

## Indian Cities Slacking On Rooftop Solar

Despite attractive incentives on paper, the country's leading metros are falling far short of meeting their rooftop solar targets. As a result, financial incentives are not being utilized and consumers are not availing of significant potential savings on their electricity bills, even as the burden on DISCOMs to meet power demand from the grid grows.

While the country has made good progress on reaching its 60 GW utility scale solar PV target, leading to falling tariffs and cheaper electricity for consumers, progress in the rooftop segment has been tepid. Given the obvious land constraints large-scale solar faces, it is important that enough policy support is also paid to rooftop and decentralised solar, both off grid and grid-connected. Rooftop solar will have a key role to play as India looks to decarbonise its electricity sector and tackle air pollution, a significant portion of which is caused by coal fired power plants generating electricity.

Air pollution accounts for 1.2 million deaths every year according to Global Burden of Diseases.<sup>1</sup> This costs India 3 percent of its GDP. While the state and central governments are yet to recognise air pollution as a national health emergency, it is important that citizens of India take initiative and move away from thermal power. Solar policies have already been put in place by various state governments and citizens need to shed their inhibitions and avail their benefits.

A Greenpeace analysis shows that all the major metros are far from meeting rooftop solar targets as laid down by state governments and the Ministry of New and Renewable Energy. This is despite a significant national incentive in the form of a 30% capital subsidy, and a range of state incentives and schemes. As of December 2016, India's total installed rooftop solar capacity was estimated at 1,247 MW.<sup>2</sup>

The slow progress points to the need for more active government intervention in the form of aggregating demand, financing schemes and incentives to city and state governments to boost rooftop solar installations. It must not be used as an excuse to weaken India's ambitious rooftop solar goals which have won it widespread global praise.

Limited polling by Greenpeace suggests significant public interest in adopting rooftop solar. Close to 55% of the 812 survey respondents from our supporter base expressed interest in investing in and installing solar.

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<sup>1</sup> Global Burden of Disease Study 2015,

<http://ghdx.healthdata.org/gbd-results-tool?params=querytool-permalink/59cce35bccb248721070d6164c918bb1>

<sup>2</sup>[http://www.bridgetoindia.com/wp-content/uploads/2017/05/BRIDGE-TO-INDIA\\_India-Solar-Handbook\\_2017.pdf](http://www.bridgetoindia.com/wp-content/uploads/2017/05/BRIDGE-TO-INDIA_India-Solar-Handbook_2017.pdf)

What's holding back residential solar?

1. Lack of familiarity with the process, fear of bureaucratic red tape
2. Insufficient knowledge of the financial incentives and attractive return on investment
3. Perception that large upfront capital investment is required making rooftop solar accessible only to the rich
4. Net metering provisions are present in most states, but effectiveness of implementation varies significantly.
5. Popular misconceptions surrounding solar and rooftop installations  
(E.g.: rooftop space becoming unusable by installing solar panels. Raised structures which keep rooftops free and the floors below cooler are both practical and economically feasible)

#### NEW DELHI:

Official Target: 1000 MW by 2020, 2000 MW by 2025<sup>3</sup>

Rooftop Solar Potential: 2500 MW total, of which 1250 residential<sup>4</sup>

Rooftop Solar installed: 35.9 MW total (as of December 2016)<sup>5</sup>, of which only 3 MW residential (as of March 2016)

Per the Delhi Solar Policy, there should already be 119 MW of solar already installed in the city.

Incentives in place: Net Metering. GBI: Rs 2 per unit generated (expires 2019, with restrictions)

#### MUMBAI:

Official Target: 4,700 MW (all Maharashtra) by 2022, no Mumbai-specific target

Rooftop Solar Potential: 1720 MW (IIT Mumbai)<sup>6</sup>

Rooftop solar installed: 5 MW

Incentives in place: Net Metering, banking of excess generation credits, with unutilized credits being purchased at end of the year.<sup>7</sup>

#### BENGALURU<sup>8</sup>:

Official Target: 400 MW (entire state) by 2018<sup>9</sup>

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<sup>3</sup> "Rooftop Revolution – Unleashing Delhi's Solar Potential", Bridge to India, 2013

<http://www.greenpeace.org/india/Global/india/report/2013/Rooftop-Revolution.pdf>

<sup>4</sup> "Rooftop Revolution – Unleashing Delhi's Solar Potential", Bridge to India, 2013

<http://www.greenpeace.org/india/Global/india/report/2013/Rooftop-Revolution.pdf>

<sup>5</sup> <http://solarrooftop.gov.in/notification/Notification-09012017.pdf>

<sup>6</sup> [www.ncpre.iitb.ac.in/research/pdf/Estimating\\_Rooftop\\_Solar\\_Potential\\_Greater\\_Mumbai.pdf](http://www.ncpre.iitb.ac.in/research/pdf/Estimating_Rooftop_Solar_Potential_Greater_Mumbai.pdf)

<sup>7</sup> <http://mnre.gov.in/file-manager/UserFiles/Grid-Connected-Solar-Rooftop-policy/MERC-Net-Metering-for-Rooftop-to-p-SPV-Systems-Regulations-2015.pdf>

<sup>8</sup> <http://www.thehindu.com/news/cities/bangalore/Aerial-mapping-of-city%E2%80%99s-solar-energy-prospects/article14584940.ece>

<sup>9</sup> <http://kredinfo.in/solargrid/Solar%20Policy%202014-2021.pdf>

Rooftop Solar Potential: Unknown, mapping currently underway by BESCO and CSTEP

Rooftop Solar Installed: 36 MW in Bengaluru<sup>10</sup>

Incentives in place: Net metering and Gross Metering; Tariff of Rs 6.03 after capital subsidy, 7.08 without subsidy.

#### HYDERABAD:

Official Target: No target specified in Andhra Pradesh rooftop solar policy

Rooftop Solar Potential: Unknown

Rooftop Solar Installed: 32MW throughout AP as of Oct 2015<sup>11</sup>

Incentives in place: Net Metering and Gross Metering, with tariffs equal to average 'cost to serve' of the DISCOM<sup>12</sup>

#### CHENNAI:

Official Target: 350 MW target rooftop solar (for the entire state) specified in TN's Energy Policy 2012 (MNRE specifies tentative 8.8GW for the state by 2022 for all solar PV, utility and rooftop).<sup>13</sup>

Rooftop Solar Potential: Unknown

Installed: 1.4 MW of rooftop according to TEDA (entire Tamil Nadu)<sup>14</sup>

Incentives in place: 20,000 subsidy for domestic consumers under CM's Solar Rooftop Capital Incentive Scheme, Net Metering<sup>15</sup>

But there are positive stories:

1. Delhi's Tagore International School's electricity bill goes down from 4 lakhs INR to Rs.10,000: <https://www.youtube.com/watch?v=C7wh36gZ7MU>
2. Delhi residential consumer, Pankaj Rajpal has a net metered rooftop plant of 5kW, and saves more than Rs.7000 each month: <https://www.youtube.com/watch?v=V9cWOjSVQ38&feature=youtu.be>
3. Chennai's V. Balakrishna, Besant Nagar has lowered his monthly electricity bill from over 2,000 to just 400. He expects to recover his 1.2 lac investment in 6 years. More stories at <http://www.thehindu.com/features/homes-and-gardens/chennai-gets-solar-smart/article7064966.ece>

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<sup>10</sup><http://www.thehindu.com/news/cities/bangalore/Rooftop-solar-power-generation-is-up-but-future-uncertain/article17078885.ece>

<sup>11</sup> Bridge to India Solar Rooftop map 2016

[http://www.bridgetoindia.com/wp-content/uploads/2015/11/BRIDGE-TO-INDIA\\_India-Solar-Rooftop-Map-2016.pdf](http://www.bridgetoindia.com/wp-content/uploads/2015/11/BRIDGE-TO-INDIA_India-Solar-Rooftop-Map-2016.pdf)

<sup>12</sup> Andhra Pradesh Solar Policy 2015 <http://ireeed.gov.in/policydetails?id=436#>

<sup>13</sup><http://mnre.gov.in/file-manager/UserFiles/Tentative-State-wise-break-up-of-Renewable-Power-by-2022.pdf>

<sup>14</sup> <http://teda.in/achievements/solar-energy-4/solar-photovoltaic-power-plants/>

<sup>15</sup> <http://www.tangedco.gov.in/linkpdf/solarpolicy.pdf>

4. Mumbai's Mary Nagar Housing Society, Mahim, is saving 3 lac every year on its electricity bills:  
<http://www.hindustantimes.com/mumbai-news/switch-to-solar-power-will-save-mumbai-housing-society-28-000-a-month/story-kiv7Rcy6o2kC9siMbCZKuN.html>
5. Vasant Oscar Complex, Mulund has invested 14 lac for 30kW rooftop solar and expects to recover the investment cost via savings on its electricity bill in three years:  
<http://www.dnaindia.com/money/report-solar-power-lights-up-2000-houses-in-mulund-2429120>