



Guarini Center

Frank J. Guarini Center on Environmental,
Energy, and Land Use Law
at NYU School of Law

Sustainable Energy Solutions for Remote Populations in Latin America

*A Workshop on Opportunities and Obstacles to Expanding Off-
Grid Renewable Energy Resources*

October 27-28, 2016

OVERVIEW

Rural electrification rates vary widely throughout Latin America. In some countries, it is as low as 50-60%, while others approach 100%. The workshop will examine different approaches to rural electrification efforts, and will explore how challenges vary between countries.

Over the course of this two-day workshop, which is a continuing joint effort of the Guarini Center and SolarCity, we will evaluate case studies of potential new renewable energy projects in participating Latin America nations that can help provide cost-effective, reliable

electricity access to remote populations and reduce dependence on diesel generation. The case studies have been modelled by the countries in collaboration with experts at SolarCity.

Participants at the workshop include: government and utility representatives from select Latin American countries, development bank lenders, experts from NYU Law, SolarCity executives, NGOs experts and private sector financiers. As in previous workshops, there are a limited number of participants, so as to provide a chance for substantive discussion among all participants.

DAY 1: THURSDAY, OCTOBER 27, 2016
POLLACK COLLOQUIUM ROOM, FURMAN HALL, 245 SULLIVAN STREET

REGISTRATION (THURSDAY, 11:00AM)

OPENING SESSION (THURSDAY, 11:15AM)

Opening Remarks and goals for the workshop:
Bryce Rudyk, Climate Program Director & Adjunct Professor, Guarini Center, NYU Law/Senior Legal Advisor, Alliance of Small Island States

Overview of the Opportunity for Renewable Microgrids in Latin America:
Bob Rudd, Vice President, Energy Storage and Microgrid, SolarCity

Participant introductions

LUNCH (THURSDAY, 12:00PM)

PANEL 1 (THURSDAY, 12:45PM)

ASSESSING LEGAL AND REGULATORY FRAMEWORKS FOR SUPPORTING THE DEPLOYMENT OF RENEWABLE ENERGY MICROGRIDS

The background legal and regulatory frameworks in a given country play a crucial role in determining the opportunities for off-grid renewable energy deployment. This session will explore the instruments that various jurisdictions have developed to support off-grid renewable energy deployment and challenges that have been encountered. Specific questions to be explored include:

- What incentives, if any, are in place to support off-grid renewable resources? Are there any distortionary policies in place like fossil fuel subsidies?
- How, if at all, do officials take account of benefits such as pollution reduction and habit preservation in deciding whether to pursue transmission expansion or microgrid solutions for under-electrified areas?

- What regulatory frameworks might effectively incentivize adoption of the “smart” grid technology that cutting-edge microgrids feature throughout the distribution grid?

Panelists:

- **Teresa Parejo-Navajas**, Associate Professor of Law, Carlos III de Madrid University (moderator)
- **Jorge Avalos**, Profesional Senior División Acceso y Equidad Energética en Ministerio de Energía, Chile
- **Daniela Martinez Gutierrez**, Senior Associate, Quintanilla & Busel Niedmann
- **Milton Montoya**, Research Director, Mining and Energy Law Institute, Externado de Colombia University

CASE STUDY OVERVIEW AND ASSUMPTIONS (THURSDAY, 1:45PM)

Tristan Glenwright, Director, Project Development, SolarCity

CASE STUDY SESSION 1 (THURSDAY, 2:00PM)

EVALUATING OFF-GRID VERSUS GRID-CONNECTED SOLUTIONS

Off-grid renewable energy systems present a host of different economic, environmental, and energy security benefits and costs than grid-connected solutions. How are policymakers evaluating these costs and benefits and what factors may be overlooked? This session will explore these issues through case studies of potential projects in Argentina and Uruguay.

Presenters:

- **Juan Pablo Carvalho Bodelon**, PhD Candidate, Energy & Resources Group, UC Berkeley (*moderator*)
- **Lourdes Albornoz**, Asesor, Equipo Ingenieria Electrica, Direccion Nacional de Energia, Uruguay
- **Marta Carrizo**, Miembro de la Unidad de Coordinación del Proyecto (UCP) del Proyecto de Energías Renovables en Mercados Rurales (PERMER), Argentina

DAY 2: FRIDAY, OCTOBER 28, 2016
POLLACK COLLOQUIUM ROOM, FURMAN HALL, 245 SULLIVAN STREET

REGISTRATION AND WELCOME (FRIDAY, 9:00AM)

Danielle Spiegel-Feld, Executive Director, Guarini Center, NYU Law

THE REGULATOR'S PERSPECTIVE: THE BENEFITS AND RISKS OF DIESEL DISPLACEMENT (FRIDAY, 9:15AM)

Rodrigo Rodríguez, Director Nacional de Electricidad, Autoridad Nacional de los Servicios Públicos de Panamá

**CASE STUDY SESSION 2 (FRIDAY, 9:45AM)
EVALUATING OPPORTUNITIES FOR DIESEL DISPLACEMENT**

While it is clear that renewable microgrid technology costs have declined in recent years, questions remain regarding exactly how competitive the technology is compared to diesel generation. There are also a number of questions regarding potential implementation challenges communities may encounter as they attempt to transition from diesel to renewable systems. This session will explore these issues through a series of case studies of potential projects in Argentina, Guyana and Panama. Specific questions to be addressed include:

- From a cost perspective, what is the optimal mix of renewable versus fossil generation in the case study site?
- How much land would be required to implement the proposed solution and what barriers, if any, might exist to utilizing the land required?
- Are there operations and maintenance (O&M) difficulties associated with transitioning to a renewable energy

system? If so, what plans might be designed to build local capacity to assist with O&M?

- What subsidies are currently provided to isolated communities and how are these subsidies accounted for when evaluating renewable alternatives?

Presenters:

- **Bernardo Busel**, Partner, Quintanilla & Busel Neidmann (moderator)
- **Victor Andrés Martínez**, Renewables and Distributed Generation Management, Elektra Noreste S.A., Panama
- **Maximiliano Morrone**, Director Nacional de Promoción de Energías Renovables, Ministerio de Energía y Minería, Argentina
- **Leon de Souza**, Energy Engineer, Guyana Energy Agency, Guyana

COFFEE BREAK (FRIDAY, 11:15AM)

PANEL 2 (FRIDAY, 11:30AM)

THE PUBLIC FINANCE PERSPECTIVE: LAYING THE GROUNDWORK FOR DURABLE PROJECTS

The components of a microgrid, including solar PV, battery storage, and intelligent software,

have become more affordable in recent years, which should produce significant opportunities

for growth in remote regions of Latin America. Yet a number of key questions remain regarding how governments can access capital to get projects off the ground and the role that multilateral development institutions can, or should, play in supporting project implementation. This panel will examine these questions. Specific topics to be considered include:

- Opportunities for funding from multilateral development banks and/or climate finance instruments
- Approaches to building local capacity and stakeholder engagement

- Building appropriate regulatory frameworks
- Environmental and social standards and safeguards

Panelists:

Andrew Eil, Consultant, UNEP & The World Bank (moderator)

Roberto Aiello, Energy Principal Specialist, Inter-American Development Bank

Mariano Gonzales, Senior Energy Specialist, World Bank

Dane McQueen, Energy Advisor, Ministry of Foreign Affairs, United Arab Emirates

LUNCH (FRIDAY, 12:30PM)

LINKING CLIMATE CHANGE, SUSTAINABLE DEVELOPMENT AND RENEWABLE ENERGY (FRIDAY, 1:30PM)

Isabel Cavalier, Minister-Counselor, Permanent Mission of Colombia to the United Nations

CASE STUDY SESSION 3 (FRIDAY, 1:45PM)

USING RENEWABLE ENERGY MICROGRIDS TO EXPAND ENERGY ACCESS

Traditionally, government efforts to promote rural electricity access have focused on expanding the central grid. Yet, for some remote populations, grid expansion is either geographically impractical or prohibitively expensive. Renewable energy microgrids may offer a solution for these populations that is more cost-effective and avoids increasing a country's greenhouse gas emissions. But they also present a number of important questions that need to be addressed before projects can be developed. This session will explore these questions, including:

- When deploying microgrid systems for populations that currently have little or no access to electricity, how should authorities determine the appropriate amount of generation capacity to install? When is 24/7 supply the appropriate standard as opposed to something more limited?
- In designing tariffs, how do officials balance the need to provide for cost-recovery

against remote populations' limited ability to pay?

- What forms of government support are currently available to assist off-grid rate-payers? How, if at all, have Public Private Partnerships been engaged in off-grid renewable energy deployment thus far?

Presenters:

• **Juan Luis Castellon**, Partner, Núñez & Muños (moderator) (invited)

• **Gerardo Cañas Jimenez**, Director General, IPSE, Colombia

• **Santiago Carlos Bolaños Guerra**, Director Adjunto del Fondo de Servicio Universal Eléctrico, Mexico

• **Tristan Glenwright**, Director, Project Development, SolarCity

COFFEE BREAK (FRIDAY, 2:45PM)

PANEL 3 (FRIDAY, 3:00PM)

PRIVATE FUNDING OPPORTUNITIES AND OBSTACLES: LEVERAGING THE CAPITAL MARKETS

While public finance may be necessary to help catalyze off-grid renewable energy deployment in developing countries, to achieve the scale of deployment required to achieve the climate change, private capital markets will need to be engaged. This panel will address opportunities and obstacles to attract private capital to these critical projects. Topics to be addressed will include:

- Strategies for engaging local banking institutions
- Approaches to increasing project scale and facilitating portfolio investments
- Relationship between public and private capital
- Mechanisms to evaluate off-taker creditworthiness

Panelists:

- **Bob Rudd**, Vice President, Energy Storage and Microgrid, SolarCity (moderator)
- **Laura Andersen**, Program Director, Renewable Energy and Sustainable Development, Overseas Private Investment Corporation
- **Elee Muslin**, Fund Manager, Inter-American Investment Corporation
- **Jason Segal**, Managing Director, Aldwych Capital Partners