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## Energy Conservation Building Code for Residential Buildings (Part-5)

This issue is in continuation of the [previous](#) part which explains the thermal/heat transmittance standards to be considered for energy efficient building design.

### Thermal transmittance of building envelope (except roof) for cold climate ([U<sub>envelope,cold</sub>](#))

In cold climatic areas, the building envelope should be planned in such a way that warm air is restricted from escaping the building, and cold air from outside is prevented from entering it. This will make the temperature inside the built environment warmer and therefore, more comfortable.

Limiting the transmittance of both warm and cold air by making use of the structures - walls, foundation, windows and doors improve thermal comfort in cold climates is an effective passive strategy to reduce the building's energy consumption.

Excess cold air entry into the construction can be prevented by the incorporation of [designs](#) like:

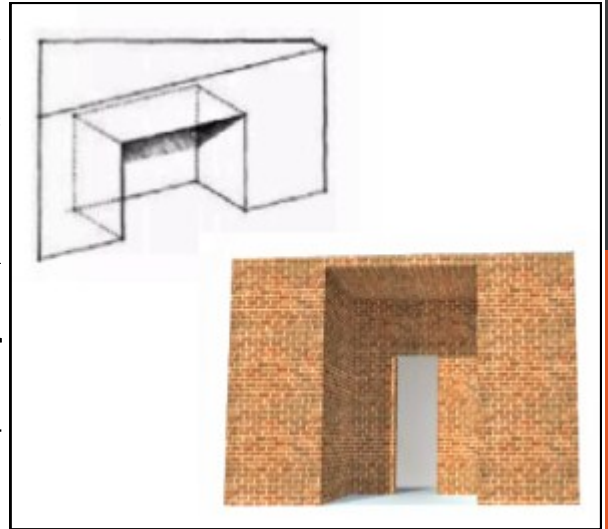
- air-tight construction with no unintended gaps in the building envelope to allow air leaks,
- covered entrances and open spaces, and
- recessed entryways (built in the part of a wall further back from the rest).

### Residential Envelope Transmittance Value ([RETV](#)) for building envelope (except roof) for four climate zones (Composite Climate, Hot-Dry Climate, Warm-Humid Climate, and Temperate Climate)

The residential/building envelope is sometimes termed the '[skin](#) of a building'. Its key function is to protect the interiors from entry and building up of external heat in climatic conditions dominated by higher temperatures. Limiting the residential envelope's transmittance helps reduce heat gain, improves thermal comfort and reduces the electricity required for cooling.

According to [Eco Niwas Samhita 2018](#), the residential envelope's transmittance value(RETV) characterizes the thermal performance of the building envelope (except the roof). Ventilation designs, like [shaded](#) windows, reduce solar exposure on the building envelope and utilise wind flow to evacuate internal heat. Such passive construction strategies can bring about optimal RETV and thermal comfort in hot, dry and humid climates.

'The buildings and construction sector is not on track to achieve decarbonization by 2050' [warns](#) the UN. Accelerating population growth implies more residential infrastructure constructions and thus more resultant CO<sub>2</sub> emissions. To tackle this, building green and resilient buildings must become institutionalised, instead of constructing energy inefficient structures and then spending resources fixing them to become energy efficient.



Recessed entryway - to restrict cold air entrance / [slideshare](#)

**(Concluded)**

## Simple measures for Electricity consumers to participate in the circular economy - Do It Yourself series (Part -1)

The circular economy is an economic system that focuses on eliminating waste and promoting the continuous use of resources. In a circular economy, products and materials are reused, repaired, or recycled to help extend their lifespan. This system aims to minimize the consumption of natural resources and reduce the environmental impact of production and consumption.

In a traditional [linear economy](#), materials are extracted, processed, used, and discarded with no thought given to future use or recycling or end of life measures, resulting in deficient use of resources, typically non-renewable resources, enlarged carbon footprints and subsequent effects on the ecosystem. Transitioning to a circular economy, on the other hand, can significantly reduce the carbon footprint of a product, right through its lifespan, and mitigate its effects on climate change.

The transition to a circular economy requires collective action and collaboration among stakeholders such as businesses, governments, and the end consumers. It employs a set of principles which include the concepts of **Reduce, Redesign, Reuse, Repair, Repurpose, Recycle and Recover** - to tackle the issue of waste management.

Thus, apart from being better for the ecosystem, it is also better for economies as it creates new livelihood opportunities by promoting job growth within industries related to resource recovery and recycling. In addition, a well-designed circular economy can result in cost savings and increased efficiency throughout the supply chain.

### Circular economy in the energy sector:

The circular economy is [pivotal](#) if we are to overcome the current energy crisis. In the energy sector, to scale up the actions towards the accomplishment of set net-zero targets, the R's of circular economy can be applied to minimize energy waste, optimize resource use, and mitigate the environmental impact of energy production and consumption.

**Reduce** refers to reducing unnecessary energy consumption, achieved by employing energy-efficient technologies, processes, designs and habitual changes.

**Redesign** refers to designing sustainable products that are not resource heavy, resulting in more sustainable use of resources.

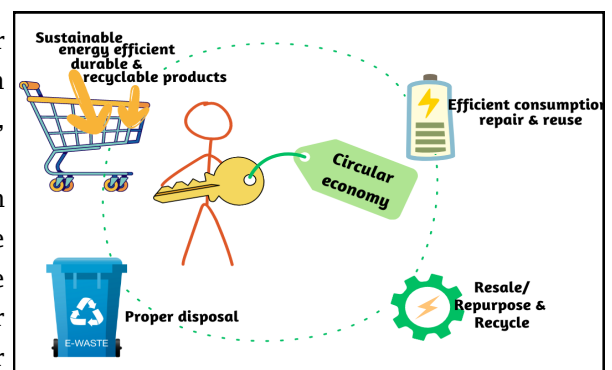
**Reuse and Repurpose** involves using old appliances again or finding new uses for those appliances. The byproducts which are generated from the production process can be reused, rather than discarded.

**Repair and Refurbishment** are essential aspects based on which the products must be manufactured/designed in the circular economy. The central objective behind these processes is the restoration of any faulty appliances or components back to good working condition by fixing their faults, defects or damages.

**Recycle and Recovery** involve the recovery of useful materials from waste, such as metals, plastics, and biomass, for use in new energy products or other sectors.

### Role of consumers in the circular economy:

Consumer choices play an [important role](#) in the circular economy from the point of purchase of a product until the end of its useful life. To reduce carbon emissions and conserve natural resources, [conscious](#) purchase of energy appliances and products that are sustainable, energy efficient, durable, recyclable and repairable can go a long way. More than this, every consumer must think twice before buying any new products, and make purchases if and only when necessary. This is because overconsumption results in more emissions, pollution and the accumulation of electronic and the associated solid wastes.



Consumers' role in the circular economy

*(To be continued)*

## Contracted Demand vs Excess Demand Charges

As an electricity consumer, we are aware of paying [electricity bills](#) for the energy consumed. Are we aware that the distribution licensee collects penalties for drawing power over contracted demand? This editorial is for small commercial establishments such as shops, small offices and small business units. This editorial will explain the basics of connected load, contracted demand or sanctioned load and penalty charges in detail.

**What is a connected Load?** [Connected load](#) refers to the total electrical capacity needed to power all the devices and appliances in a building. The appliances may be lights, fans, air conditioners, computers, refrigerators etc. When an electrical device is turned on, it draws a certain amount of power from the grid. In general terms, how much power an appliance draws is rated in wattages (W). By summing all the wattages of the devices installed in a building, we can easily calculate the maximum amount of power required from the grid. In general the connected load is measured in kilowatts (kW). For example if a consumer applies for a new service application under a commercial category, the consumer should submit the list of appliances and its connected load details with the application. The table is an example:

Appliances	Number	Watts	Total (W)	W	kW
Bulb	2	40	2*40 = 80	80	0.08
Tube Lights	2	60	2*60=120	120	0.12
Fans	2	75	2*75=150	150	0.15
Computer	2	100	2*100=200	200	0.2
Air cooler	1	300	1*600=600	600	0.6
Air conditioner	1	1500	1*1500=1500	1500	1.5
Total					2.65

Based on the devices installed in the shop, the connected load is 2.65kW. If the shop utilises all the devices at the same and the electrical load required from the distribution licensee is 2.65 kW (i.e by rounding to 3 kW), the distribution licensee will approve the load for 3 kW. This is called a sanctioned load or contracted demand.

**Why is connected load important for the Consumer and the Utility?** A connected load is the total power drawn by the electrical appliances in a building, and the estimate of which helps the utility to provide the required power supply. Based on the connected load details submitted by the consumers, the utility sanctions or allocates the electricity required for a consumer. This helps the utility to monitor and maintain the voltages, and avoid overloading that could result in circuit fire accidents. The consumer's consumption is monitored by an electronic meter that has the facility to record the time, date, month, year, power factor, consumption units, maximum demand, etc. [Maximum Demand](#) is the maximum power (highest demand) that a consumer is likely to draw from the grid. This helps the utility to know the consumer's maximum demand during the billing period.

[Sanctioned load or contracted demand](#) refers to the agreement between the distribution licensee and the consumer on the maximum electricity load that the consumer can draw at any given time. For example, if the contracted demand is fixed as 3kW for a service connection, the consumer cannot use beyond that. If exceeded, the consumer is charged a penalty called an excess demand charge. Excess demand charges are collected from the consumer at the rate specified in Clause 5(2) in the [Tamil Nadu Electricity Supply Code, 2004](#).

**Excess Demand Charges:** If a consumer draws power from the utility's grid above the contracted demand, the consumer is liable to pay the [excess demand charge](#). For example, if a consumer has added one more air conditioner rated at 2000 watts at any point during the billing period, the maximum demand will be recorded as 5 kW against a contracted demand of 3 kW. Therefore, the consumer will be levied an excess demand charge in the bill for the excess demand of 2 kW. The excess demand charges will be calculated for every kW in excess of the contracted demand at the rate of 1% of the total energy charges.

**Why is a consumer liable to pay excess demand charges?** With time, consumers are likely to add appliances or devices, undertake alterations to a building etc. These changes can increase power loads or connected load over the contracted demand. The consumer may not even be aware of, but this will result in extra resource use by the utility to provide this supply. This leads to the utility levying additional charges for exceeding the demand. In order to avoid this, the consumer should take steps to submit a requisition for additional supply (load) before entering into such activities.

**(Concluded)**

## Tamil Nadu News

### No hike in power tariff for domestic consumers in Tamil Nadu

Power tariff in Tamil Nadu will remain the same for domestic consumers but will go up by 2.18% for other categories from July 1. The state government will pick up the tab for domestic consumers by compensating the Tamil Nadu Electricity Generation and Distribution Corporation (Tangedco). But domestic consumers will have to pay a bit more for the common area connections, which will now be charged 8.17 per unit against the earlier 8. "This is a marginal increase compared to other states; consumers who paid 100 will pay 102," said Tangedco officials. The 2.28% tariff hike will be applicable for fixed and demand charges too in other categories such as commercial and high-tension connections. As earlier, domestic connections get the first 100 units for free and the second 100 units with 50% subsidy if the bi-monthly consumption does not exceed 500 units. In connections under the I-A category, the first 400 units are charged '4.5 per unit, after which the per unit rate increases for every 100 units. The Tamil Nadu Electricity Regulatory Commission (TNERC) is likely to issue a revised tariff order in the last week of June. "We just have to update the numbers in the software to get consumption charges calculated as per the revised tariff," said officials. The TNERC announced a multi-year tariff formula last year for an automatic increase in electricity tariff based on consumer price inflation comparing the consumer price index of the present year with that of the corresponding month last year. While the cap was 6%, Tangedco initially arrived at 4.7% comparing the price indices of April 2022 and 2023.

Source : [TOI](#), June 09, 2023

## India News

### Rajasthan, Gujarat and Tamil Nadu emerge Top Achievers in Wind Energy Adoption

The Ministry of New and Renewable Energy, Government of India joined the worldwide celebrations of 15th June as Global Wind Day, through the organization of a day-long event in New Delhi today, 15th June, 2023. Held with an intent to celebrate the success so far and discuss the potential ways forward for accelerating wind energy adoption in India, the event had the central theme of "Pawan - Urja: Powering the Future of India". The celebration featured in-depth discussions on Wind Energy Progress in India, Offshore Wind development, Strengthening of wind energy manufacturing ecosystem and Green Finance for Wind Energy. Delivering the keynote address, Bhupinder Singh Bhalla emphasized that the Government of India is fully committed to achieve the target of 500 GW renewable energy capacity by the year 2030. He applauded the contribution of all states with wind potential, in the development of wind energy sector. The Secretary congratulated the states of Rajasthan, Gujarat and Tamil Nadu for their achievements during the financial year 2022-'23. Rajasthan was felicitated for achieving the highest wind capacity addition, Gujarat for achieving the highest wind capacity addition through open access and Tamil Nadu for initiating repowering of wind turbines. The event also witnessed the launch of Wind Atlas at 150 meter above ground level, prepared by National Institute of Wind Energy (NIWE). The onshore wind potential of the country is now estimated at 1,164 GW at 150 meter above ground level.

The event had the active participation of central and state government authorities, wind turbine manufacturers and developers, international and domestic financial institutions, Central Public Sector Enterprises, academia, think-tanks, and other key stakeholders. The celebration was organized in collaboration with the National Institute of Wind Energy, Shakti Sustainable Energy Foundation, Indian Wind Turbine Manufacturers Association, Indian Wind Power Association, and Wind Independent Power Producers Association. India has made great strides in the generation of wind energy over the years, and it now ranks fourth in wind power capacity in the world. Wind energy is crucial to India's efforts to achieve its goal of having 50% of its electric power installed capacity from non-fossil fuel-based energy resources by 2030 and to achieve Net Zero by 2070. India has significant potential for both onshore and offshore wind energy production. With the continuous efforts from the government, the country has developed around 15 GW of domestic wind manufacturing capacity, making it Aatma Nirbhar.

Source: [PIB](#), June 15, 2023

# Consumer Focus

## Ombudsman Case

The appellant (consumer) inherited land from his late father. When he applied for a name transfer, the respondent (utility) staff stated that his service details were not available on the website. In order to rectify this, the appellant applied for updating of his service connection details on the Low Tension billing software/Tamil Nadu Generation and Distribution Company Limited (TANGEDCO) website, on 25.07.2022. Shortly after, he also applied for name transfer and shifting of the connection.

The Assistant Engineer (AE) upon inspection of office records, discovered that the service connection in question was found in a different survey number. This number was not supported by the document submitted along with the application. Therefore, the respondent served the appellant a letter on 27.03.2023 requesting him to submit necessary certificates to determine the correct survey numbers according to the date of sanction of the service connection.

The appellant argued that this letter was served after an undue delay of 8 months, despite many reminders on WhatsApp, mobile calls and e-mails to the respondent office members, ministers, etc on different dates.

The appellant on 20.02.2023 registered an online complaint to the concerned Consumers Grievances Redressal Forum (CGRF). The Chairman of the CGRF passed an order on 20.04.2023 directing the appellant to produce the certificate showing the survey number and name under which the land was registered, obtaining this from their concerned Village Administrative Officer (VAO). The order stated that upon verification of revenue records, action would be initiated to update the data.

The appellant was aggrieved by this order and hence complained further to the Ombudsman. The appellant argued that the respondent had so far not attempted to inspect the premises in question. The appellant also stated that it is the responsibility of the respondent to check land records and update accordingly; he prayed that action be taken against the assistant Engineer for failing to check the land records and update the same for his service connection.

The respondent argued that the survey number given in the application did not match the land records, and hence they could not update it. The respondent also submitted that they reached out to the Village Administrative Officer for proof regarding ownership of the submitted survey number, and it was discovered that the land fell under the railway poramboke land (Government owned land). Finally, the respondent submitted that once the required documents were provided, on approval of these, the verified connection number would be uploaded in the portal.

The Ombudsman observed that at the time of the Ombudsman's order, the details had already been reviewed and uploaded on the website. The Ombudsman also noted that matters concerning employee disciplinary action and similar issues were not within the jurisdiction of the Ombudsman, as specified in the [Regulations for Consumer Grievance Redressal Forum and Electricity Ombudsman](#).

Considering the facts of the case, arguments put forth, and the statutes relied upon, the Ombudsman passed the following order:

- The appeal is rejected since the details have been uploaded on the website
- Ombudsman cannot take any disciplinary action against the employees

Source: **Ombudsman Case**, [TNERC](#)

**Note:** Consumers have to verify and make sure that their land survey number, service connection number, etc are entered correctly while making an application.



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*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.*

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## World News

### Governments are continuing to push investment into clean energy

The amount of money allocated by governments to support clean energy investment since 2020 has risen to USD 1.34 trillion, according to the latest update of the IEA's Government Energy Spending Tracker. Around USD 130 billion of new spending was announced in the last six months - among the slowest periods for new allocations since the start of the Covid-19 pandemic.

This slowdown may be short-lived, however, as a number of additional policy packages are being considered in Australia, Brazil, Canada, the European Union and Japan. Already, government spending is playing a central role in the rapid growth of clean energy investment and expanding clean technology supply chains, and is set to drive both to new heights in the years ahead. Notably, direct incentives for manufacturers aimed at bolstering domestic manufacturing of clean energy technologies now total around USD 90 billion.

At the same time, governments continue to increase spending on managing the immediate energy price shocks for consumers. Since the start of the global energy crisis in early 2022, governments have allocated USD 900 billion to short-term consumer affordability measures in addition to pre-existing support programmes and subsidies. Around 30% of this affordability spending has been announced in the past six months.

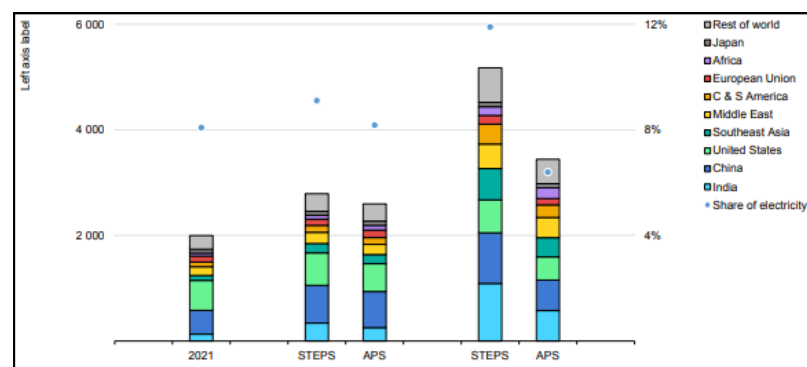
Early numbers for 2023 show that wholesale energy prices are easing. However, retail prices are unlikely to fall as quickly. High prices are already making clean energy technologies more cost competitive, notably electric vehicles and heat pumps, which saw record sales in 2022. As high prices persist, the uptake of clean energy technologies is set to accelerate further, hastening the emergence of the new energy economy.

**Source:** [IEA](#), June 02, 2023

### Publications / Regulations

- Government Energy Spending Tracker, formerly the Sustainable Recovery Tracker, June 2023, [IEA](#)
- World Energy Transitions Outlook 2023: 1.5°C Pathway, June 2023, [IRENA](#)
- Unlocking Smart Grid Opportunities in Emerging Markets and Developing Economies, June 2023, [IEA](#)
- National Energy Data: Survey and Analysis Year 2021-22, June 2023, [BEE](#)
- Electricity (Rights of Consumers) Amendment Rules, 2023, June, [MoP](#)

### Space cooling demand by region in the Stated Policies Scenario (STEPS) and Announced Policies Scenario (APS) By 2030 and 2050



**Source:** [IEA](#)