



# Rooftop solar – the business and its financing



June 2017



# About CleanMax Solar

- Largest rooftop solar developer in India with ~25% all India market share
- All India presence with 5 offices and solar plants across 15 states
- Clients across MNCs, universities, large corporate groups
- Largest rooftop/ onsite plants in many states including Karnataka, Maharashtra, Gujarat
- Team of 105 people, with ~500 crore of annual revenues
- Focus on being “sustainability partner” of large corporates and private users in their journey, with offerings across rooftop solar, grid connected solar, energy storage.

# Solar has caught the imagination of India

Bangalore Airport – 500 kWp



IIT – BHU 1500 Kwp



Viviana Mall, Mumbai – 1000 kWp



New Delhi Office Building – 600  
kWp



# India's stretch aspiration require greater efforts to reach global averages of rooftop solar

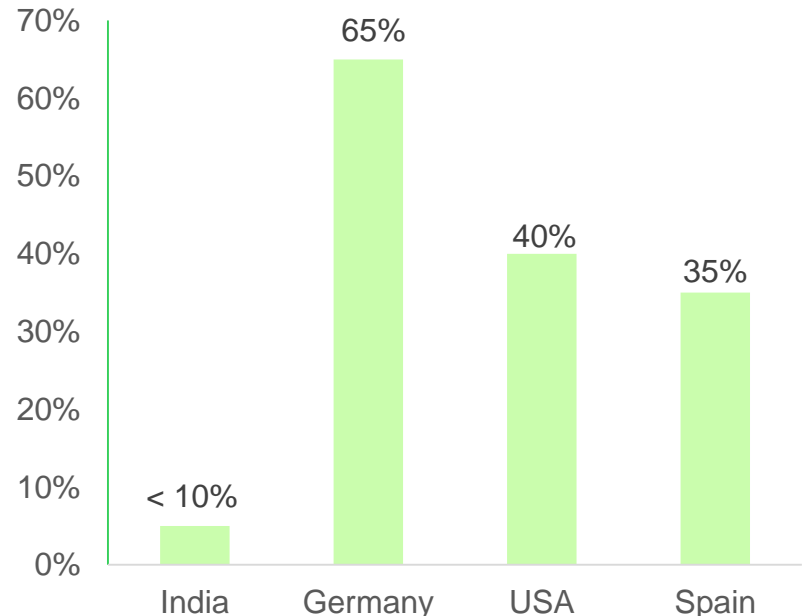
## Rooftop volumes lag targets ...

### MWp capacity



## ... and India's share of rooftop solar in overall solar mix is low

### Percent, rooftop solar/total solar

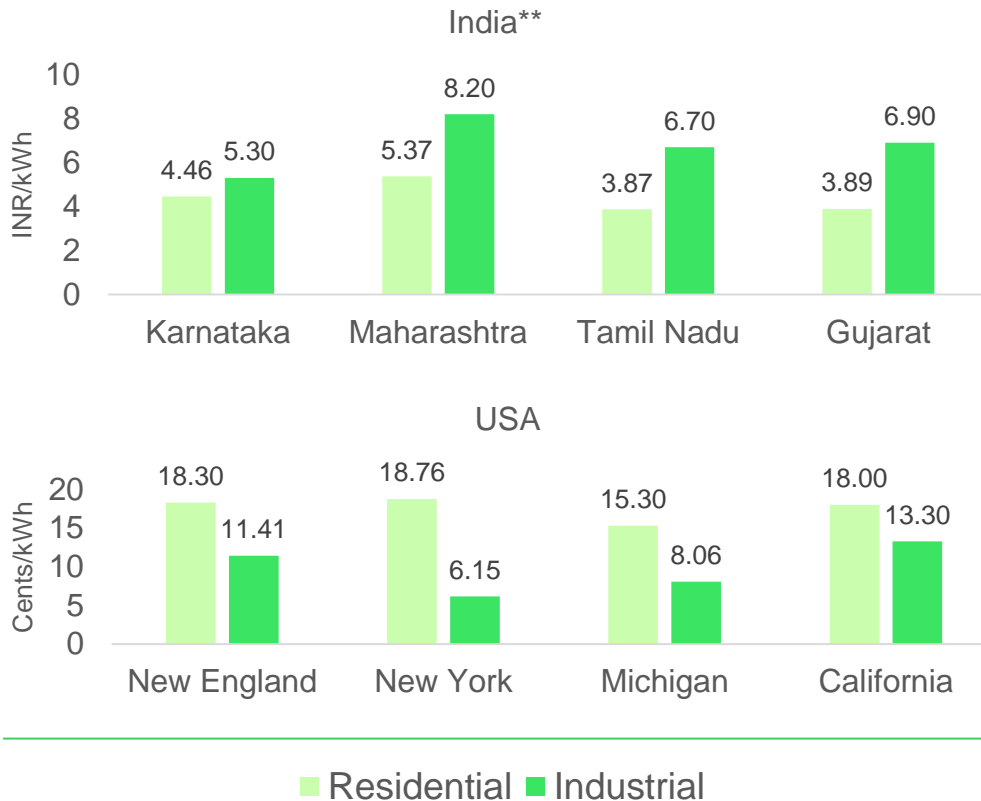


Source: Bridge to India Solar Rooftop Map 2016 and future growth estimates

# Indian rooftop market likely to see greater growth in industrial, educational and commercial segments

Due to tariff differentials, initial rooftop solar take-off likely in educational, industrial and commercial segments

### Electricity Price by Segment: India vs. USA\*



\* Source: EIA (USA), Individual discoms (India)

\*\* India residential rates are on a slab system; rates shown are weighted average cost per kWh for 150 kWh consumption/month

# Three benefits to Discoms through rooftop solar

1

## *Avoided Capex and lowered T&D losses*

- Localised generation reduces systemic T&D losses (reduced transmission and distribution requirements)
- Select capacity additions can be avoided
  - USA discoms saved USD 1.5 billion in avoided capex last year through solar/ storage based peak shaving
  - India example: Congested IT areas (e.g. Hinjewadi, Pune/ Whitefield, Bangalore) can meet day time peak load requirements through rooftop solar

2

## *Surplus Summer time power*

- Universities represent large possible rooftop consumers (200 mwp already identified in govt segment). Net metering coupled with their summer holidays means that much free generation during summers for discoms – and discoms give them power during rainy/ winter seasons which is a win-win

3

## *Fiscal / green compliance benefits*

- Central government financial assistance scheme for discoms providing net metering benefits to consumers launched
- In most cases, discoms can account for net metered energy in their RPO benefits

# Central government roles in financing of private sector rooftop projects

1

*Enable lower financial costs/  
investment incentives*

- Continuation of AD and tax incentives for renewable energy industry in India (also suggestion of Niti Aayog Committee on Renewable Energy)
- GREAT JOB: Getting low cost loan lines for rooftop solar: 9000 crore lending lines available within 18 months at low cost.
- Enabling norms for Investment trusts for solar and rooftop solar in conjunction with MOF/ SEBI. Create investment tax breaks for investors investing into such schemes

2

*Draft 'model' net metering codes/  
guidelines for state adoption*

- Can document and disseminate best practices on net metering codes including technical guidelines, timeframe for grant and implementation of net metering
- Suggest guidelines for state regulators on Cross subsidy, ED for net metering of electricity

3

*Create state comparison and improvement enablers*

- Partner with rating/ ranking/ consulting agencies to publish "Ease of rooftop solar indices" Measuring state-wise performance on rooftop solar in conjunction with industry bodies
- Benchmarking and publish data on rooftop solar grants
- Provide fiscal incentives to Discom for grant of solar power approvals, and have incentives diminish with delay in grant of approval