



REALISTIC INCENTIVES FOR PV

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“HELLENIC – BULGARIAN COOPERATION IN THE ENERGY SECTOR”

Greek Association of PV Producers

- ❑ 100 companies members
- ❑ 16 MW of grid connected PV parks
- ❑ Investments of 80 million Euros
- ❑ In order to be a member of SPEF the company has to be a true investor (with grid connected PV park)
- ❑ Project profile: 20kW, 100kW, 500kW, 2MW, 4MW



SDL Solar's role in Bulgaria and Greece



- ❑ Leading Photovoltaic Developer in Southeast Europe
- ❑ Partnerships with First Class Companies
- ❑ Develops Utility Scale Projects
- ❑ Provides Complete PV Solutions
- ❑ First Project: 10 MW in SE Bulgaria



The PV Program in Greece



IRR results
flexing PV
yields and
interest rates



- Started in 2006 with FIT > 400 Euro/MWh
- Offered additional subsidies 40%
- In accordance of high yields (1,300-1,900 kWh/installed kW)
- IRRs ~ 40% !!!



The result after 4 years

IRR results
flexing PV
yields and
interest rates



- ❑ Over 3,700 MWs of applications
- ❑ Only 50 MWs installed so far
- ❑ Approved Subsidies still not paid
- ❑ True IRRs ~ 30% (due to the very long development process)

The future of PV in Greece



- ❑ New law for Renewables to be voted the next days
- ❑ FIT deescalates 5% every 6 months from this summer
- ❑ No state subsidies
- ❑ IRR ~ 18%-15% (2010-2011)
- ❑ IRR ~ 10% (after 2012)



Funding of RES



- FIT incentives to be paid by the citizens through power invoices (RES duty)
- Today's RES duty to consumers (GR):
 - 1.5 Euro/year/household today
 - 15 Euro/year/household in 2011



Investor Profile



- ❑ Private Equity Funds
- ❑ Utility/Energy Companies
- ❑ Multinational Organizations
- ❑ Private Investors
- ❑ Individuals





Ways to attract PV Investors

- ❑ Low Development Risk
- ❑ Attractive IRRs (at least 15%)
- ❑ Assurance of Interconnection
- ❑ Predictability in Cash Flows
- ❑ Creditworthy Off Taker
- ❑ Stability in Laws



Financial Projection for 1MW Project in Bulgaria



Cost Assumptions



Sources & Uses			
<u>Uses</u>	€	% of Total	€ per KWp
EPC Cost	2,600,000	80.6%	2,600
Development Cost	200,000	6.2%	200
Connection Cost with Grid	75,000	2.3%	75
Substation Upgrades	50,000	1.5%	50
Development/Construction Oversight Costs	6,454	0.20%	6
Consulting Fees	30,000	0.9%	30
Construction Loan Interest Reserve	24,731	0.8%	25
Financing Fees	40,897	1.3%	41
Other Closing Costs	200,000	6.2%	200
Total Project Cost	3,227,082	100.0%	3,227
VAT	451,792		452
VAT Bridge Loan Interest Reserve	4,339		4
Total Uses	3,683,213		3,683
<u>Sources</u>		% of Total Project Cost	
Construction Loan Financing	2,270,312	61.6%	
VAT Bridge Loan	456,131	12.4%	
Equity	956,771	26.0%	
Total Sources of Capital	€ 3,683,213	100.0%	

General Assumptions



General Assumptions		
Power Plant Size	1,000 KWp	
FIT Price For PV Electricity	€ 0.372 per KWh	
FIT Term	25 Years	
Weighted Average Annual Energy From PV	1,200 KWh/KWp	
Total Project Investment Cost (excluding VAT)	€ 3,227,082	3,227 € per KWp
Project Start Date	June 1, 2010	
Construction Period	5 Months	
Date PV Plant is Operational	November 1, 2010	

Operational Assumptions



Operational Assumptions	
Feed-In-Tariff Growth Rate	0.00% <i>per annum</i>
Degradation PV Panel Power Outcome	0.50% <i>per annum</i>
Total Operation & Maintenance Costs	
Years 1-2	€ 20,000 <i>per MW</i>
Years 3-25	€ 30,000 <i>per MW</i>
Insurance Expense	€ 12,000 <i>per MW</i>
Insurance Expense Growth Rate	2.00% <i>per annum</i>
Contingency	0.50% <i>of Net Sales</i>
Total Operating Expenses per MW after Year 2	€ 44,929
Average Depreciable Life of PV Equipment	25 Years
Income Tax	10.00%
Downtime in Days of PV	1 day(s) <i>per annum</i>



Bank Financing Assumptions

Bank Financing Assumptions	
<u>Project Construction Loan</u>	
Loan Amount as % of Financable Costs	75.00%
Loan Amount as % of Total Project Costs	70.4%
Loan Amount	€ 2,270,312
Interest Rate	8.00%
Total Debt Service Rate	13.3%
<i>Year 1 Debt Service Coverage Ratio</i>	1.37 x
Loan Term	12 years
Amortization Period	12 years
Financing Fees	1.50%
<u>VAT Bridge Loan</u>	
Loan Amount as % of VAT	100%
Loan Amount	456,131
Interest Rate	8.00%
Loan Term	10 years
Financing Fees	1.50%

Investment Returns Sensitivity



Projected Investment Returns	
Unleveraged Return on Total Costs	12.3%
Gross Leveraged Return on Equity	10.1%
<i>Year 1 Debt Service Coverage Ratio</i>	<i>1.37 x</i>
Gross IRR - 25 year hold, no residual value	12.4%
Payback Period	13 Years
Gross Equity Multiple	5.46 x

Gross Internal Rate of Return to Investor

		Annual Feed-In-Tariff Growth Rate				
		-4.0%	-2.0%	0.0%	2.0%	4.0%
PV Yield	1100 KWh/KWp	1.9%	6.2%	10.1%	13.6%	16.9%
	1150 KWh/KWp	3.1%	7.4%	11.2%	14.8%	18.0%
	1200 KWh/KWp	4.3%	8.6%	12.4%	15.9%	19.2%
	1250 KWh/KWp	5.4%	9.7%	13.6%	17.1%	20.4%
	1300 KWh/KWp	6.7%	11.0%	14.8%	18.3%	21.6%



Conclusion

- ❑ Bulgaria needs this “green” development
- ❑ Investors will not be attracted with the current FIT program in Bulgaria
- ❑ Bulgaria needs to define grid capacity and assure project interconnection
- ❑ Bulgaria needs to fix the FIT in order to forecast investment IRRs and to attract Bank Capital



Thank you