



# Energy Bills | Overview and Implementation

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- The Puerto Rico Energy Affairs Administration (PREAA) was created with the purpose establishing a government agency responsible for the implementation of energy policies to:
  - Promote and enforce energy conservation and efficiency within the end use sector.
  - Adopt renewables and alternative fuel and energy sources to reduce our high fossil fuel dependency.
  - Diversify our sources for electricity generation and to strengthen energy security.
  - Improve and protect environmental quality.
  - Enhance our economic development, promoting competitiveness and industry growth.
- Our commitment is to fulfill our objectives addressing our energy, environmental, and economics needs to ensure a sustainable energy future.





# Legal Base

- Created in 1977, by Law 128 as the Office of Energy attached to the Governor's office.
- In 2008 EAA was assigned under the Department of Economic Development and Commerce, acquiring all powers, duties, functions and powers in order to promote and encourage conservation and energy efficiency and thus also the integration of renewable and alternative energy sources.
- On July 19, 2010, Act No. 82 and Act No. 83 were enacted with two main objectives:
  - Diversify the electric power generation mix by adopting a Renewable Portfolio Standard (RPS),
  - Provide new incentive programs for enabling investments in renewable energy.





# PREAA's Role

- Both legislations enabled additional powers and duties to PREAA, designating PREAA as the Government entity responsible of the implementation and management of the RPS and Green Energy Incentives programs.
  - Require RE projects to be evaluated and certified by PREAA
  - Develop and enforce decisions, determinations, orders, and regulations for the fulfillment of the objectives and programs included within Laws 82 and 83 of 2010.
  - Develop and offer additional financial mechanisms, programs, or initiatives consistent with the established energy policy.
  - Negotiate, market, buy, sell or legally transfer RECs
  - Design, promote, and enforce energy conservation and efficiency measures.





# RPS - Policy Overview

- Act # 82 July 19<sup>th</sup>, 2010 – Energy Diversification by means of an RPS Policy
  - Recognizes many sources of renewable energy utilizing various technologies.
  - Sets a hard target of **12%** renewable energy production **by 2015**, and **15% by 2020** with a requirement for retail energy providers to establish a plan to reach **20%** renewable energy production **by 2035**
  - Adopts APX North American Renewable Registry (NARR), an electronic platform to manage the issuance, tracking, and trading of RECs
  - Creates a permanent Renewable Energy Commission as an oversight entity focused solely on the implementation of the RPS





# Green Energy – Incentive Overview

- Act #83 July 19<sup>th</sup>, 2010 0 Also known as “Green Energy Incentive Law”
  - Creates a Green Energy Fund (“GEF”) through which the government of Puerto Rico will co-invest \$290 million in renewable energy projects over the next 10-years; initially funding of \$20 million beginning July 1, 2011
  - GEF, will provide flexibility for the government to establish new investment or incentive programs in the future.
  - For companies dedicated to the production of renewable energy on a commercial scale, the law also provides several tax benefits.

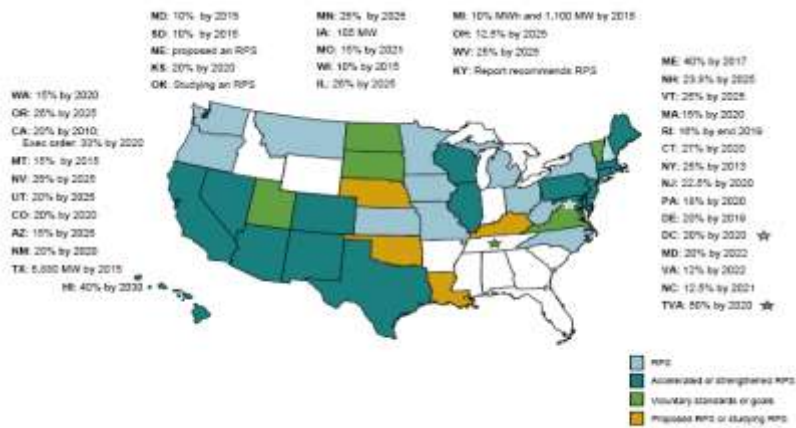




# Renewable Portfolio Standard

## What is an RPS?

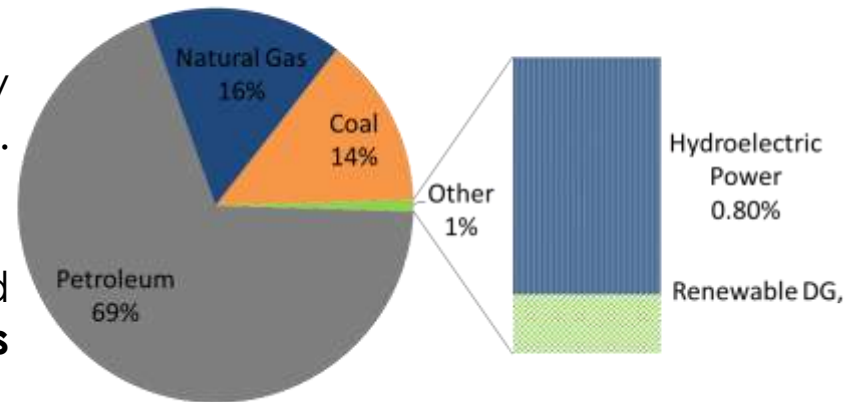
- The Renewable Portfolio Standard (RPS) is a legal energy policy that requires an increment in renewable energy production through the use of wind, solar, biomass and geothermic among others
- Diversification is the key to reduce energy price
  - **Diversification** → Helps **stabilize, and thus reduce** electricity prices
  - 29 states and the District of Columbia have implemented an RPS



## Aggressive targets, both achievable and encouraging!

- Targets are production based, NOT capacity based.
- According to statistics, net electricity generation during FY 2009 was approx. **22,650 millions of kWh**.
- Using FY 2009 as a reference, we will need to produce approximately **2,718 millions of kWh** by means of RE technologies.
- Based on identified RE projects, PREAA's has analyzed their potential contribution regardless of their status or progress. However, all projects included within the analysis have commence our internal evaluation procedure for utility or large scale RE projects, and some are currently at a advance stage.

Electricity Net Generation by Source, 2009







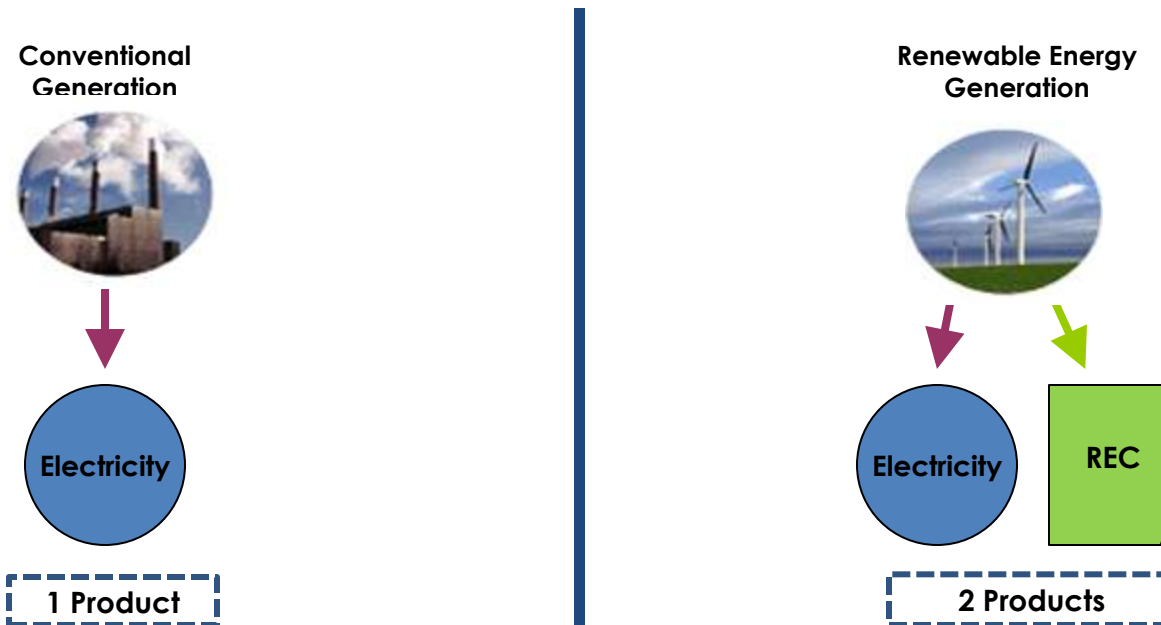
# RPS Targets

## Utility Scale RPS Target Contribution Outlook

Renewable Energy Source (Sustainable & Alternate)	Number of Projects (independent of their respective status or progress)	TOTAL CAPACITY [MW]	Estimated Capacity Factor	Total Expected Annual Generation [MWh]	% Contribution to RPS (using FY 2009 as base)
Solar PV	5	135	18%	212868	0.9%
Wind	6	259.4	25%	568086	2.5%
Geothermal	0	0		0	0.0%
Biofuel	0	0		0	0.0%
Hydro (Eligible)	0	0		0	0.0%
Ocean (Kinetic)	0	0		0	0.0%
Ocean Thermal Energy Conversion (OTEC)	0	0		0	0.0%
Waste to Energy	3	126	85%	938196	4.1%
Fuel Cells	0	0		0	0.0%
<b>TOTAL</b>	<b>14</b>	<b>520.4</b>	<b>N/A</b>	<b>1719150</b>	<b>7.6%</b>

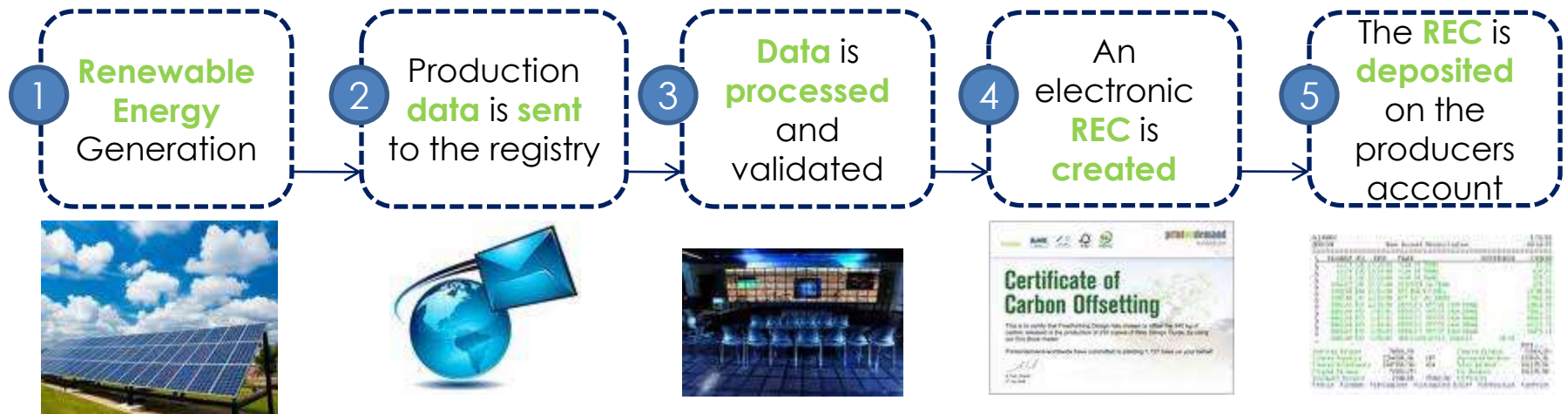


- Adopting a Compliance REC Market for RPS enforcement
  - **REC** – a **certificate** considered as an instrument with economic value that can be bought, sold or transferred between persons and that represents the equivalent of one (1) MWh of electricity generated from a renewable energy or alternate renewable energy source



- **Production Incentives based on RECs**

- **RECs** will be registered in the North American Renewable Registry. This will facilitate the marketability of RECs
- **RECs** could be marketable either on compliance or voluntary markets.
- **RECs** have their own **economic value** and they are **marketable** in the United States. Entities required to comply with an RPS from the other 29+ states or companies with corporate social responsibility could buy PR's RECs.





# How much are REC's worth?

- **REC values will depend on a number of factors, including whether they are bought for RPS compliance or at voluntary markets**
  - For compliance market REC prices will fluctuate according to demand and supply dynamics.
  - Market Reports have shown that in regions where there has been shortages to meet RPS compliances REC prices have reached Alternative Compliance Payments (ACP) of up to \$60/Mwh.
  - ACP are ceiling prices established through many states in order to control compliance cost and avoid significant retail electricity price increase, while still encouraging the fulfillment of the RPS through supply and demand.
  - Solar RECs (SRECs) have a significant higher market values due to their higher cost, among other technology carve out strategies commonly employed. For example, Massachusetts ACP for SRECs is \$600/MWh with a floor price of \$300/MWh.
  - On the other hand, voluntary markets typically range from \$1-\$10/Mwh.





# NAR - Registry

## Why the North American Renewables Registry (NARR)?

- RPS tracking systems should ensure that there is no double counting of RECs in compliance and voluntary markets.
- RPS programs should require the use of a robust tracking system for RECs.
- Registry creates a REC for every MWh of renewable energy produced and manages the complete life cycle of each REC from issuance to retirement. It can also be expanded to track energy efficiency certificates
- Easy to use, cost-effective, Web-based system
- Ensures highest levels of transparency, quality, security, and accountability.
- Delivers full documentation, public reports, and detailed audit trails
- Drives continued growth of clean energy generation and usage





# REC Market Regulations for RPS Compliance

## Where are we?

- PREAA initiated administrative training and demos regarding the use of NAR-Registry.
- PREAA will be organizing training sessions for both Retail Power Producers, and RE generators.
- Although, RPS Compliance does not start until 2013, due to the 2015 (12% target) and RECs life (2 years) according to Law 82, 2010.
  - PREAA will be enabling NAR-Registry for RE Generators for participation on REC voluntary markets.
  - PREAA is encouraging RE Generators to negotiate fixed prices for environmental and social attributes (RECs) on Power Purchase Agreements (PPAs) with PREPA.
  - PREAA is currently evaluating different alternatives to address large scale projects financial needs.





# Green Energy Fund

- **Green Energy Fund (GEF) Creation**

- Starting as on FY 2011-2012, funds will be collected from motor vehicles tax consistent with Sec. 2011 of the Internal Revenue Code of PR.
- These funds will be received by the Dept. of Treasury (DT) and used for the purposes described in this Act, as it follows:

Fiscal Year	Funds
2011-2012	\$20,000,000
2012-2013	\$20,000,000
2013-2014	\$25,000,000
2014-2015	\$30,000,000
2015-2016	\$35,000,000
2016-2020	\$40,000,000 (each year)
Total	290 Millions





# Green Energy Fund

## Summary of Incentives Programs

### Tier 1

#### **Small Scale**

- Allow individuals and small companies have more control over energy prices thus reducing expenses and increasing available incomes
- Project size: 0—100 kW
- Potential Markets: Residential & Small Businesses
- Incentive: Up to 60% of total system cost through a Rebate Program

### Tier 2

#### **Medium Scale**

- Establishes a dynamic market that will attract new investments in the manufacturing of renewable energy equipments
- Project size: 100 kW + —1 MW
- Potential Markets: Industrial and Large Commercial
- Incentive: Up to 50% of total system cost through a Rebate Program
- Will be granted through a competitive process and on a quarterly basis.

### Tier 3

#### **Utility Scale**

- Considerably reduces oil dependency, creates an economic stimulus and green jobs are created
- Project size: 1 MW+
- Market: Independent Power Producer
- Incentive: Access to the RECs market







# GEF Regulations

## Where are we?

- PREAA is currently drafting regulations for Tier 1 and Tier 2 programs.
- Tier 1 Regulation Draft will be similar to the State Energy Plan – ARRA programs regulation (Reg. 7792)
- The Tier 1 rebate program will be managed through a rebate reservation process whereas the Tier 2 program will be managed through a quarterly competitive process (“reverse auction”).
- Specific details regarding provisions describing the competitive process, evaluation criteria, and selection process is currently being developed to fulfill requirements established by law.
- PREAA is currently working in the development of a web-based system to automatize all processes related to the application, evaluation, approval, monitoring and verification of Renewable Energy projects rebate incentives under the Green Energy Funds (GEF) Tier 1 and Tier 1 Programs.
- Our objective is to implement a robust and efficient system platform capable of enabling the most effective operation of Renewable Energy (RE) project incentive in Puerto Rico.





# GEF Near-Term Projections

## Example of Potential Market Impacts for Tier 1 & 2 RE Projects

TIER 1 PROGRAM ESTIMATED IMPACT FOR FY 2011-2012							
Technology	Estimated Market Impact Share	GEF Fund Share	Market Price Caps [\$/kW]	Rebate %	Total [kW]	Capacity Factor	Estimated annual Energy Production [kWh]
Solar	88%	22%	7500	50%	1173	18%	1850112
Wind	12%	3%	3750	50%	320	24%	672768
<b>Total</b>							<b>2522880</b>

TIER 2 PROGRAM ESTIMATED IMPACT FOR FY 2011-2012							
Technology	Estimated Market Impact Share	GEF Fund Share	Market Price Caps [\$/kW]	Rebate %	Total [kW]	Capacity Factor	Estimated annual Energy Production [kWh]
Solar	75%	45%	5500	50%	3273	18%	5160436
Wind	25%	15%	3000	50%	2000	24%	4204800
<b>Total</b>							<b>9365236.364</b>



**Thank you!**



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