

## Consumer guide to grid-connected rooftop solar - Part 3

The [previous issue](#) highlighted the capacity required for installing solar panels in the consumers' premises. Part 3 will explain certain points to be kept in mind while choosing a suitable solar developer/installer.

### Finalising a solar developer

Consumers should ideally request quotations from different solar developers as this will enable them to compare the various items and services offered, in order to finalise a suitable developer. For comparison, consumers should not only consider the cost but also some additional parameters as given below, as they are equally important for making the decision.

### Standards:

- Ensure all the components listed in the quotation meet standards set by the [Ministry of New and Renewable Energy](#) (MNRE)

### Solar panels:

- Solar panels are available in different capacities starting from 3 Watts to 350 Watts. Consumers should ensure that the panels given in quotation are for the requested capacity. This is related to the space available in the consumer's premises e.g. a 350-watt panel will be bigger and occupy more space than a 35 -watt panel.
- Consumers should check whether watt peak (Wp) is mentioned in the quotation. The Wp represents the maximum electric power that can be supplied by one photovoltaic panel in standard temperature and sunshine conditions. This will help one understand the efficiency of the solar panel - higher the watt peak, the higher the efficiency.
- The consumer should check the make of panel to see if it is a standard manufacturer, this example [list](#) can be used for ready reference.
- Ensure that the developer mentions efficiency of the solar panel is greater than [13%](#)

### Solar Inverter:

- The power generated through the solar panel is [Direct Current \(DC\)](#) while the appliances run on [Alternating Current \(AC\)](#). DC power should be converted to AC power. For this purpose, a solar inverter is used.
- Inverter capacity is usually measured in [Volt Ampere \(VA\) or kilo Volt Ampere \(kVA\)](#) and is related to the capacity of the solar panel required for the premises. Ideally, the inverter capacity must be [greater than or equal](#) to the solar panel's capacity.
- The make of the inverters should be checked to verify if it is from a recognised manufacturer. Sample list is given [here](#) for reference. The inverter should have a minimum warranty of 5 years.
- The efficiency of an inverter indicates how much DC power is converted to AC power. The inverter should have an efficiency of greater than or equal to 95% with the ability to withstand a [temperature range](#) of -10°C to 60°C. If the temperature increases, the inverter will gradually reduce its power output, by reducing the output AC to protect its components. **(to be continued...)**

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Please send your feedback to [ecc@cag.org.in](mailto:ecc@cag.org.in)

### Electricity Consumer Cells (ECCs)

**Madras Metropolitan Consumer Rights Protection Centre (MMCRPC)**  
No. 118, Fourth Street, Kamaraj Nagar, Avadi, Tiruvallur District. Chennai - 600 071, Phone: 9382828286 Email: [ecctiruvallur@gmail.com](mailto:ecctiruvallur@gmail.com)

**Tirunelveli District Consumer Rights Protection Sangam**  
No. 9, Kulapirai Street, Tirunelveli Town, Tirunelveli - 627 006 Phone: 0462-2338544 Email: [ecctirunelveli@gmail.com](mailto:ecctirunelveli@gmail.com)

**Federation of Consumer Organizations of Tamil Nadu and Pondicherry - (FEDCOT)**  
5, Anthoniyarkoil Street, Cuddalore - 607 001 Phone: 9994019119 Email: [ecccuddalore@gmail.com](mailto:ecccuddalore@gmail.com)

**Sadayanodai Ilaigarnar Narpani Mandram - (SINAM)**  
Avalurpet Road, Tiruvannamalai - 606 604 Phone: 04175 - 298033 Email: [ecctiruvannamalai@gmail.com](mailto:ecctiruvannamalai@gmail.com)

**Consumer Voice Foundation,**  
31/20, Sree Rangan Street, Gugai, Salem - 636 006 Phone: 9994941050 Email: [eccsalem1@gmail.com](mailto:eccsalem1@gmail.com)

**National Level Educational and Social service Trust (NEST)**  
No: 10, Pillayar Koil Street GribblesPet Arakkonam Vellore District - 631 002 Mobile : +91 98946 32302 Email id: [eccvellore@gmail.com](mailto:eccvellore@gmail.com)

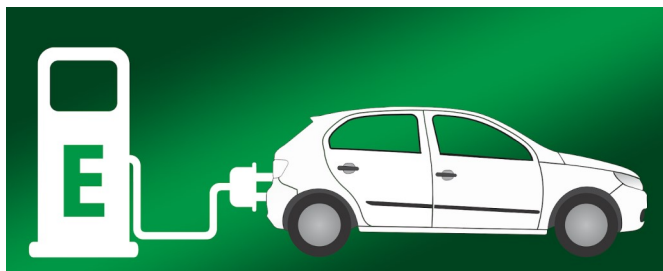
**People's Action Service Society (PASS)**  
No: 4/74, Sangililyandapuram Pettavaithalai & Post Tiruchirappalli District - 639 112 Landline : 0431-2612597 Mobile : +91 9788203997 Email id : [ecctiruchirappalli@gmail.com](mailto:ecctiruchirappalli@gmail.com)

# Electric Vehicles - Part 1

One of the most fascinating topics engaging people across the nation in recent days is electric vehicles (EVs). The discussions around the topic have been [cross-sectoral](#), [technological](#), [social](#) and [policy-related](#). Given the growing interest and inquisitiveness around the topic, this series will focus on de-mystifying EVs for the benefit of the consumer.

The series will elaborate on the following:

- 1.Introduction to the EVs
- 2.Charging and storage techniques
- 3.Factors to be considered by consumers
- 4.Government initiatives on EVs
- 5.Present scenario and future trends



## Introduction

“The [transport sector](#) in India is the third most [Greenhouse gases](#) (GHG) emitting sector, with road transport being a major contributor.” As of 31 March 2015, there were 21,00,23,289 [motor vehicles registered in India](#), which includes buses, taxis, light motor vehicles (passengers), goods vehicles, two-wheelers, jeeps, and others. Most of them are Internal Combustion Engine (ICE) vehicles and are driven using petroleum based fuels, which leads to vehicular emissions. [A study](#) estimated that in 2015, 74,000 premature deaths in India were associated with vehicular emissions. At the same time, [crude oil import by India](#) is rapidly increasing due to the increasing usage of motor vehicles, which was 3,925.5 barrels/day in 2015 ([Avg. cost = \\$ 49.49/barrel](#) ) and 4,545.6 barrels/day in 2018 ([avg. cost = \\$ 69.78/barrel](#)).

Considering the above factors, it is obvious that the prevailing ICE vehicles have a huge impact on both the environment, public health, and economy of the country. Many studies reveal that EVs could be a [better alternative](#) to ICE vehicles, mainly due to their reduced or zero on-road emissions.

## What is an Electric Vehicle?

A vehicle that uses one or more electric motors for propulsion is called as an [electric vehicle](#). It may partially or fully run on electricity and uses a battery to store electricity. Charging of battery can be done by plugging it into the electricity grid or to stand-alone energy sources such as solar panels.

## Types:

### 1.Battery electric vehicles (BEV) or All Electric Vehicles (AEV)

BEVs are fully electric vehicles and contain one or more electric motors. Unlike PHEVs or Internal Combustion Engine (ICE) vehicles BEVs do not require any petroleum based fuels hence leading to nil emissions on road.

### 2.Plug-in electric vehicles (PEV):

#### i) Plug-in hybrid electric vehicles (PHEVs):

PHEVs contain one or more electric motors, which uses electricity from the onboard battery, as well as a conventional Internal Combustion Engine (ICE) which uses petroleum based fuels. Compared to normal ICE vehicles, there will be less emissions on road due to the electric hybrid system.

#### ii) Strong hybrid electric vehicles (SHEV).

In a strong hybrid electric vehicles, also known as full hybrid vehicle, the engine is supplemented by an electric motor. The vehicle is driven by ICE; however it can also be run entirely on electricity, but requires petroleum based fuels, which means the battery is charged without the need for a grid supply.

*(to be continued...)*

## Tamil Nadu News

### TN power consumers hail 'must run status' of energy projects

Tamil Nadu Electricity Consumers Association (TECA) welcomed the communication of the Ministry of New and Renewable Energy (MNRE) to the state governments to honour 'must run status' of wind and solar projects.

In a press release, TECA secretary said the decision was hailed as curtailing of wind and solar power by state load despatch centres (SLDCs) would be discouraging generators. Most of the distribution companies (DISCOMs) were running on heavy loss and with Tamil Nadu having a generating capacity of 8,300 MW wind power, the order gives a boost to generators, he said. Also, he demanded that the governments speed up the process of green energy corridor to evacuate the power produced through renewable energy. The ministry, in its communication to all the state energy secretaries, reiterated that the 'must run' status of wind and solar projects be honoured in letter and spirit. The Ministry further said curtailment of such power can be done only for grid safety and security and that too after communicating instructions detailing reasons for curtailment to the generators in writing.

It further reiterated that if any SLDC curtails wind or solar power for any reason other than grid safety or security or as prescribed in respective grid code or regulation, they shall be liable for making good the loss incurred by the wind or solar power generator(s) towards deemed generation, TECA secretary said.

Source: [The Economic Times](#), August 04, 2019

## India News

### India added record 1836 MW of rooftop solar power in last fiscal: Report

State-run oil refiner Indian Oil Corporation Ltd (IOCL) will set up a 1 Giga Watt (GW) plant to make batteries used for running electric vehicles (EVs) in partnership with an overseas start-up using a non-lithium ion raw material that is locally available, Chairman IOCL said.

The move fits well with the government's strategy to facilitate the adoption of EVs in the country's energy basket, and cut the fuel import bill. It also supports a key element of the EVs industry — batteries and their recharge.

"If we look at EVs today, we know that it is more efficient, less complex, very advanced and more economical, if you are looking at the car alone. If you club it with batteries and electricity, from where electricity is coming, how you will replace batteries — because battery has a very limited life, how you recycle batteries, then probably, if you also look at the impact on environment, there is a puzzle which is yet to be solved," chairman IOCL said.

India-centric solution

"The lithium-ion battery we see today is not the only answer, or is the best answer. For a country like India, we don't have a single grain of lithium. So, if you are looking at EVs in a very big way, we have to look for something which is indigenously available. We have already tied-up with one company. We are working on a solution which can be manufactured 100 per cent indigenously," he added without elaborating.

According to Indian Oil's director for Research and Development, the planned battery plant will use "chemistries which are India-centric, whose raw material is easily available in this country, whose recycling technology is extremely mature, and whose recycling industry is well established in this country."

He said that it will use "transition group of elements".

"Those elements are known since ages, the natural resources of that particular element in this country is abundantly available, unlike in the case of lithium. For lithium, you have to be depending on imports, and that too from China, because all lithium reserves today are under the possession of China," he added.

Source: [Business line](#), August 28, 2019

## Consumer Focus

### CGRF Case :

The petitioner applied for three-phase agriculture connection for his well, under horticulture scheme, by paying a sum of Rs.25,900 on 20.09.2016. After receiving the application, the utility prepared the working instructions. The field staff did the feasibility survey in the petitioners land for erecting the poles. The neighbouring landowner objected and stopped the work because field staff were using the common path for erecting the poles. The petitioner was asked to arrange a different path to complete the work and informed that if he failed to arrange the path for erecting poles, the application would be treated as rejected. However, the petitioner failed to allocate a separate path for laying the poles, hence the utility declared the application as rejected.

Since the three-phase application was rejected by the utility, he applied for single-phase connection for the same land by paying a sum of Rs.16,920. Following confirmation of the single-phase connection, the petitioner requested the utility to withdraw the three-phase application. During the inspection, TANGEDCO had assured to refund a sum of Rs.22,100, after deducting the miscellaneous costs incurred during the survey for the erection of poles, submitted for the three-phase connection. The utility also issued an acknowledgement receipt for Rs.22,100. However, despite several follow-ups, the utility did not refund the amount. Hence the petitioner approached the Consumer Grievance Redressal Forum for redress.

On hearing both the parties, The Forum ordered the utility to pay the amount either through cheque or money order within 10 days from the date of receipt of the Order.

## ECC VOICE

கடந்த மாதம் பலத்த காற்றுடன் பெய்த மழையின் பொழுது திருவண்ணாமலை, பாளையம் கிராமத்தில் உள்ள விவசாய நிலத்தில் இருந்த மின் கம்பங்கள் கீழே விழுந்து உடைந்தன. இதனால் மின் இணைப்பு துண்டிக்கப்பட்டது. மின் இணைப்பினை சரி செய்து தருமாறு பாளையம் கிராமத்தை சேர்ந்த திருமதி. M. சுசீலா, ஆரணியில் உள்ள உதவி செயற்பொறியாளரிடம் விண்ணப்பம் ஒன்றினை சமர்ப்பித்தார். அவர் விண்ணப்பத்தினை பெற்று கொண்டு இரு தினங்களில் மின் இணைப்பினை சரி செய்து தருமாறு ஒப்புக் கொண்டார்.

ஒரு வாரத்திற்கு பிறகு உடைந்த மற்றும் சாய்ந்த மின் கம்பங்கள் சரி செய்யப்பட்டது. ஆனால், மின் இணைப்பு தரப்படவில்லை. இதனால், பயிர்களுக்கு நீர்ப்பாசனம் செய்ய முடியாமல் பயிர்கள் அனைத்தும் தண்ணீர் இல்லாமல் வாடி விட்டது.

திருவண்ணாமலை மின் நுகர்வோர் மையம் நடத்திய விழிப்புணர்வு கூட்டத்தில் திருமதி. சுசீலா கலந்து கொண்டு தனது பிரச்சனையை கூறினார். திருமதி. சுசீலா, மின் நுகர்வோர் மையத்தின் ஆலோசகர் திரு. ஆனந்தன் அவர்களின் அறிவுரைப்படி, AE/R/W/Arani அவர்களுக்கு விண்ணப்பக் கடிதத்தினை அனுப்பினார். அதன் பிறகு உதவி செயற்பொறியாளரை திரு. ஆனந்தன் அவர்கள் தொலைபேசி மூலம் தொடர்பு கொண்டு தகுந்த நடவடிக்கையினை கால தாமதமின்றி உடனடியாக எடுக்குமாறு கேட்டுக்கொண்டார்.

இரண்டு நாட்கள் கழித்து உதவி செயற்பொறியாளரின் உத்தரவின் பேரில் மின் கம்பங்களுக்கு இணைப்பு தரப்பட்டது என்று திருமதி. சுசீலா தனது நன்றியினை மின் நுகர்வோர் மையத்திற்கு தெரிவித்தார்.

**Citizen consumer and civic Action Group (CAG)**  
New #246 (Old #277B),  
TTK Road (J.J. Road ),  
Alwarpet, Chennai 600 018  
INDIA

Phone: 91-44-24660387  
Telefax: 044-24994458  
Email: [ecc@cag.org.in](mailto:ecc@cag.org.in)

[www.cag.org.in](http://www.cag.org.in)

#### Initiative of



*Citizen consumer and civic Action Group (CAG) is a non-profit, non-political and professional organization that works towards protecting citizen's rights in consumer and environmental issues and promoting good governance processes including transparency, accountability and participatory decision making.*

#### Editorial Team

K. Vishnu Mohan Rao

Balaji M K

Bharath Ram G N

Jeya Kumar R

Pavithra R

## World News

### Canada's 'largest' solar project gets green light for construction

A 400-megawatt Canadian solar facility, expected to be the largest operating solar energy project in the country, is a step closer after the Alberta Utilities Commission granted approval for its construction and operation. In an announcement, Greengate Power said construction on the Travers Solar project would start in 2020, with commercial operations slated for 2021.

Greengate said the photovoltaic facility could supply electricity to over 100,000 homes. The site of the project is in Vulcan County, Alberta. Photovoltaic refers to the process of directly converting light from the sun into electricity. "We are very pleased to have received approval for what we expect will be Canada's largest solar energy project and one of the largest in the world," Greengate CEO said in a statement.

At 400 MW, the Travers Solar project would be toward the upper end of solar PV plants. In North America, other large-scale PV plants include the 550 MW Topaz Solar Farms project and the 586 MW Solar Star Projects facility, which are both located in California. "We anticipate that Travers Solar will bring significant investment, employment and clean renewable energy to Alberta while strengthening the province's position as a global energy and environmental leader," Greengate CEO added.

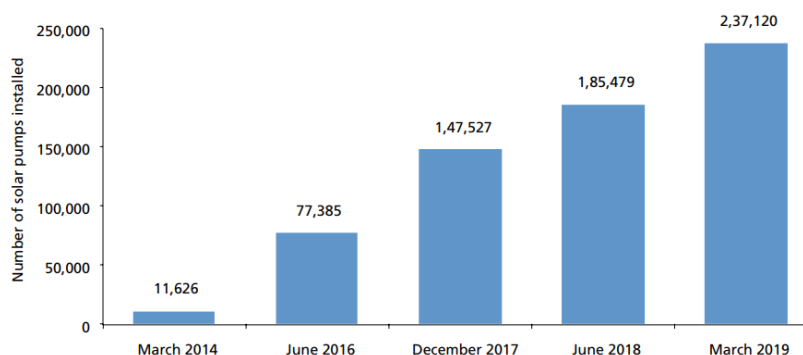
Solar photovoltaic capacity in Canada stood at 3,040 MW in 2018, with most of it based in Ontario, according to Natural Resources Canada. At the moment, the country's biggest PV farms include the Sol-Luce Kingston facility and Grand Renewable Energy Park, which both have a capacity of 100 MW. By contrast, the country's hydroelectricity capacity was 80,764 MW in 2017

Source: [CNBC](http://CNBC), August 28, 2019

## Publications / Regulations

- Are solar pumps a panacea for irrigation, farmer distress and discom losses? [CSE](http://CSE), August 2019
- Operational guidelines for implementation of phase- II of grid-connected rooftop solar programme for achieving cumulative capacity of 40,000 MW from rooftop solar by 2022. [MNRE](http://MNRE), August 2019

### Number of solar pumps installed in India



Source: [Centre for Science and Environment](http://Centre for Science and Environment)