

Renewable Energy and Mining Summit

Toronto, September 25th, 2013



SOLARPACK- Company Profile

Company Overview

- Started operations in 2005 in Spain
- 60 highly specialized professionals
- 79 MW own developed and built
- 160 MW under management
- 25 MW under construction
- 300 MW pipeline under development

Business Model and Activities

- Development
- Engineering
- Financial structuring (project finance)
- Construction
- Operation and Maintenance
- Project Management and consulting

Global Presence



Technologies & Performance

- Trackers: 
- Modules: poly, mono, thin film, CPV, CIGS...
- Average performance: +9,9% over BC
- Average availability: 99,54%

SOLARPACK- Plants under operation or construction

Project	Location	Power DC	Year	Financing
Isla Mayor	Spain	8,4 MW	2007	Santander
Lebrija	Spain	3,84 MW	2008	Santander
Llerena 1	Spain	4,8 MW	2008	Barclays
Llerena 2	Spain	4,1 MW	2007	Barclays
Ampliación Isla Mayor	Spain	0,5 MW	2008	Barclays
Tejeda de Tietar	Spain	5,8 MW	2011	Industrial Group
Guijo de Coria	Spain	6,2 MW	2011	Triodos
Calama Solar 3	Chile	1,1 MW	2012	IDB-Proparco
Tacna Solar	Peru	22 MW	2012	OPIC
Panamericana Solar	Peru	21 MW	2012	OPIC
Pozo Almonte	Chile	25 MW	2013	IDB-Proparco

SOLARPACK- Variety of environments



Why solar and mining succeed in Chile?

PV needs

What Chile offers

	PV needs	What Chile offers
TECHNICAL	<ul style="list-style-type: none"> ▪ Solar Resource ▪ Land availability ▪ Interconnection 	<ul style="list-style-type: none"> ▪ > 6,500 Wh/m² daily average ▪ >100,000 km² of desert ▪ Extensive electrical grid & load
REGULATORY	<ul style="list-style-type: none"> ▪ Opened Electrical market ▪ Support for renewables ▪ Long term PPAs 	<ul style="list-style-type: none"> ▪ Open access for interconnection ▪ 5%-10% from NCRE ▪ Free clients → Bilateral PPAs
ECONOMIC	<ul style="list-style-type: none"> ▪ Good macro economic conditions ▪ Long term financing/ Low WACC ▪ Small gap LCOE vs. spot prices 	<ul style="list-style-type: none"> ▪ Solid economic growth ▪ USD financing → > 15 years ▪ Relatively high electricity prices
POLITICAL	<ul style="list-style-type: none"> ▪ Legal security ▪ Transparency ▪ Custom duties, taxation etc. 	<ul style="list-style-type: none"> ▪ Good environment for investment ▪ Administration is very transparent ▪ Trade agreements main countries
OTHER	<ul style="list-style-type: none"> ▪ Cultural and language barriers 	<ul style="list-style-type: none"> ▪ Opened to international business

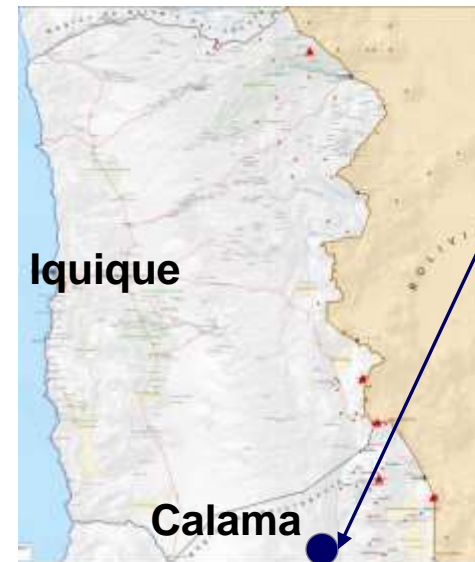
Calama Solar 3: 1st PPA Experience

Project Description

- 1.1 MWdc
- Avoids emissions of c. 2,152 tons of CO₂
- Calama (Chile)
- On line since April 2012
- Off taker CODELCO
- Owner, EPC and O&M: Solarpack



Project Location



Calama Solar 3

Key features

- Polycrystalline silicon modules
- 1 axis horizontal trackers
- R&D area with CIGS, thin film and CPV
- Performing in excess of forecasts

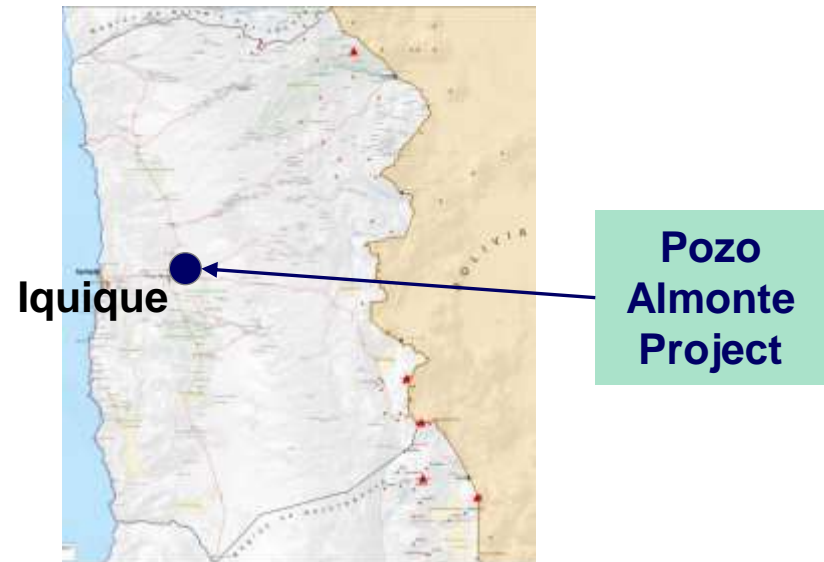
Pozo Almonte projects: 1ST PPA tender experience

Project Description

- 25.4 MWdc
- Pozo Almonte (Chile)
- Development started in 2009
- July 2012: PPA awarded by Collahuasi
- Supply of 60 GWh of electricity per year (- 48,000 tons of CO2)
- Owner, EPC and O&M: Solarpack



Project Location



Key features

- Polycrystalline silicon modules
- 1 axis horizontal trackers
- R&D area in Puerto Patache
- On line in 4Q 2013

Solar PV Project Finance Requirements

Description and Target

- Highly capital intensive projects → 60-75% of the total costs due to construction capex
- Low operating expenses → 75-85% EBITDA margins
- Predictable production → **predictable cash flows** → high leverage → competitive WACC

Competitive tariff (low LCOE)

Economic Drivers

Energy Yield
(Solar Irradiation)

Investment Costs
(PV modules)

WACC
Equity & Debt

Financing Requirements

Developer experience

Tested technology

Legal security

Predictable Cash Flows: PPA with long term bancable offtaker

Mining Industry Energy Supply Requirements

Requirements met by PV

- Competitive prices → solar PV now in the range of 100 USD/MWh ✓
- Low uncertainty → PV has very predictable production → energy hedge ✓
- Energy diversification and independence ✓
- Clean generation and mitigation of environmental impact ✓
- Positive social/economic impact in region → Value stays local ✓

Other requirements: Constant supply...

- PV does not meet this at a competitive price yet...
- However:
 - Predictable production allows to plan well ahead and match PV supply with other traditional power contracts

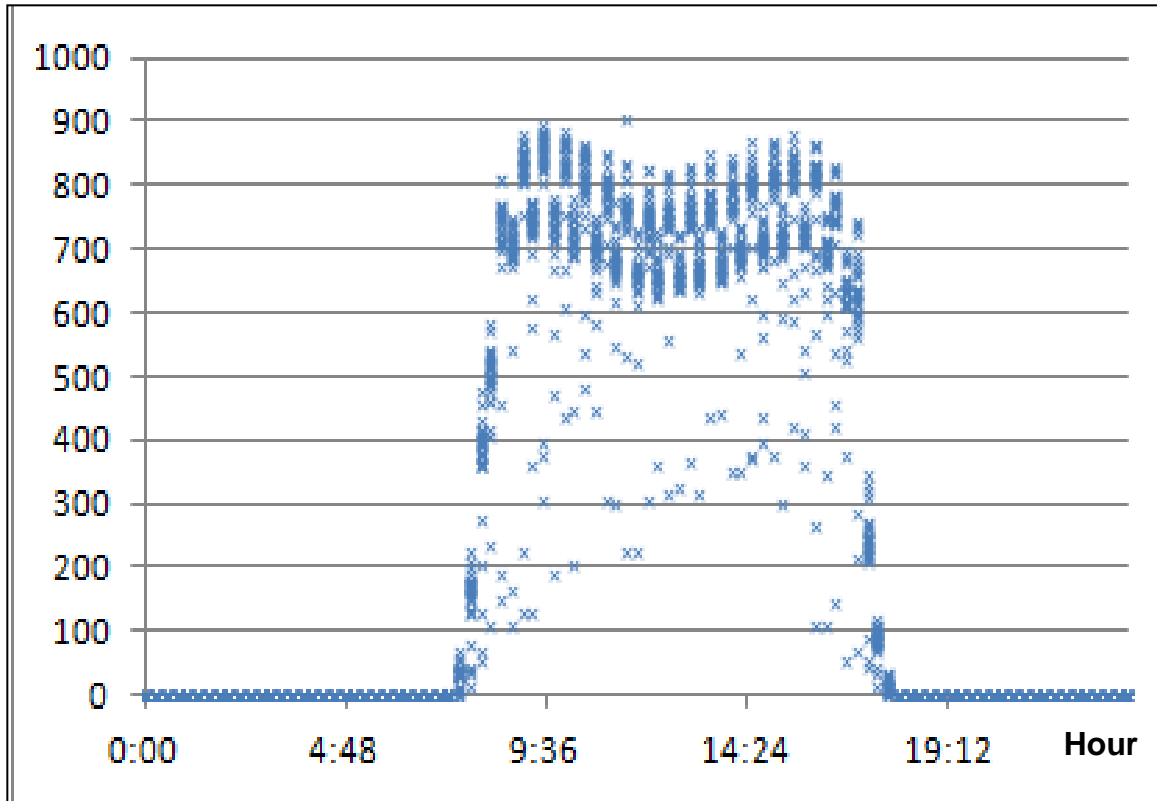
No need to reinvent the wheel! COLLAHUASI has matched PPA contracts and will save c. USD 20 m in 20 years

No Power Guarantee but Predictable Curve

Daily Production Curves for Calama (Jul 2013)

- Worst case scenario (july) shows the profile below

kW_{AC}



Facts

- Real production > forecast
- Wind & low humidity: ↓ cleaning
- No firm power but*:
 - 100%-90%: 18% time
 - 90%-80%: 28% time
 - 80%-70%: 52% time

Many Ways of Implementation

Description

Pure PPA

- Energy sold: Grid Op. or direct
- “Take or Pay” with or wo max Q
- Fixed price in USD indexed CPI

PPA Swap

- Hedge between a fixed USD PPA price and spot prices in market

EPC

- Plant owned by mining co.
- Turnkey, fixed price EPC contract
- Performance guarantees

Advantage

- Non-recourse financing
- Stable purchase price
- No upfront investment from mining co.
- Those in Pure PPA and...
- Ease to match conventional PPAs
- But Buyer needs spot exposure
- Tax benefits
- Lower energy price if WACC of mining co. is lower than IPP

- **Different options to supply solar energy to mining co.**
- **Quality in development + engineering + construction + O&M is key**
- **Challenge of financing the asset requires highly experienced Sponsors and Contractors**

Thank you!

