expansion of the electricity sector to incorporate electrification of water and space heating and transportation services. However, non-emitting technologies typically have very low marginal costs and as these technologies expand up to 50 percent of total electricity supply and beyond the market clearing price will be insufficient to cover the capital costs of the investments or the variable costs of most existing technologies. This project examines possible directions for regulatory reform that are already apparent, and others may emerge, as a way to incent new investment in the power sector. The project involves the preparation of a white paper and convening of electricity sector analysts and is co-sponsored with the National Renewable Energy Laboratory.

Skills desired: familiarity with electricity markets, renewable energy technologies, grid integration, regulatory practices, basic spreadsheet management, good communication skills (writing and speaking), good organization

Project leader: Dallas Burtraw

Web link to this project: None

Title: Permitting Hydroelectric Power Dams: Remove or Re-operate?

Description: Hundreds of dams in the US generate hydroelectric power. Continuing to generate hydro power can reduce the need for fossil fuel generated power and so can reduce carbon emissions. However, the dams and their operations have had negative consequences for many fish populations and for riverine wetlands. All these dams will need a new operating license from the Federal Energy Regulatory Commission. As FERC considers renewing a dam's operating license it must decide whether reduced carbon emissions are worth the loss of fish and wetlands that result. How does FERC make the decision to have a dam removed, or to require change in dam operations? The answer to this question can be found through a careful reading and summary of FERC Environmental Impact statements prepared for making dam relicensing decisions.

Skills desired: Knowledge of, or willingness to learn about, environmental laws bearing on FERC decision making. Ability to prepare concise summaries of complicated and complex environmental reports, in order to explain how the FERC complied with the laws and the basis for the FERC relicensing decision.

Project leader: Leonard Shabman

Web link to this project: None

Title: Seafood fraud

Description: Seafood is the world's most traded food commodity and has a complex global supply chain. Mislabeling — labeling one seafood product with a description of another — can occur at several points along the supply chain. Although seafood mislabeling is now well-documented across many species and regions, the where, how, and why it occurs is unknown as are the impacts. Understanding these mechanisms and feedbacks, and the conditions where seafood fraud is likely

to have the greatest socio-ecological impacts is critical to designing interventions to reduce it. The intern will assist in data acquisition and analysis to explore the drivers and impacts of seafood fraud.

Skills desired: Current enrollment in an undergraduate or graduate program; experience acquiring and organizing data using software such as Excel or STATA; strong writing skills; some familiarity with seafood supply chains and/or trade data would be beneficial but are not necessary.

Project leader: Kailin Kroetz

Web link to this project: None

Title: Environmental Regulation, the Permitting Process, and Untangling Red Tape for Increased Efficiency

Description: Federal licensing and permitting processes are a key policy lever for achieving a variety of government goals, including environmental protection, workplace safety, and protecting historical/heritage sites. Licenses and permits establish legally binding terms that govern the construction or operation of major industrial, electricity, and oil and gas production facilities. As a result, licensing and permitting processes can help protect the environment, but they also may have adverse effects on economic activity. This project will explore the extent to which there are differences in approval times across several licensing and permitting programs, and review what evidence exists that such differences lead to differences in levels of economic activity. This project could also include a review of differences in State permitting processes—for example, do permitting times differ by state?

Skills desired: Excel and proficiency in data analysis and management.

Project leader: Art Fraas

Web link to this project: None

Title: Use of Energy Saving Devices on Heavy-Duty Truck Trailers

Description: Our planned research would expand data collected this past summer on the use of energy saving devices on heavy-duty truck trailers. The planned research has two components. First, we plan to expand significantly the number of trucks in our sample. Second, we plan to combine and analyze this information with data collected in 2015 and 2016.

Skills desired: Proficiency in Stata, data analysis and management.

Project leader: Randy Lutter

Web link to this project: None

Title: Electric Vehicles: Policies and Battery Innovation

Description: The research will consist of two parts. The first is a synthesis of current estimates of the costs of batteries for use in electric vehicles, as well as projections of future costs. The second part will collect background information and synthesize existing research about California's Zero Emission Vehicle program.

Skills desired: Some familiarity with electric vehicle technology and policy is preferred but not required.

Project leader: Joshua Linn

Title: Water Affordability

Description: This project will focus on the development and analysis of a database of residential water pricing in the U.S. for household consumption with a focus on competing incentives introduced by objectives of conservation and affordability. The intern will help build a database of water utility rate structures, linked spatially with socioeconomic and demographic characteristics. Additional analysis will include utility revenue impacts and implications for investment in water infrastructure. The intern will also review and synthesize academic literature on water affordability and conservation from multiple disciplines.

Skills desired: Experience with, or interest in, the economics of water pricing, affordability, and conservation. Proficiency in data management in Excel and Stata (knowledge of ArcGIS desired). Excellent writing and organizational skills.

Project leader: Casey Wichman

Title: A technical review of DER energy and storage systems

Description: Due to increasingly stringent targets for carbon emissions reductions, numerous strategies have been explored to both increase the efficiency of electricity generation and the utilization of renewable energy sources. One particular strategy is to move away from the conventional system of centralized electricity generation and long range energy transmission, toward decentralized energy generation and storage through the adoption of distributed energy resource (DER) systems. In this project, the intern will review DER technologies, such as combined heat and power (CHP), heating, cooling, hot water and thermal storage, solar thermal storage, and develop conceptual performance models for two or more of these individual technologies.

Skills desired: Current enrollment in an undergraduate or graduate program; background in mechanical engineering, economics or energy systems; previous experience conducting heat balance, water balance, CHP, HVAC, or hot water boiler system design; good writing skills.

Project leaders: Jhih-Shyang Shih and Dallas Burtraw