

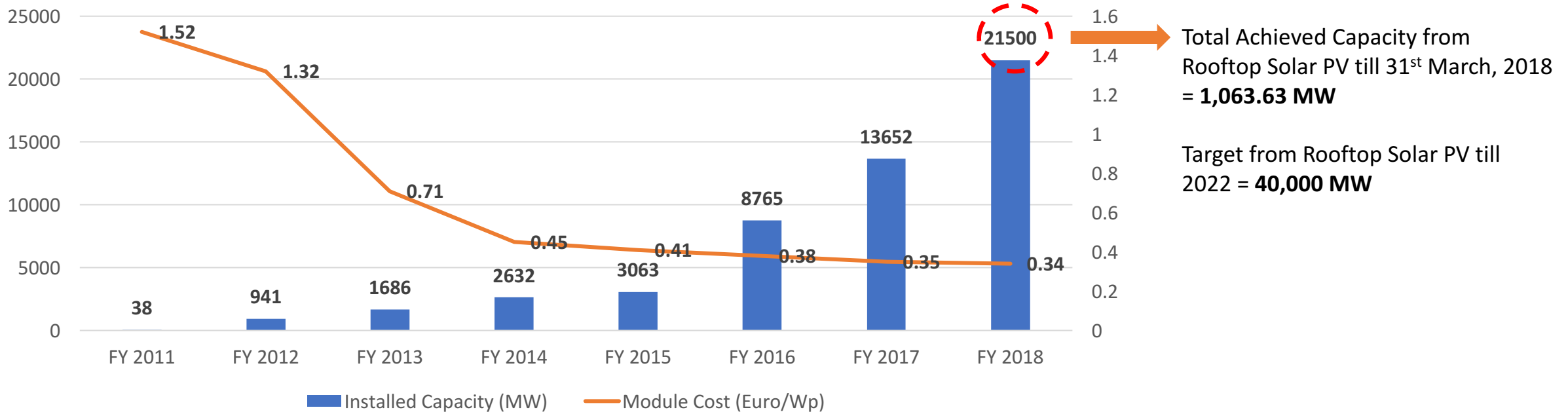
Indian Rooftop Solar PV Landscape



- Rationale for Rooftop Solar PV for Industries
- Business Models
- Regulatory Aspects
- Economics of Solar PV
- About SM Renergy (P) Ltd

Rationale for Rooftop Solar PV

Growth of Solar PV in India



Market Growth

- 678 MW of rooftop solar capacity was added in FY 2016-2017
- Yearly capacity addition is expected to scale over 2,000 MW by 2019 and over 3,000 MW 2020

Market Segments

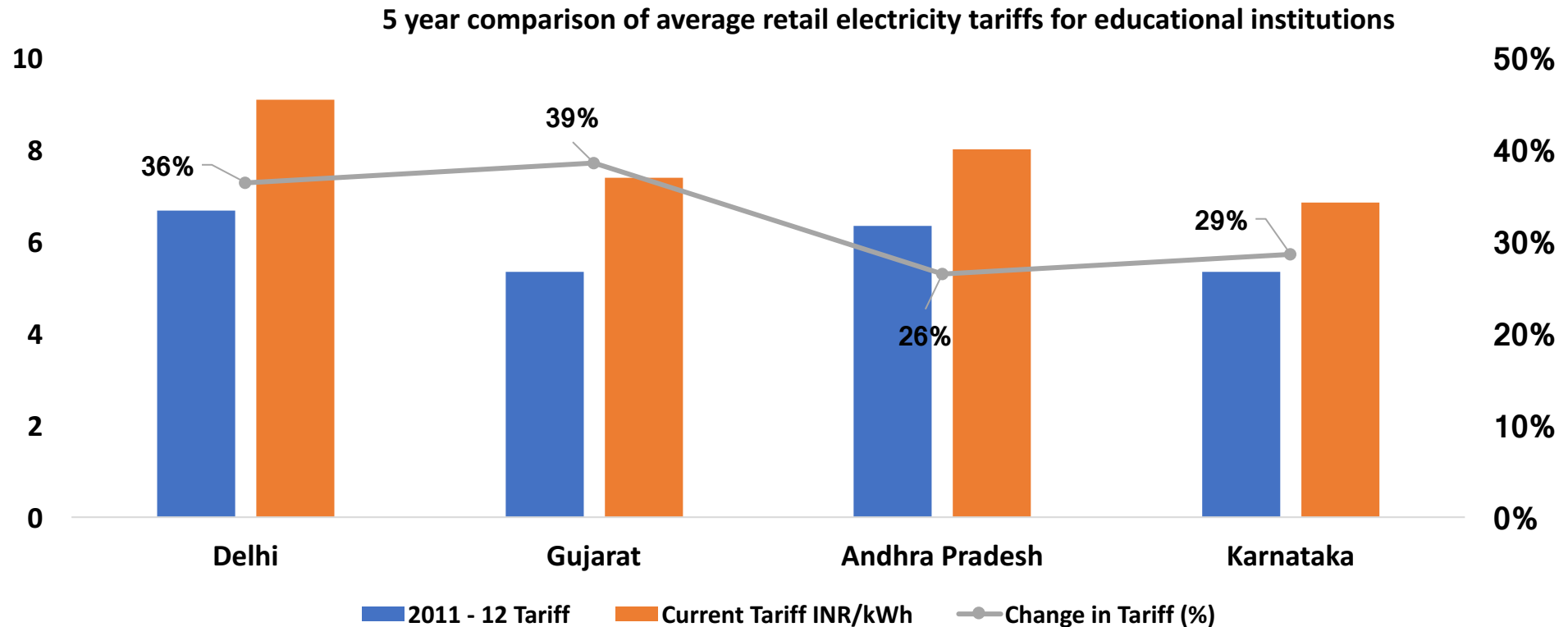
- Over 65% of total rooftop installations have occurred at commercial and industrial establishments, followed by institutions
- Residential segment is the lowest due to lower viability and longer pay back periods

Market Business Models

- Commercial and Industrial segments are seeing both CAPEX and OPEX Model adoption
- Institutional and Residential segments are mainly seeing CAPEX installations

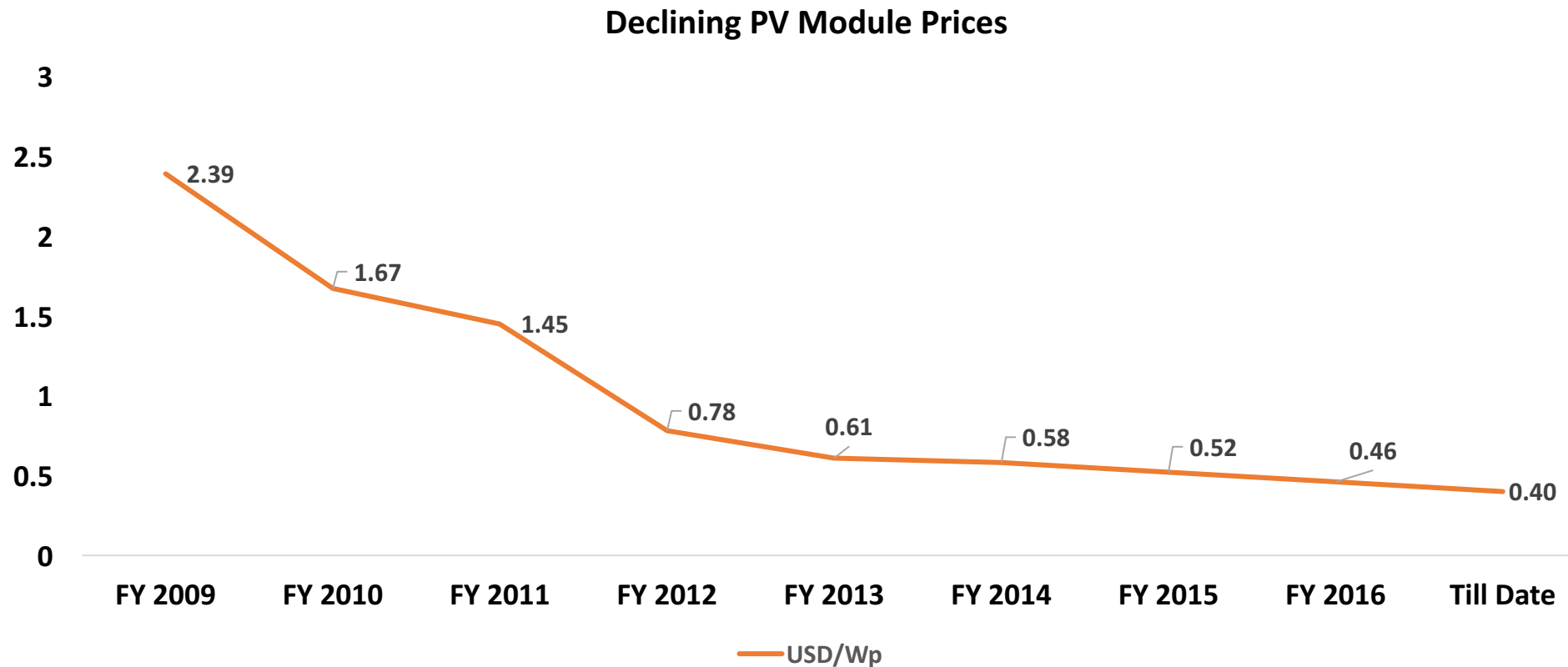
Rising Electricity Retail Tariff

On an average, between the various categories of electricity consumption, **there has been a 30% increase in electricity retail tariffs over the past five years**. More specifically, the **categories of 301 – 500 units and over 500 units per month have witnessed a 32% and 40% increase in tariffs** over the mentioned period, respectively.



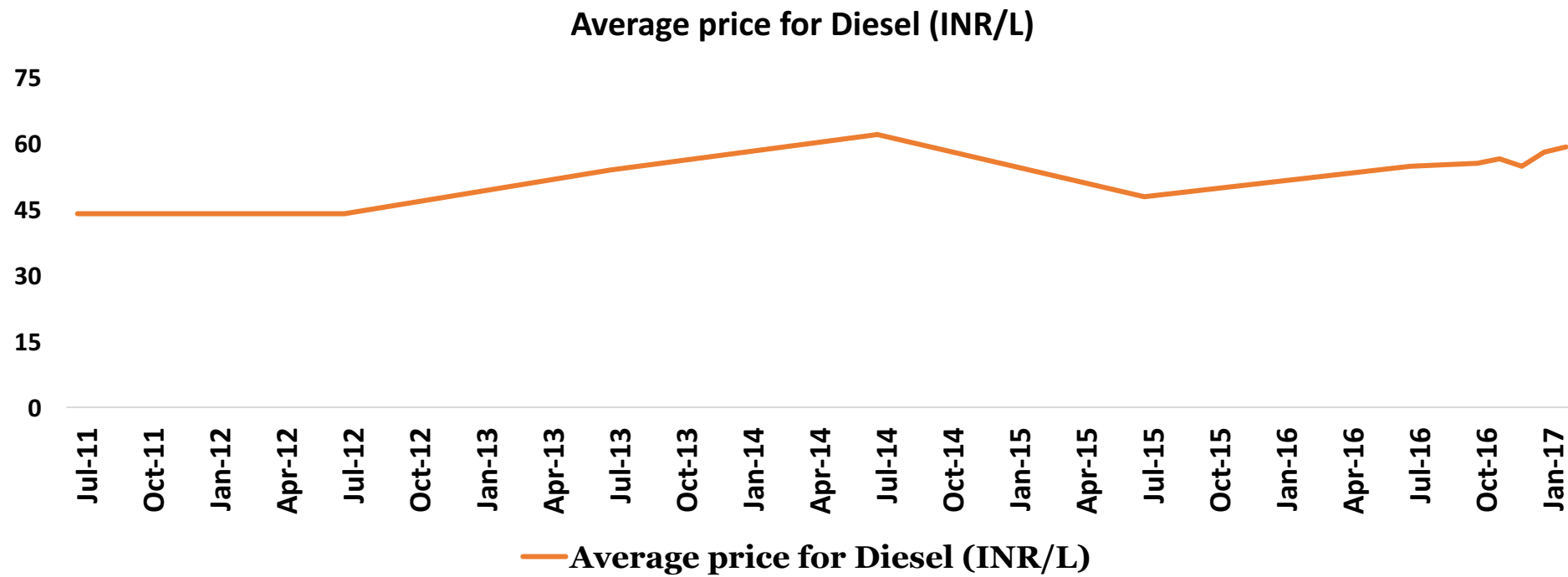
Declining Costs of Solar PV

Globally, the prices of PV modules over the past 7 years have plummeted by an astounding 83%. Experts have predicted a year – on – year decrease of approximately 7% for the next few years, due to technology and manufacturing innovation and increasing global demand for solar PV.



Power Outages – increased diesel consumption

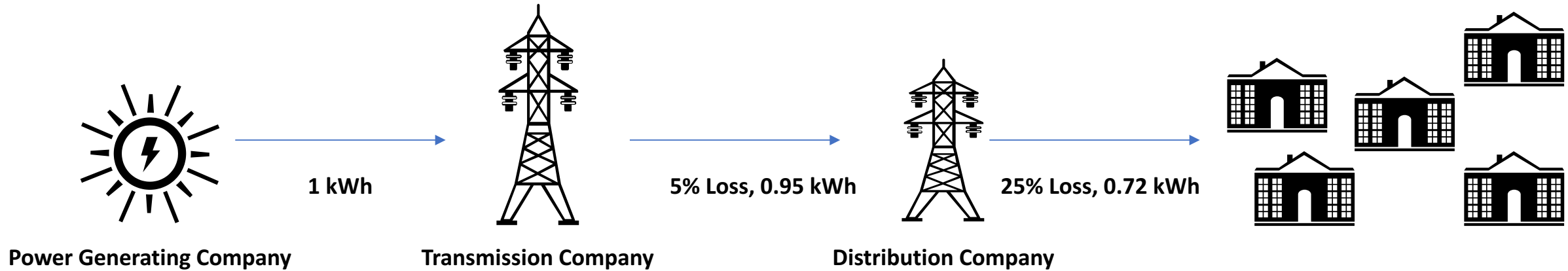
Due to the increased commercial and industrial demand from various industrial and agricultural states in India, increased peak demand during the day time and shortage of regular power supply lead to higher dependence on diesel generators. Power generation from diesel generators, depending on the location, prove to be very expensive with landed costs varying between USD 0.20 – 0.24/kWh.



Increased Government attention

The Ministry of New and Renewable Energy (MNRE) has voiced its seriousness on the development and growth of the rooftop solar PV segment in the coming years. As per the revised solar scale up plan of MNRE for India, 40 GW of the targeted 100 GW is expected to be achieved from rooftop solar PV projects. MNRE has been successful in placing lucrative policy and regulatory instruments to spur investments in this sector. Additionally, capacity building workshops and constant follow ups with SNAs, DISCOMs and financing institutions is bringing more stability and confidence in this sector.

Benefits of Rooftop Solar PV to the DISCOM

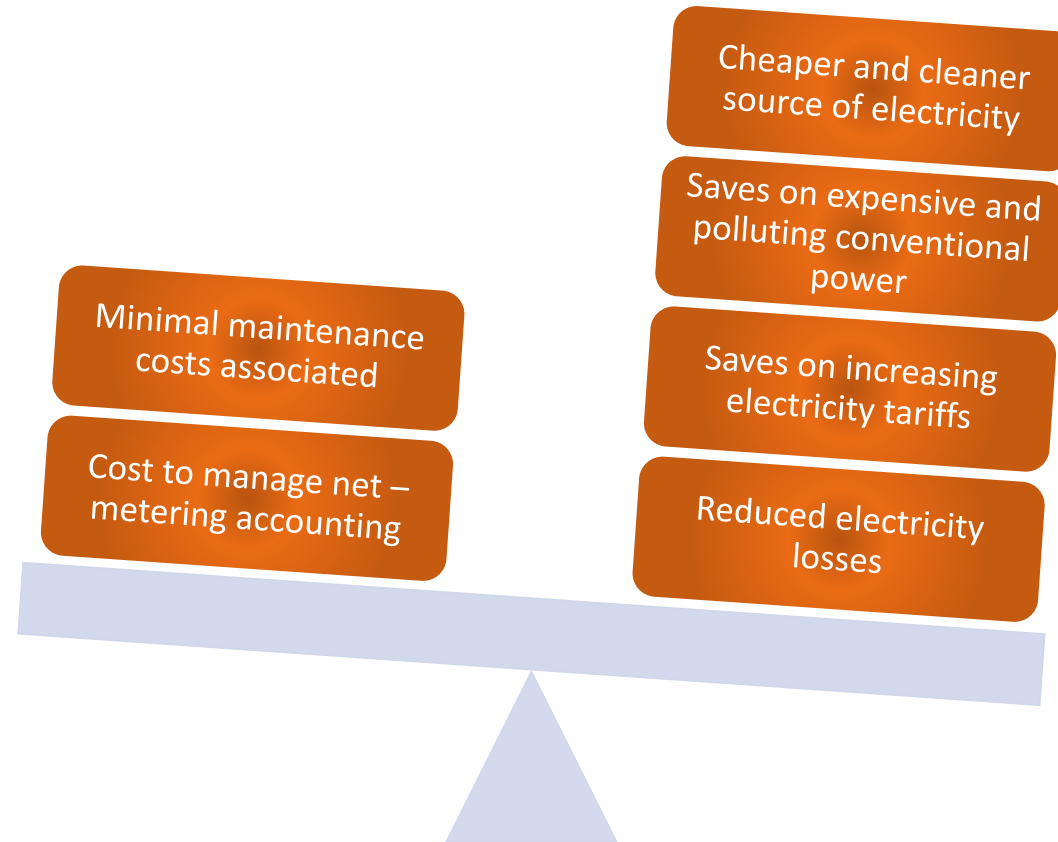


1 kWh generated at load center can save generation of 1.5 kWh by fossil fuel based plants

Benefits of Rooftop Solar PV to Customers

Costs

Benefits



Government of India has imposed favorable policy and regulatory instruments, making rooftop solar PV more attractive

10 Year Tax Holiday under Section 80 IA of IT Act

Excise and Custom Duty (~12%) Exemptions & Low GST Implication (5%)

Accelerated Depreciation under Section 32 of IT Act (40% year – on – year)

Renewable Purchase Obligations mandated by Gol

30% CAPEX subsidies provided by Gol under competitive bidding process

Indian Renewable Energy Development Agency (IREDA) financing scheme

More than 25 Indian states have dedicated solar rooftop policies/regulations

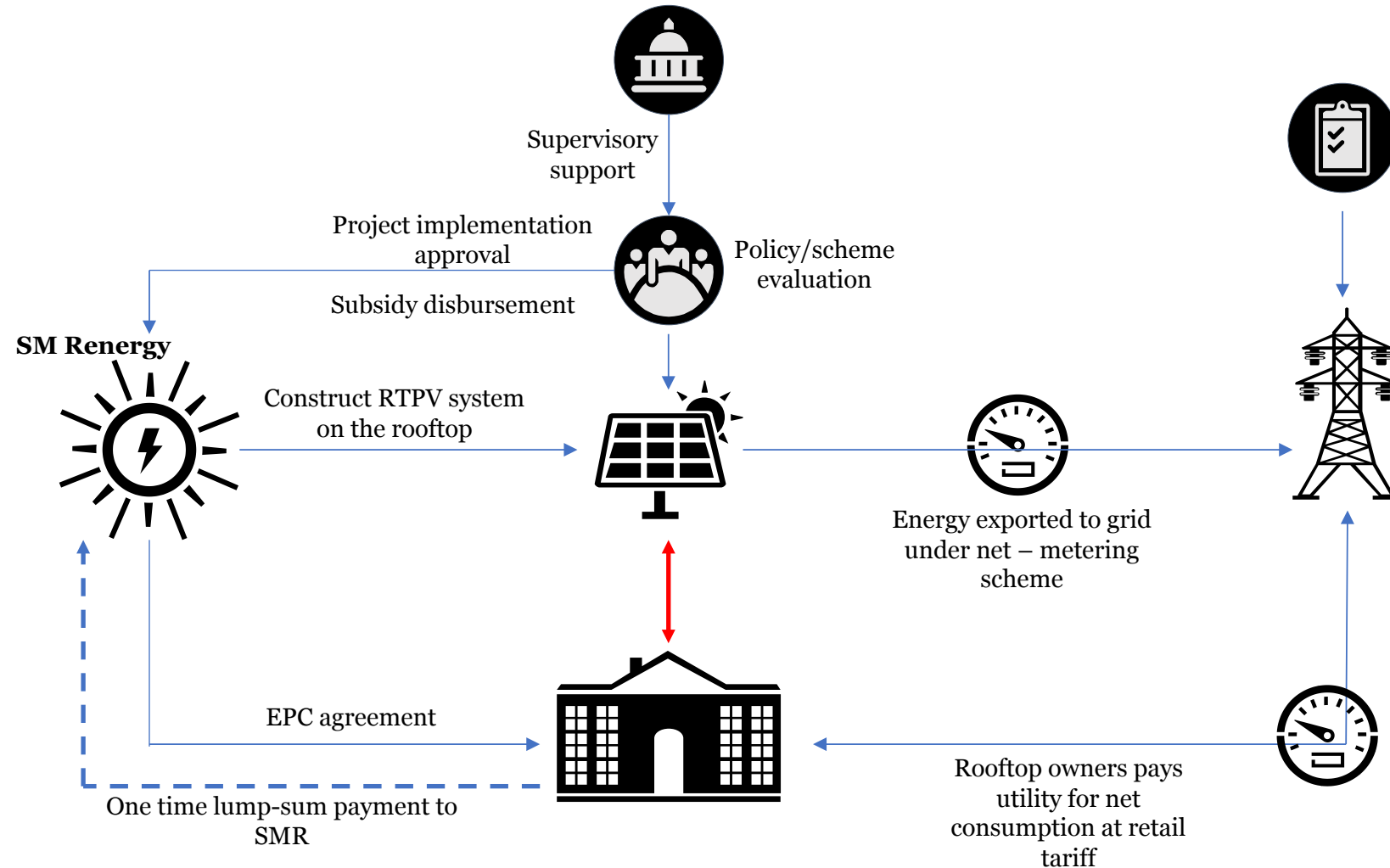
Accelerated Depreciation for Industrial and Commercial Entities

Particulars	Notations	DIV – A (Ordinary Business)	DIV – B (Solar Business)	Total (A+B)
Investment	A	200	100	300
Profit Before Dep & Tax (PBT)	B	100	20	120
Dep rate as per IT Act	C	15%	40%	
Dep as per IT Act	$D = A * C$	30	40	
PBT	$E = B - D$	70	(20)	50
Corporate Tax @ 32.45%	$F = E * 32.45\%$	22.7	(6.49)	16.21
PAT	$G = E - F$	47.3	(13.51)	33.79
Tax as a % of Cash Profit before Tax	$H = F/B$	22.7%	(32.45)%	13.5%

Business Models

Mechanisms to Adopt Rooftop Solar PV

EPC (CAPEX) Model

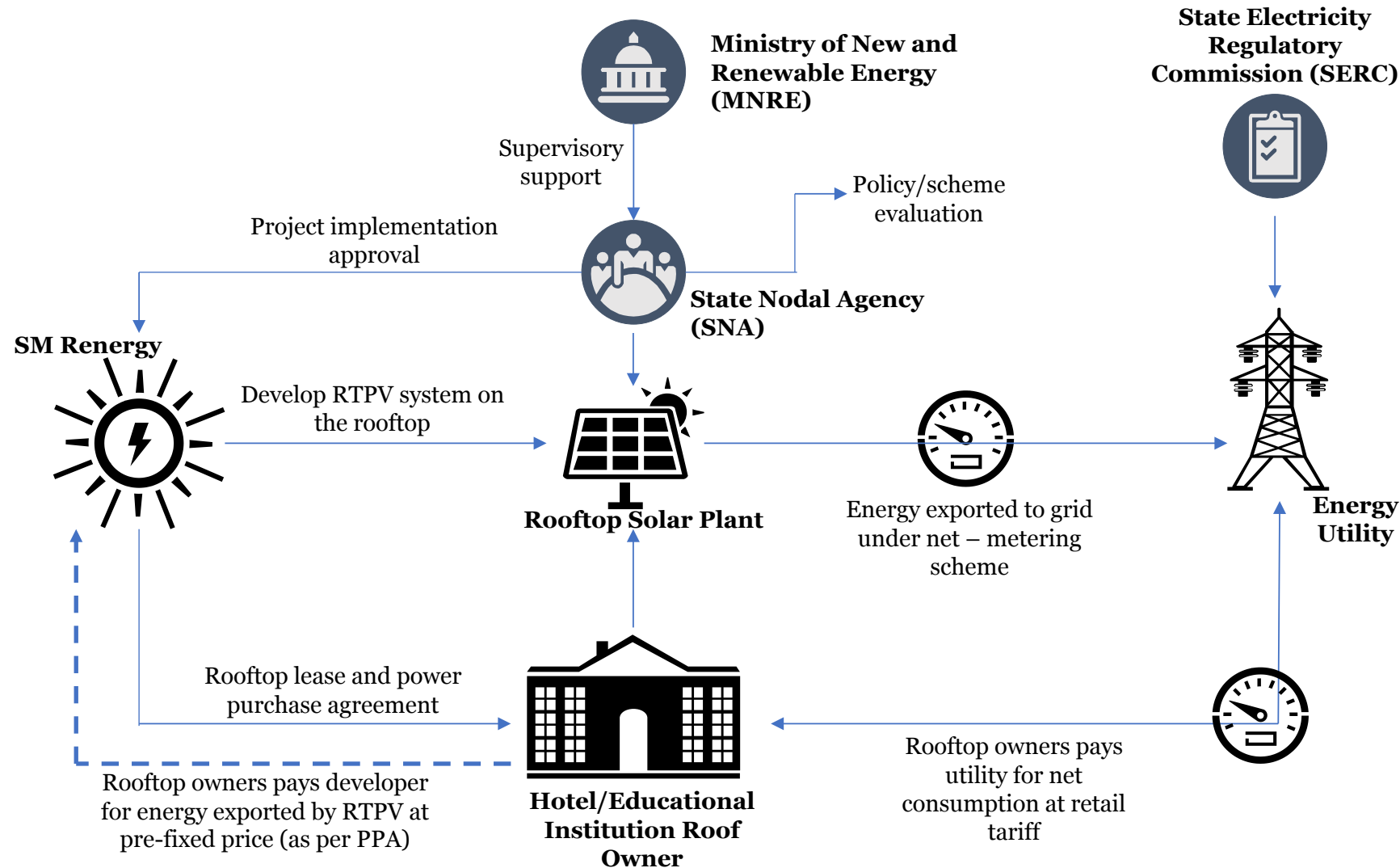


Key Highlights

- One time capital investment to enjoy more economical and clean energy for 25 years
- One – stop – solution for client willing to adopt solar PV
- SMR will provide all relevant product guarantees and warranties
- SMR will assist in procuring all relevant permits and approvals

Mechanisms to Adopt Rooftop Solar PV

RESCO Model (OPEX)



Key Highlights

- **No upfront capital investment for the client**
- **Pre – fixed agreed tariff for power sale for the next 25 years, lower than the existing grid tariffs**
- **Rooftop owner and SMR enter in to a lease agreement for the life of the asset**
- **One – stop – solution for client willing to adopt solar PV, while saving from grid tariffs**
- **SMR to undertake operation and maintenance (O&M) services of the asset**
- **SMR will provide all relevant product guarantees and warranties**
- **SMR will procure all relevant permits and approvals**

Regulatory Landscape in Gujarat

Solar PV for Energy Savings and Education

Parameter	Details
Capacity	Upto 50% of Sanctioned Load
Net – Metering Regulations	As per CEA Amendment Regulations, 2014
Demand Cut	Exemption from demand cut up to 50% of the installed capacity
Transmission Charges	Not applicable
Transmission Loss	Not applicable
Wheeling Charges	Not applicable
Energy Accounting	Type 1: Allowed for 1 month billing cycle Type 2: Adjusted in 15 min time blocks and settled at APPC
Electricity Duty	Exempted
Cross Subsidy Surcharge	Exempted

Solar PV Economics

Economics of a Turnkey EPC Product

Parameters	Details
Plant Size	100kWac (110kWp)
Total Project Cost	Approx. 50 Lakh
Area Requirement	100,000 sq feet
Debt:Equity	50:50
Interest Rate	12%
Specific Production	1400 kWh/kWp/Year
Current Grid Tariff (Delhi NCR)	Approx. INR 8.50/unit
Project Cost/Wp (Premium Equipment)	INR 45.50/Wp
Grid Escalation per annum	5%
Plant Life	25 years
Gross Savings over 25 years	INR 552.40 Lakhs
Solar LCOE	INR 4.12
Grid LCOE over 25 years (with 5% escalation)	INR 12.50
Equity IRR (post – tax)	31.92%
Project IRR (post – tax)	23.68%

About SM Renergy (P) Ltd

Core Competencies of SM Renergy (P) Ltd

SM Renergy (P) Limited was formed with the main objective of developing sustainable and cost effective solutions for the generation and supply of renewable energy including, solar and wind. The company primarily deals with the development of solar projects. Going forward, SM Renergy aims to prove that solar energy is the most affordable and reliable source of power generation for forward thinking power consumers.



Strong Design Capability



Constant Innovation



Meticulous Execution



Design, Supply and Installation of Solar PV Applications



Emphasis and utilization of quality products at competitive rates

Quality Assurance

In a sector where product longevity is of paramount importance, many instances (according to market research) show the quick wear and tear of solar PV equipment. This wear and tear has been mainly attributed towards the use of sub – standard material while taking advantage of the ignorant consumer.

SMR is proud to be associated with leading equipment suppliers who have earned their reputation globally. We have showcased our strong supplier network below –

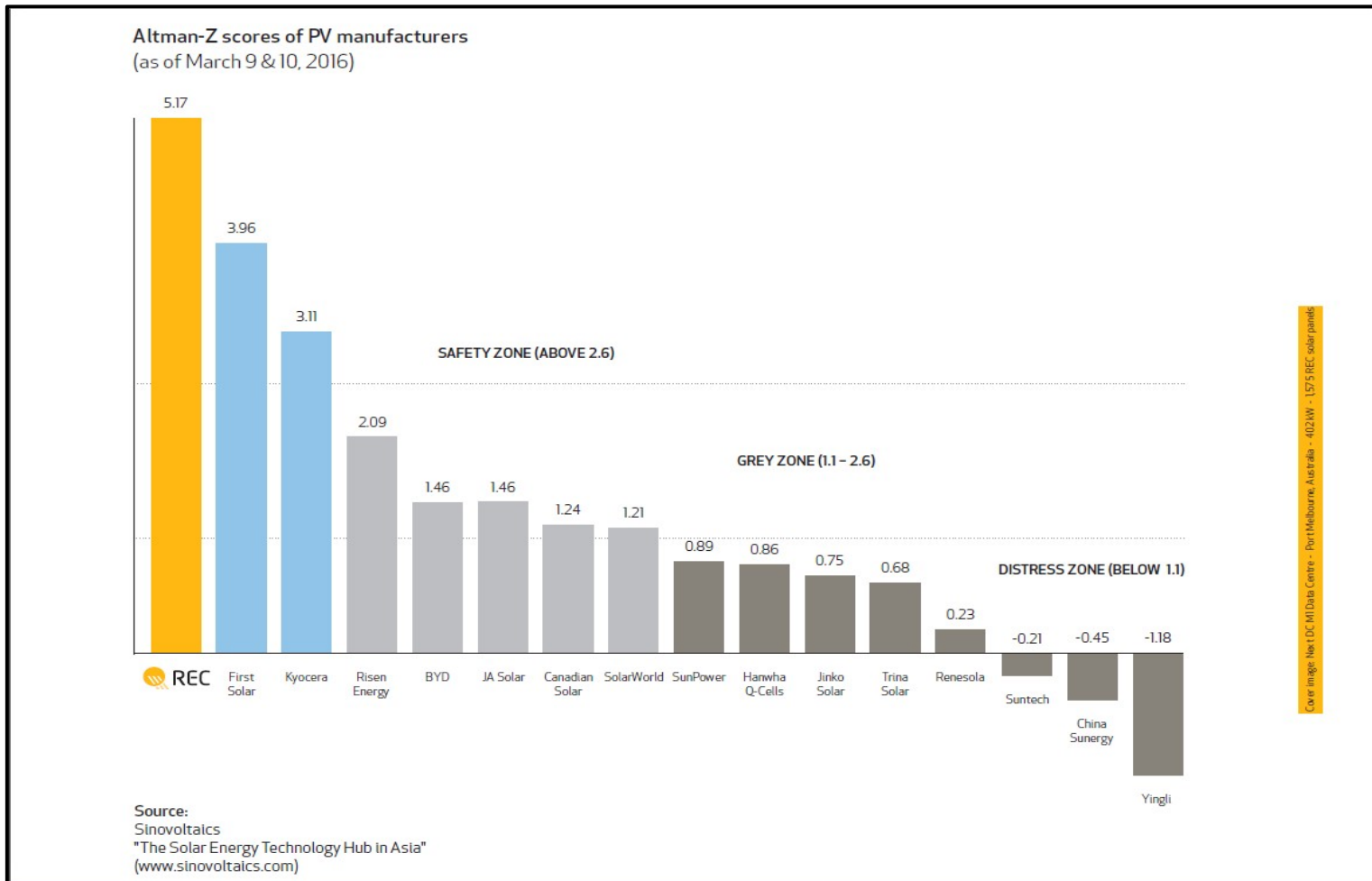
Solar PV Modules



Inverters



REC Modules – the most efficient and highest rating modules in the market today



[REC Modules Efficiency Video](#)

Our Experience

Completed Projects

Name of Entity	Project	Capacity
SM Renergy (P) Ltd	Tagore International School, Vasant Vihar	175 kWp
	Tagore International School, East of Kailash	165 kWp
	Rooftop project at FabIndia School, Rajasthan	20 kWp
	Rooftop project at Mangalagiri Chambers, Visakhapatnam	15 kWp
	Billabong High International School, Noida	220kWp
	ANJ Infra Warehouse, Ghaziabad	120kWp
	Pydah Engineering Colleges	100 kW
	AI Paper, Jaipur	200 kW
	Hindustan Zinc Ltd, Chittorgarh and Udaipur	100 kW (Cumulative)
	Rajasthan Patrika, Jaipur	400 kW
	Cairn India, Barmer	100 kW (Off – grid)

Projects Under – Construction

Name of Entity	Project	Capacity
SM Renergy (P) Ltd	Pydah Engineering College, Visakhapatnam	300 kW (spread across 3 campuses)
	ANJ Infra Warehouse	120kWp
	Dr. Bhansi Dhar School, Kota	100kWp
	Clarks Group of Hotels, Rajasthan	100 kWp (spread over 5 hotels)
	1589 Group of Hotels	35 kWp (spread over 3 properties)
	Billabong High International School, Noida	220kWp
	Sankar Foundation, Visakhapatnam	150kWp
	GD Goenka World School	500kWp

Our Core Team and Experience

Samay Mangalagiri – Director and Head of Operations



Samay Mangalagiri has over five years of extensive experience in the renewable energy sector in India, Singapore and South Pacific (Fiji and Tuvalu). Samay has worked with solar PV, wind and small hydro technologies with a specialization in the development and execution of rooftop solar PV. He has served with the Food and Agriculture Organization (FAO) of the United Nations, an Indo – French solar and wind energy development company (PR Fonroche) and as an Assistant Manager with PwC’s renewable energy advisory services in India.

Samay’s clientele include working with various Governments (of India, Singapore, Fiji, Tuvalu and Nepal), multilateral agencies (Asian Development Bank and World Bank) and bilateral agencies (British High Commission and GiZ). Additionally, Samay played a key role in chalking out a renewable energy market entry strategy for one of the largest infrastructure company (GMR Energy) in India, assisted one the largest Japanese conglomerates with an entry strategy in to the Indian solar market and a growth plan for one of the largest module manufacturer’s in India.

Samay is an alumnus of the prestigious The Doon School (India), completed his Bachelors in Engineering (Biotechnology) with honours from the Peoples Education Society Institute of Technology (PESIT – India) and holds a MSc in Management with a Merit from the London School of Economics and Political Science (LSE).



Nalin Agarwal's specialization lies in renewable energy systems with an emphasis on solar PV. He has a deep understanding of the technical and financial aspects along with a special interest in energy and economic policy.

Nalin started his career with a PE firm based in London. He moved back to join PR Fonroche where he rose to the level of an Associate Partner. In fact, Nalin and Samay worked at PR Fonroche for over 2.5 years. At PRF, Nalin was responsible for successfully developing and commissioning over 22 MW of utility scale and distributed solar PV projects across India. He managed all utility and distributed solar PV projects in India, Philippines, Singapore and the South Pacific. Nalin went on to structure important partnerships with eminent organizations including Total S.A (France) and Bluestar.

Samay is an alumnus of the prestigious Lawrence School, Sanawar (India), completed his Bachelors in Engineering (Mechanical) with honours from NIT, Jaipur and holds a MSc in Sustainable Energy Futures with a Merit from the Imperial College London.

Govind Singh Rathore – Technical Head



Govind Singh Rathore has over eight years of extensive experience in the solar energy sector based in India. Govind Singh Rathore has executed over 3 MW of rooftop solar PV projects across India.

Govind Singh Rathore's expertise lies in various solar PV applications including, rooftop solar projects, solar street lighting and solar water pumping. He has completed projects worth 1,00,000 litres of capacity in solar water heating.

Govind Singh's clientele include working with various reputed private and government organizations including, Bosch, Cairn India, Aditya Birla Group, Military Engineering Services of India, Moser Baer, SunEdison, Power Grid Corporation of India, IL&FS and Rays Power.

Govind Singh Rathore is well connected within the solar industry strong connections with suppliers and unparalleled experience on technical layout, design and execution of high quality solar PV plants.

Pradeep Tholety – Technical Manager



Pradeep Tholety has over seven years of extensive experience in the solar energy sector based in India. He has executed and managed over 30 MW of solar PV projects across India.

Pradeep's expertise lies in execution and maintenance of various solar PV projects across India. His knowledge on man – power management, costing, technical drawings and effective quantity estimation is accurate which gives our company the edge to execute high quality projects at economical costs.

Pradeep has served with the largest solar PV companies across India including, Global Energy, Welspun Energy and Nereus Capital amassing immense knowledge on execution and maintenance of solar PV projects.

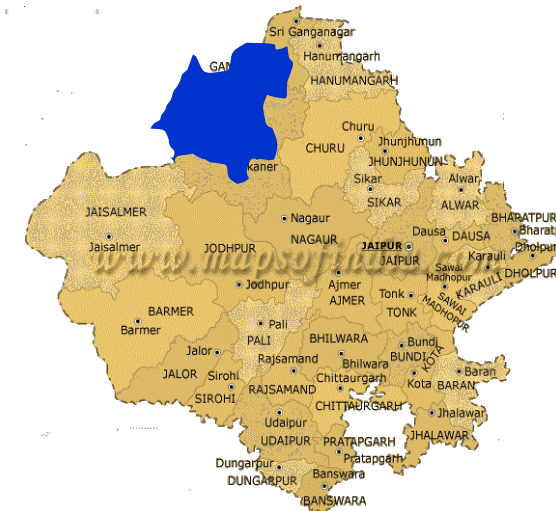
Pradeep is an electrical engineer by qualification and is well – versed with associated softwares commonly used while executing rooftop solar PV projects.

SM Renergy – Prior Experience

Accolades by the team....

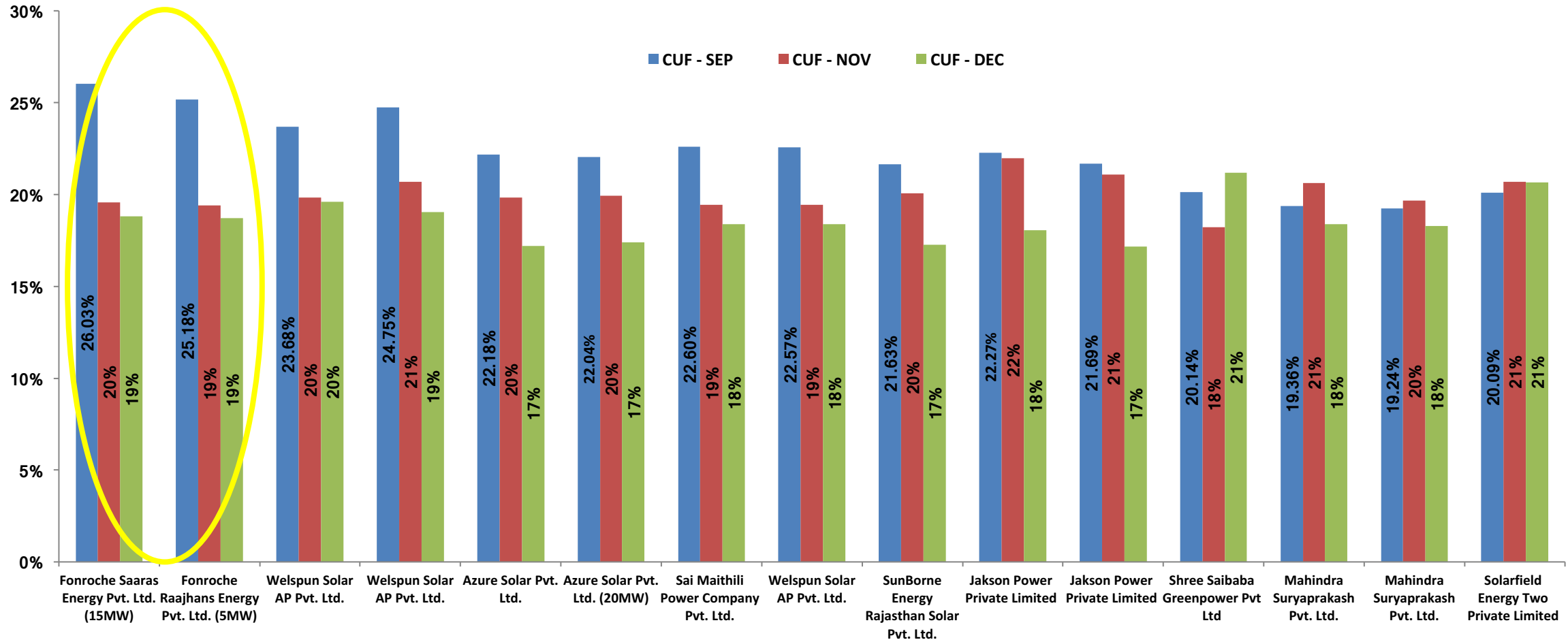
RAJASTHAN PROJECT SNAPSHOT

Sponsor	Fonroche Energie S.a.s
Developer	PR Fonroche Pvt. Ltd.
Location	Village Gajner, District Bikaner, Rajasthan
Power Purchase Agreement	With NVVN for 25 years @ Rs. 9.1 kWh
Installed Capacity	Fonroche Raajhans: 5.54MW (4.76MW_{AC})
	Fonroche Saaras: 16.75MW (14.96MW_{AC})
	Modules: First Solar Inc. – 82Wp (CdTe)
Technology	Inverters: Schneider Electric – 680kW (Central)
	Transformers: Raychem
	Transmission Line: 33kV double-circuit (2.5km)
	EPC and O&M Contractor
Commissioning Dates	Mahindra EPC
	Fonroche Raajhans: 23rd Dec 2012
	<i>1st project to be commissioned under NSM Phase-I, Batch-II</i>
Lenders	Fonroche Saaras: 21st January 2013
	Construction Facility: KKR, TataCap, ABFS
	Long-term Loan: IREDA



Accolades by the team....

Consistently the Best Performing Plant Amongst All Rajasthan Plants



Accolades by the team....

First to Commission in NSM - 1 Batch - II



AWARDED by Prime Minister of India, Dr Manmohan Singh on 21st September 2013 for the 5MW plant



Accolades by the team....

Third to Commission in NSM - 1 Batch - II



AWARDED by Union Minister for New & Renewable Energy, Dr Farooq Abdullah on 25th September 2013 for the 15MW plant

