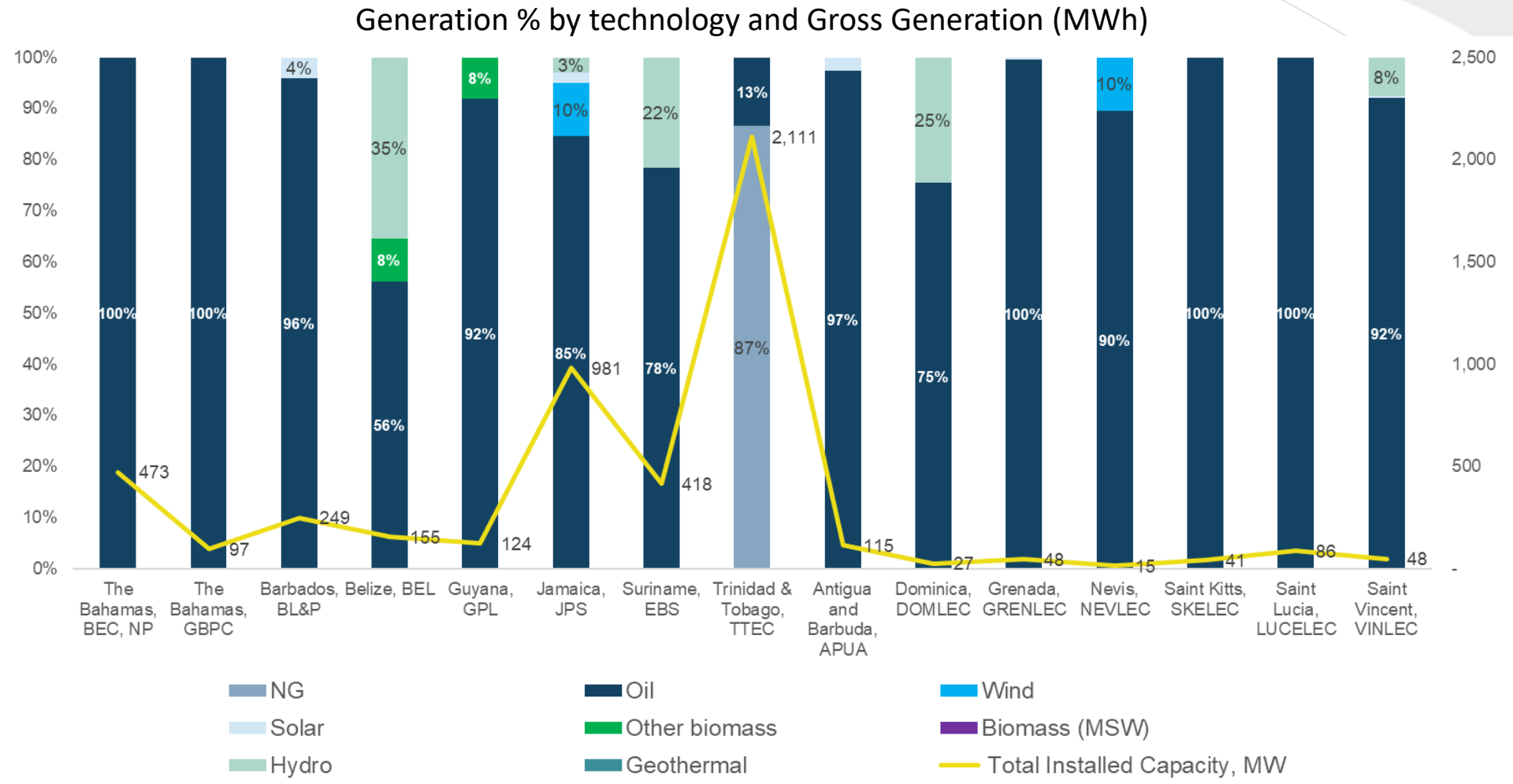
Banco Interamericano de Desarrollo

Cómo promover y construir fotovoltaica con almacenamiento

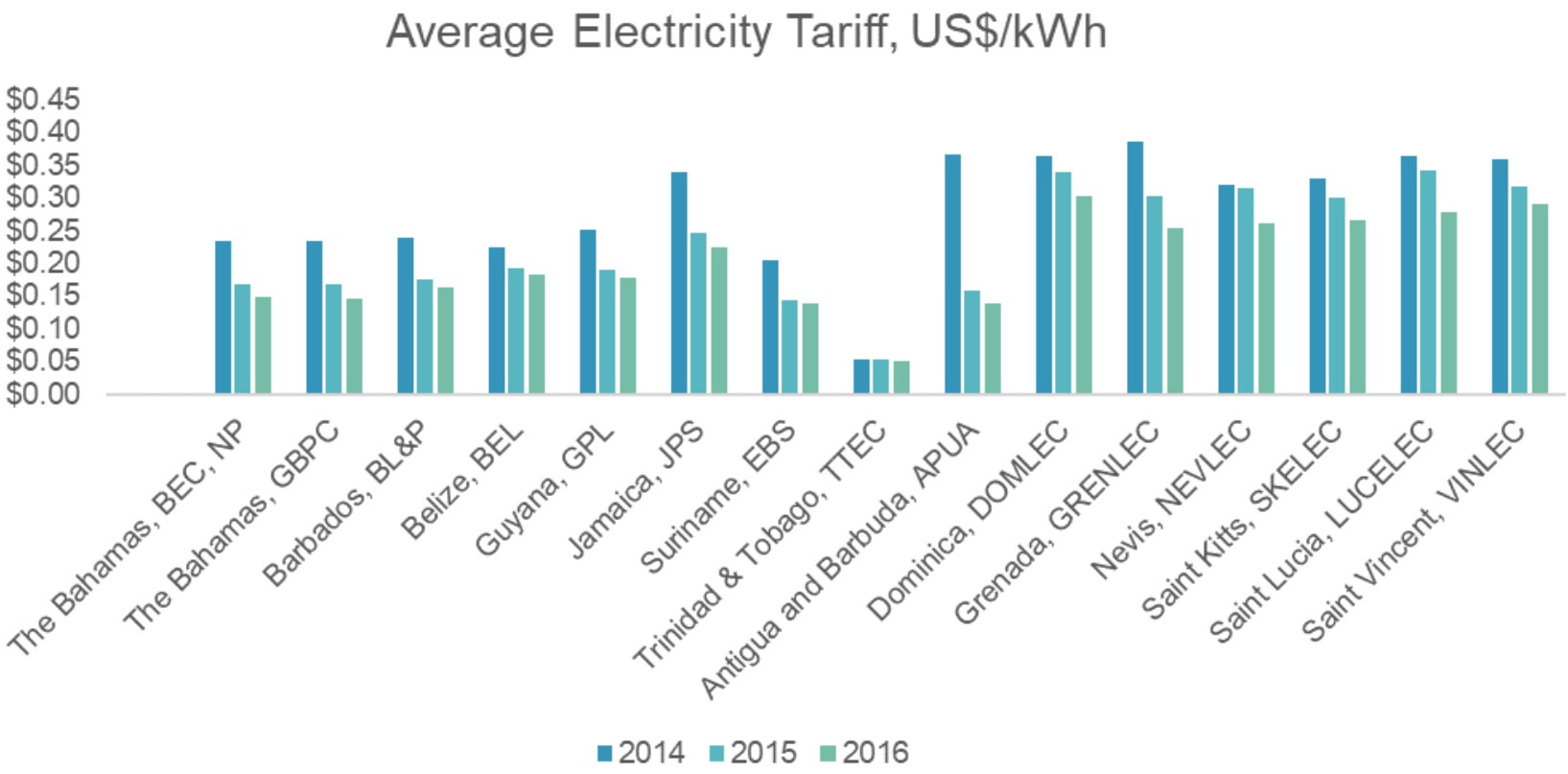
Webinar Mayo 16 2018

- Exploring ES combined with RE (mainly solar)
  - Abundant intermittent RE potential in LAC unexploited
  - Intermittent RE can cost less than electricity from conventional sources
  - Grid operators opposed to meeting more than 25% of demand with intermittent RE without adequate backup and energy management
  - ES can unlock large amounts of intermittent RE by providing backup power and energy management services

Current Generation Matrices in Caribbean Countries



Caribbean Countries face High Electricity Tariffs



Effects Renewable Energy Investments

Table 5. Implied Effects of Renewable Energy Targets				
Country	**Renewable Energy Target for Electricity**	**Implied Effects 1/**		
		Implied reduction in oil imports	Implied reduction in the national electricity bill 2/	Implied impact on long-term GDP level
Antigua and Barbuda	20%	10%	6%	1%
Jamaica	20%	5%	4%	0%
Barbados	29%	13%	6%	1%
The Bahamas	30%	17%	11%	1%
St. Lucia	35%	22%	11%	1%
St. Kitts and Nevis 3/	40%	24%	9%	1%
Belize	89%	25%	10%	1%
Guyana	90%	28%	21%	2%
Dominica	100%	45%	16%	2%
Grenada	100%	49%	31%	3%

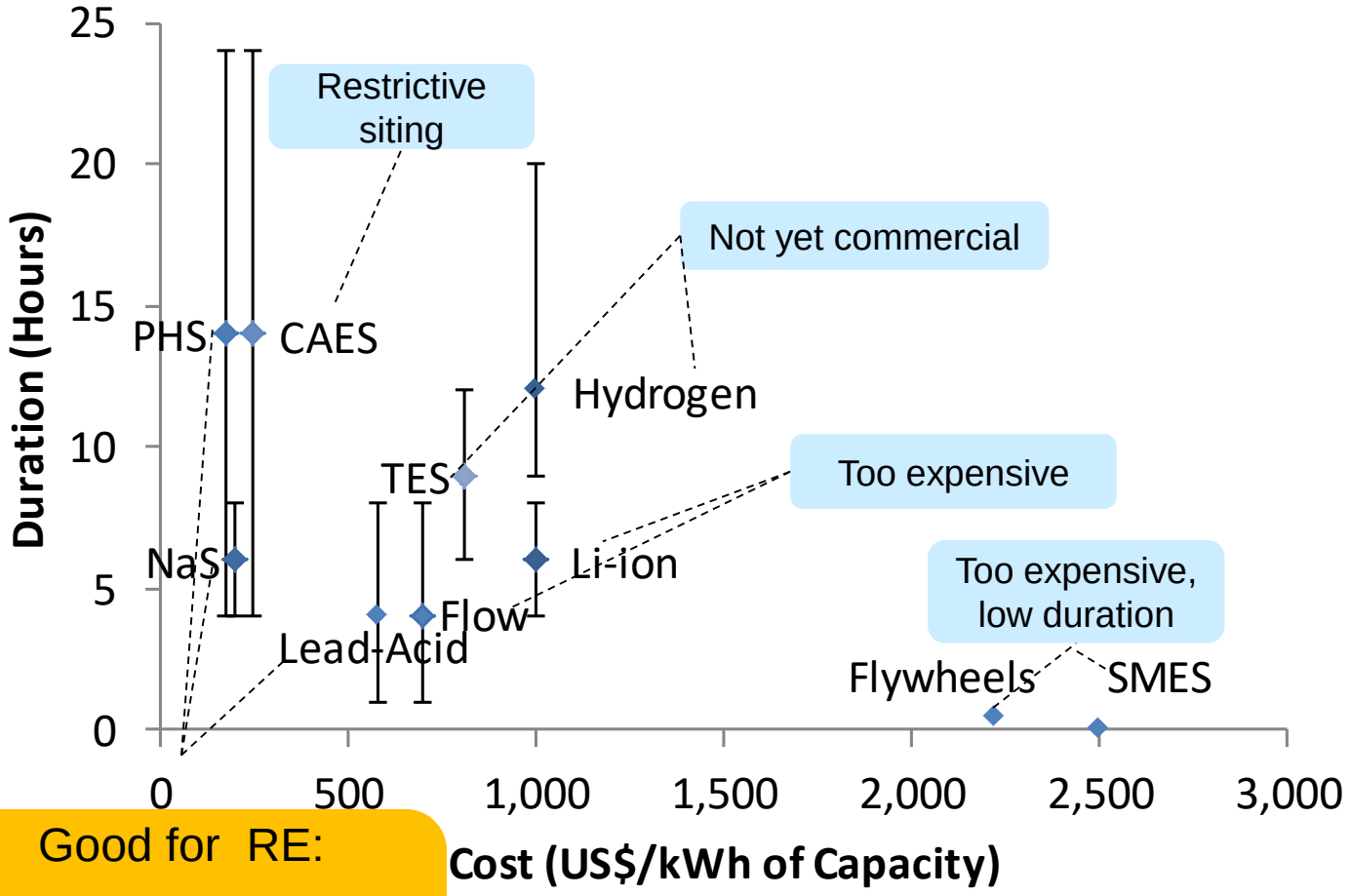
Opportunity combining solar energy and access: case study Haiti

Solar Mini Grid in Port-a-Piment, Coteaux & Roche-a-Bateau

After Matthew…

How can ES increase the share of RE in total generation?

- Low cost (X axis): measured per kWh of storage capacity
- Good duration (Y axis): ability to store/release large amount of power over time



CAES: Compressed-Air Energy Storage

Flow: Flow Battery

Lead-Acid: Lead-Acid Battery

Li-Ion: Lithium Ion Battery

NaS: Sodium-Sulfur Battery

SMES: Super-conducting Magnetic Energy Storage

TES: Thermal Energy Storage

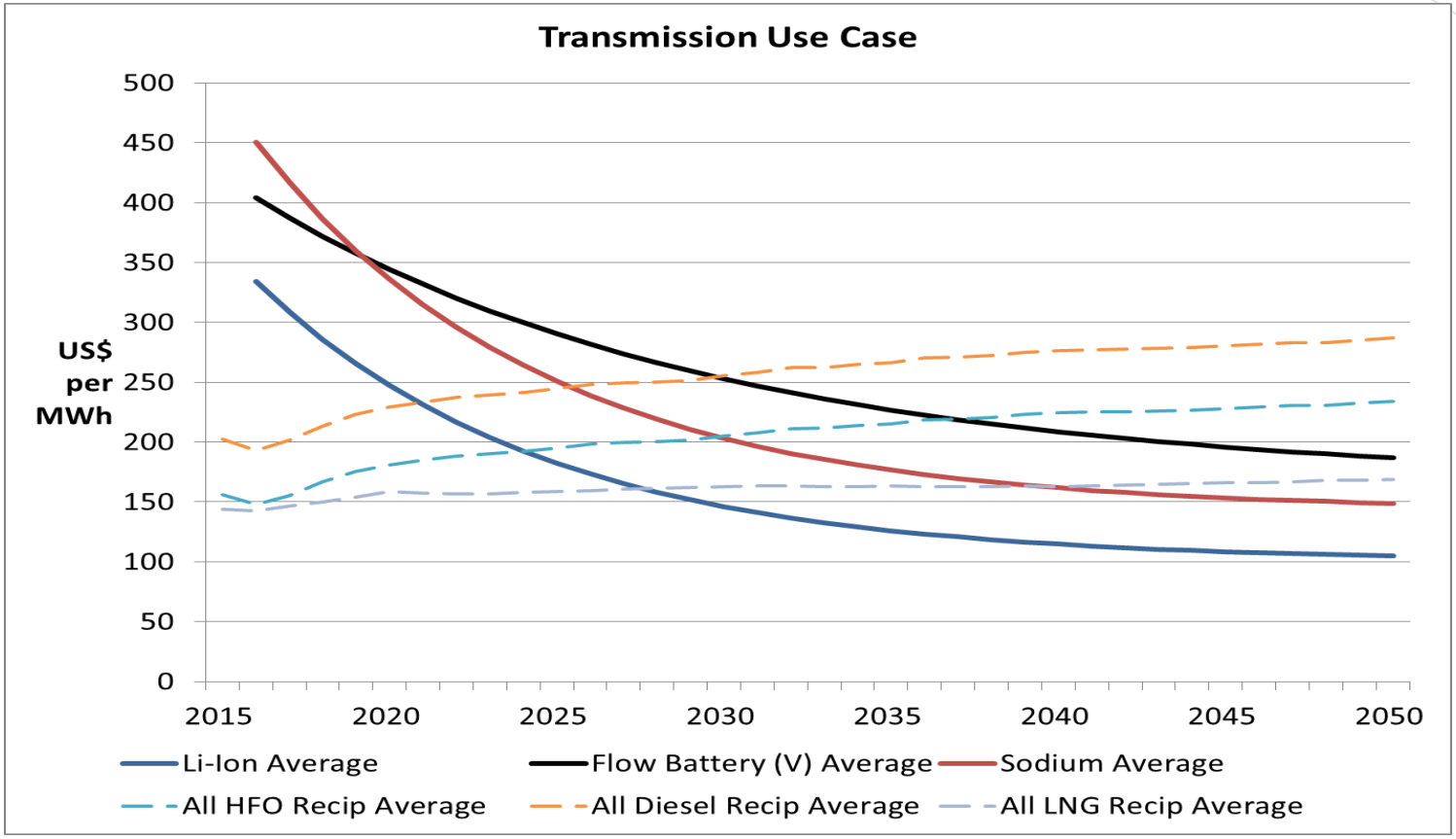
Good for RE:

Pumped Hydro Storage (PHS)

NaS Batteries

Lead-Acid Batteries

Fossil fuels (Natural Gas) vs PV+ Batteries

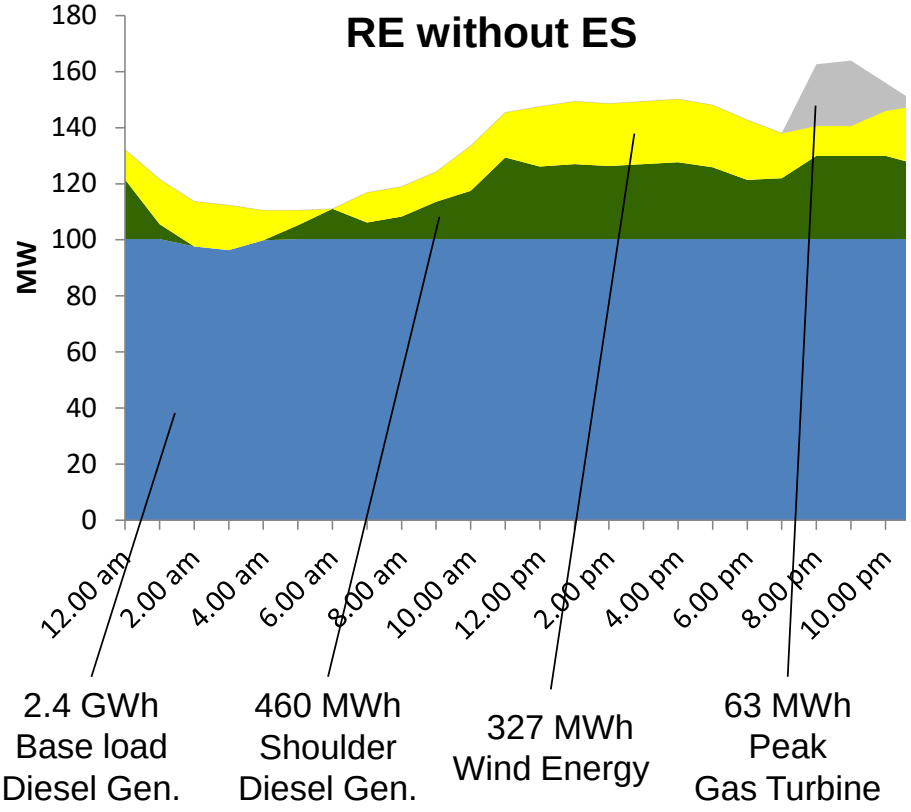


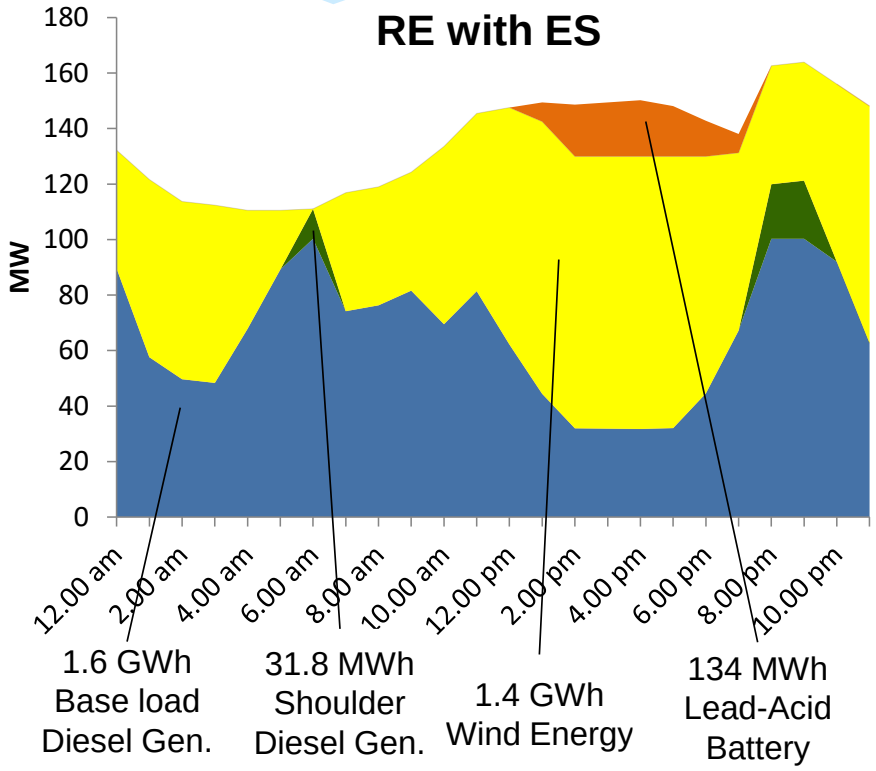
Source: Internal IDB study

By how much can ES increase the share of RE in total generation?

Small Island Country

- ES increases RE by ~1GWh/day
- 33% reduction in diesel generation



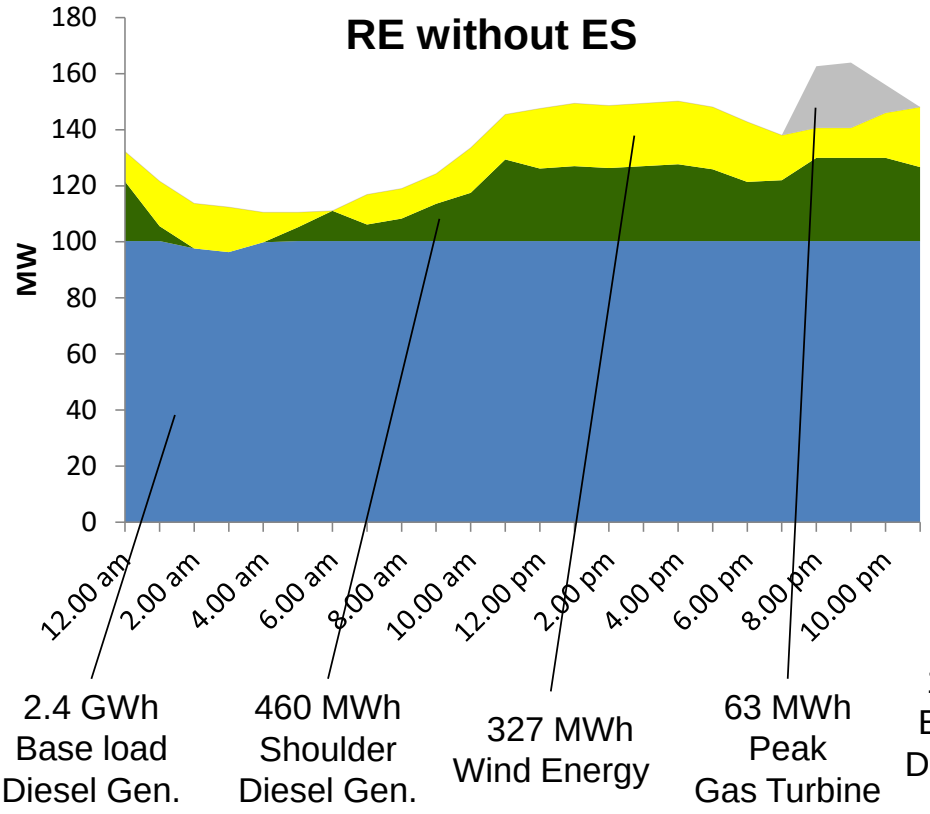


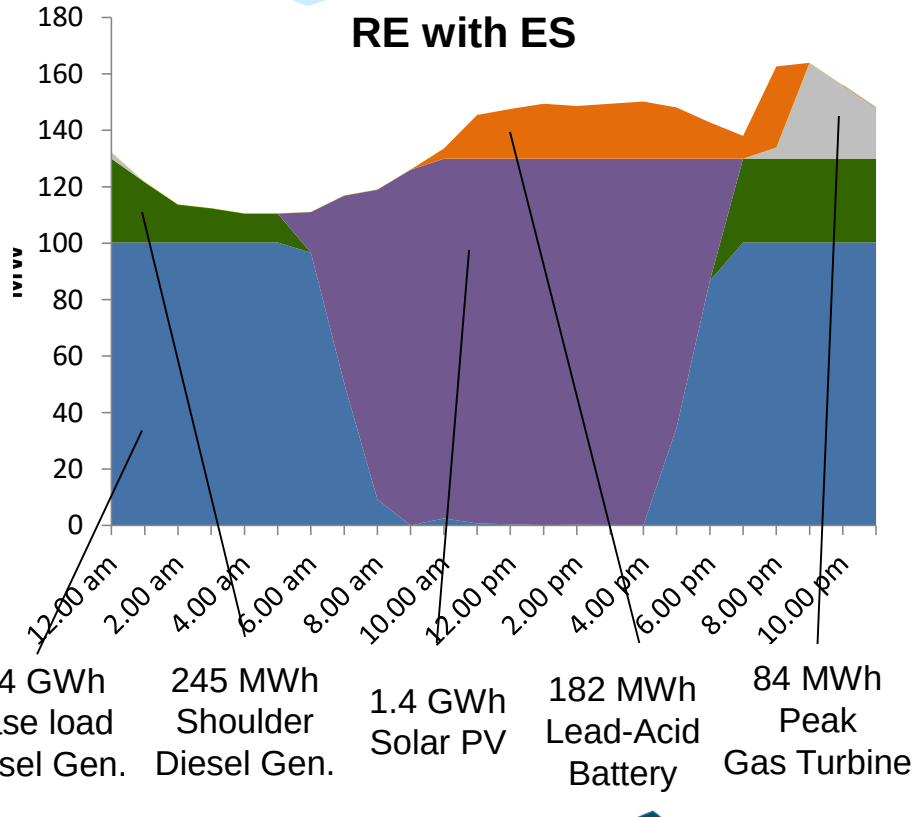
Note: even with -50% solar PV costs, combination with ES would yield negative benefits

By how much can Solar PV increase the share of RE in total generation if viable?

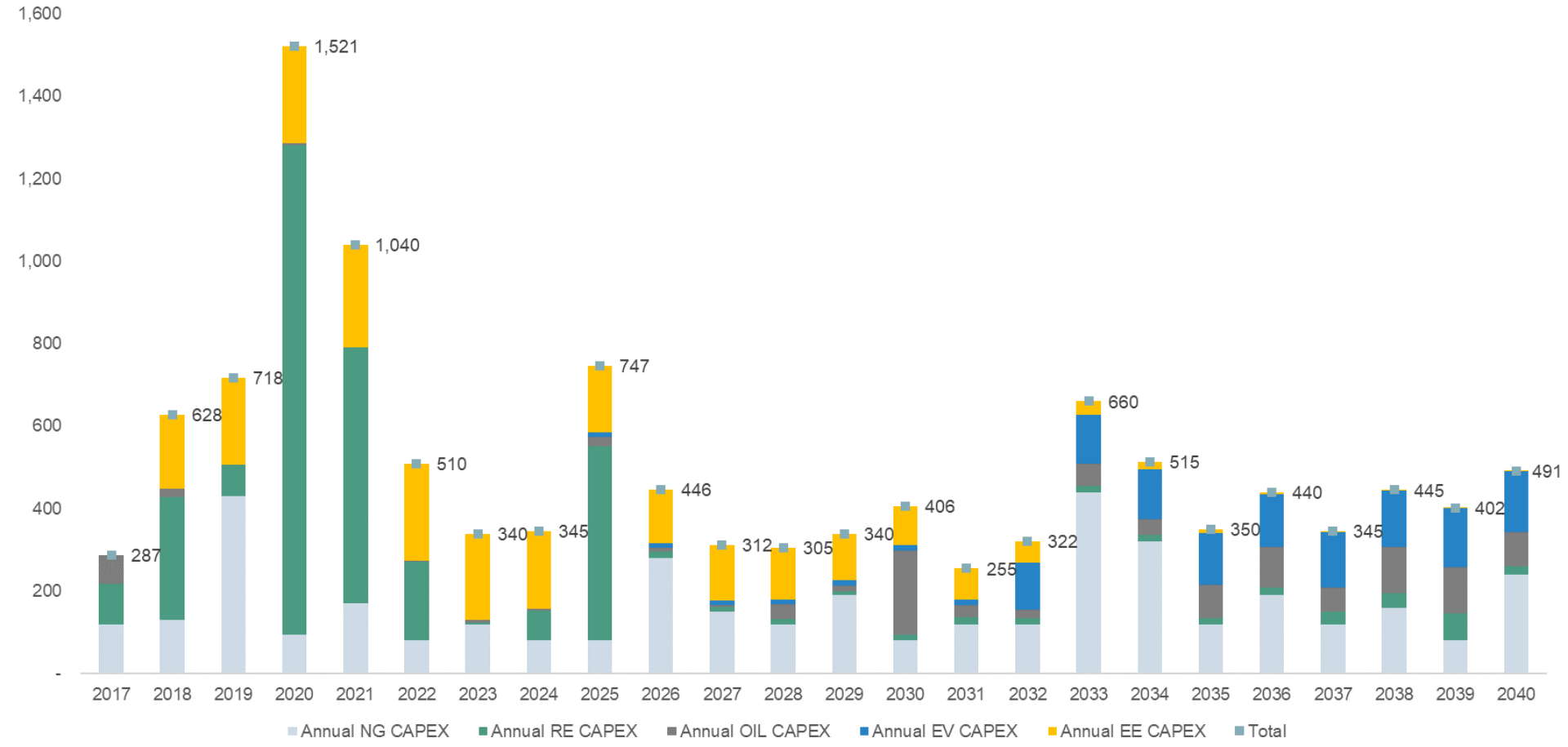
Small Island Country

Assuming for solar PV: Inst. Cost @$1,800/kW, 5% interest rate





Estimated Investments in Sustainable Energy in Caribbean Countries, in US$M from 2018 to 2040



Estimated Investments in Sustainable Energy in Caribbean Countries, in US$M from 2018 to 2040

	US$ M
RE	3,284
NG	4,032
EE	2,464
EV	1,256
Total	11,083

Resilience in T&D (US$ 1-2 M per mile of underground cable): US$ 1-2 Billon

Resilience in Power Generation (10-20% added cost in Generation CAPEX): US$ 0.7-1.4 Billion

Total : US$ 15 Billion

THANK YOU

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