

Cabangan 10 MW OTEC Pilot Plant

Zambales, Philippines
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Bell Pirie Power Corp. (PHL)
Energy Island Bell Pirie Ltd. (UK)
Project developer/owner of proposed 10 MW Cabangon CC-OTEC
with five (5) prime OTEC field sites in the Philippines

Our role as OTEC project developer/owner in the Philippines



Technology-neutral

Secure government service contract

- Resource assessment
- Feasibility study

Must register with Securities & Exchange Commission

- Max 40% foreign



Secure permits and licenses

- Grid impact study
- Local government unit endorsement
- Environmental Compliance Certificate

Secure Power Purchase Agreement

- Feed-in-tariff rate eligibility certificate



Secure financial closing

- Set up SPV (max 40% foreign)
- EPC Contract
- Loan agreement
- Shareholders' agreement
- O&M Contract



OTEC makes business sense in the Philippines



Large market opportunity – > GWs OTEC potential

Highly dependent on imported fossil fuels – oil and coal

10 MW competitive with diesel

Government incentives and support for OTEC

Buoyant debt and equity market

First mover experience – geothermal and onshore wind in Asia

Abundant practical resource



Philippine Energy Situation >>>

GRID	Installed Capacity	Dependable Capacity
LUZON	11,739	10,824
VISAYAS	2,402	2,037
MINDANAO	2,022	1,616
TOTAL	16,162	14,477

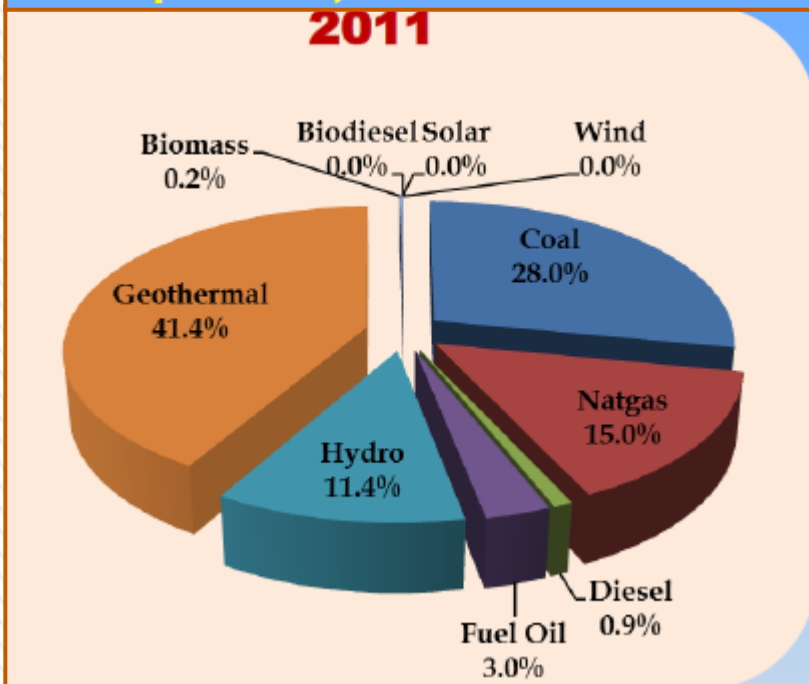
Additional capacity requirement by 2030:

Luzon – 11,900 MW
 Visayas – 2,150 MW
 Mindanao – 2,500 MW
 Total: 16,550 MW

Source: Power Demand & Supply Outlook, DOE, 2010

Source: Philippine Energy Plan, 2012-2030, DOE, 2011

Fuel Input Mix for Power Generation



Source: Philippine Energy Plan, 2012-2030, DOE, 2011

Measurable Targets

Renewable Energy

2011-2030 Potential RE Resource (in MW) - Philippines

Sector	2012-2015	2016-2020	2021-2030	TOTAL
Geothermal	50	940	175	1,165
Hydropower	310	3,125	1,892	5,326
Biomass	81	-	-	81
Wind	678	865	432	1,975
Solar	269	5	10	284
Ocean	-	36	35	71
TOTAL	1,388	4,970	2,544	8,902

Source: Philippine Energy Plan, 2012-2030, DOE, 2011

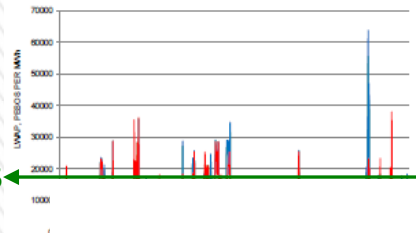


10 MW OTEC competitive with diesel >>>

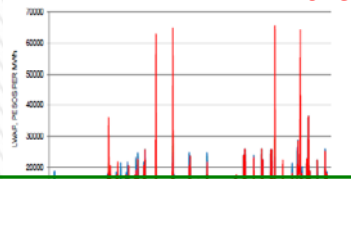
Months showing prices above OTEC's P17.65: Jun 12 – May 13



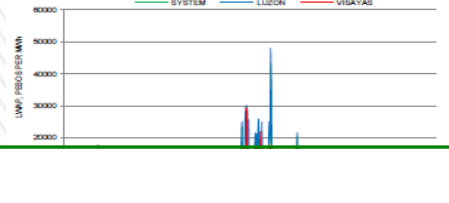
MARKET PRICES, EX-ANTE **MAY 2013**



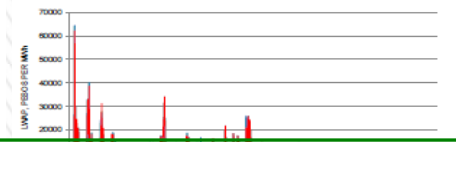
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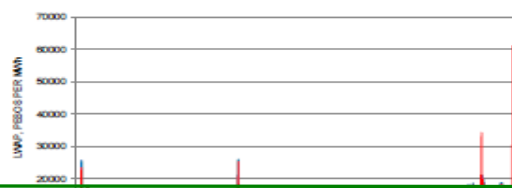
MARKET PRICES, EX-ANTE **MAR 2013**



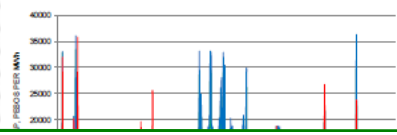
MARKET PRICES, EX-ANTE **DEC 2012**



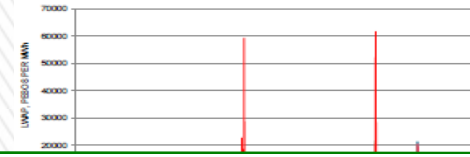
MARKET PRICES, EX-ANTE **NOV 2012**



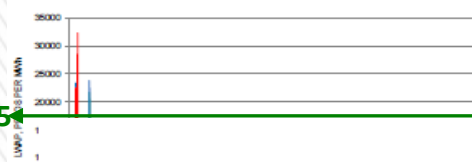
MARKET PRICES, EX-ANTE **OCT 2012**



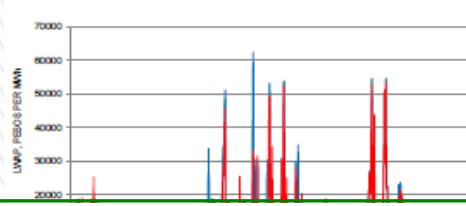
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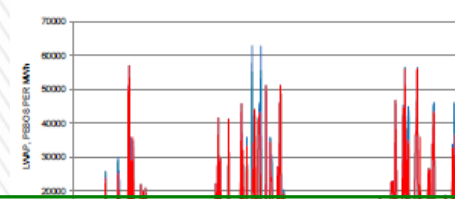
MARKET PRICES, EX-ANTE **AUG 2012**



MARKET PRICES, EX-ANTE **JUL 2012**

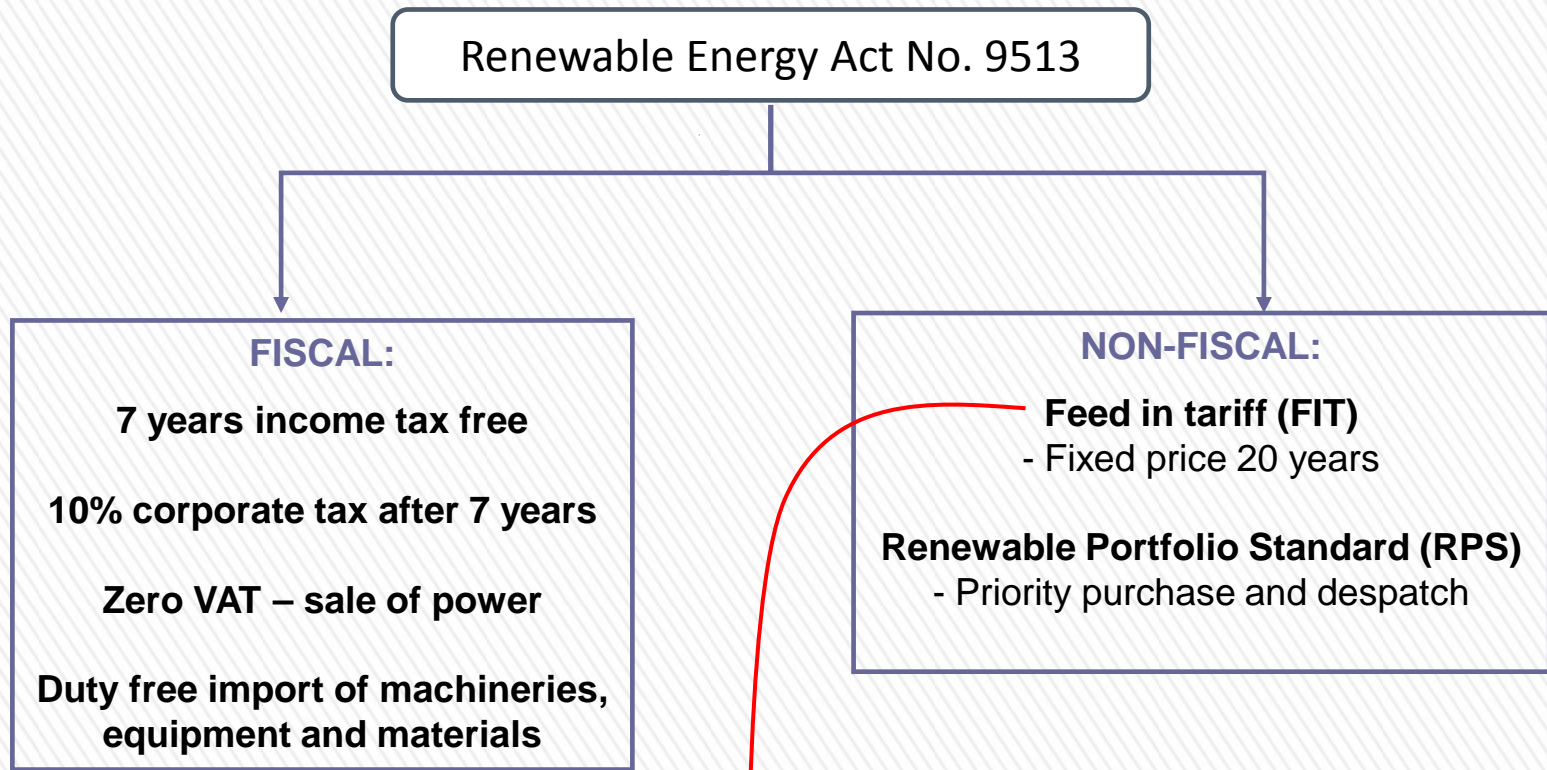


MARKET PRICES, EX-ANTE **JUN 2012**



Ten (10) out of 12 months, WESM had price spikes higher than OTEC's FIT rate of P17.65

Government incentives and support for OTEC >>>



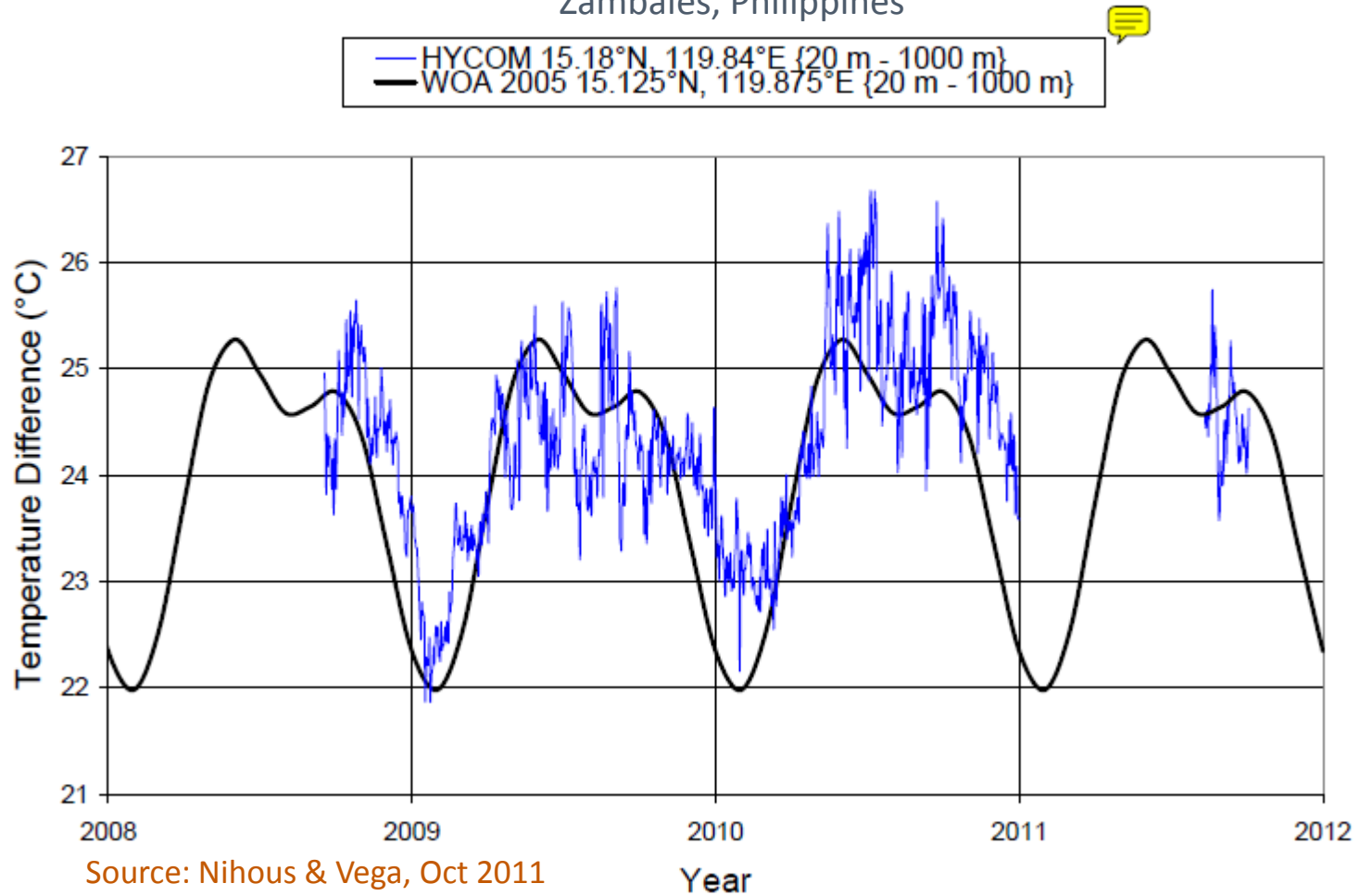
Challenge: Fair and reasonable tariff per kWh.



Abundant resource

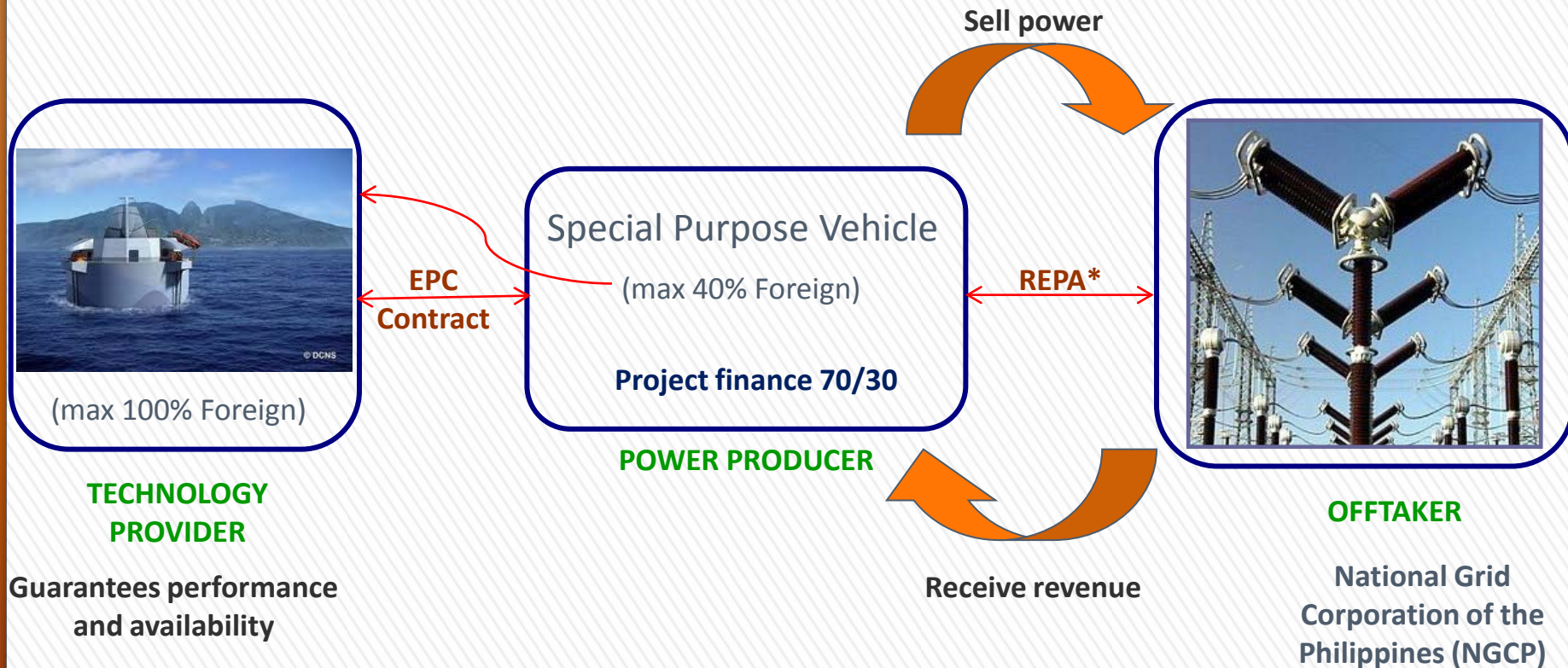


Zambales, Philippines



— blue jagged line is daily forecasts
— black smooth line is monthly averages

Investment Model >>>



* Renewable Energy Purchase Agreement thru Republic Act 9513

OTEC is unproven on a commercial scale >>>

Ideal technology providers are those who can/are:

1. Sign an EPC contract
2. Bankable - with strong balance sheet
3. Become shareholder in the SPV – maximum 40% foreign
4. Provide availability and performance guarantee
5. Willing to share key risks: technology and EDC (Engineering, Design, & Construction)
6. Provide acceptable long-term O&M service agreement