KARNATAKA ELECTRICITY REGULATORY COMMISSION

No. 16 C-1, Miller Tank Bed Area, Vasanth Nagar, Bengaluru- 560 052.

NOTIFICATION (DRAFT)

KERC/DF/DSM/2025-26/1010, Dated: 13.10.2025.

Draft Karnataka Electricity Regulatory Commission [Framework for Demand Flexibility (DF) / Demand Side Management (DSM)] Regulations, 2025.

Preamble:

Demand-Side Management (DSM) is a critical component of Energy Efficiency and an essential tool for managing energy consumption on the demand side. DSM enables Distribution Licensees to manage peak energy demand, reduce energy consumption during high-demand periods, and shift energy usage to off-peak hours. DSM programs can be implemented by Distribution Licensees and can be voluntary or mandatory for consumers. From a consumer's perspective, DSM can help reduce energy bills, increase energy efficiency, and improve the overall reliability of the energy system.

The Energy efficiency (EE) has been assessed through integrated resource planning processes. Thus, by considering this and to enable Distribution Licensees to achieve the above said goals the Commission had notified **KERC [Demand Side Management] Regulations, 2015** on 31.07.2015 with an aim to mitigate peak and energy shortages by conservation and more efficient use of electricity, reduce greenhouse gas emissions and conserve scarce conventional energy resources.

Further, the Commission had notified **Framework for Resource Adequacy (FRA) Regulations, 2024** on 24.09.2024. As per the provisions of Regulations 6.8, 6.9, 6.10, 9.3 (a) & (h) of these Regulations, the ESCOMs are mandated to adopt energy efficiency measures, energy savings and conservation interventions while formulating efficient Resource Adequacy framework considering the Demand Side Management and demand flexibility for minimizing the system costs.

The Demand Flexibility (DF)- a dynamic and data-driven approach empowers the ESCOMs to become active participants in the energy market, strategically adjusting their energy use based on real-time factors like grid conditions, dynamic pricing structures and also to quantitatively forecast the permanent load-shapes that impact Demand Forecast measures for accurate Resource Adequacy planning.

The DF/DSM programs are cost-effective way to reduce energy consumption and improve the efficiency of the energy system. By managing demand on the grid, greenhouse gas emissions can avoid the need for expensive infrastructure upgrades and improve system reliability. These programmes work best for different types of consumers and different regions with varying energy needs. The consumers are benefitted from these programs through reduced energy bills and improved energy efficiency.

The Tariff Policy and the National Electricity Policy cited under section 61 and 66 of EA 2003 enable the Commission to consider the guiding principles in respect of the above measures framed thereon.

The Commission, after carefully considering the above facts, has decided to publish **Draft Karnataka Electricity Regulatory Commission [Framework for Demand flexibility /Demand Side Management] Regulations, 2025** to invite comments / views / suggestions / objections from the stakeholders, general public and interested persons.

The Stakeholders and interested persons may file their comments / views / suggestions / objections, if any, on the said Regulations, by 14.11.2025, before the Secretary, KERC, # 16C-1, Millers Tank Bed Area, Vasanth Nagar, Bengaluru 560 052.

NOTIFICATION (DRAFT)

In exercise of the powers conferred under Section 181(2) (zp) of the Electricity Act, 2003 (36 of 2003) read with sections 3, 61, 66, 86 and all other powers enabling in this behalf, the Karnataka Electricity Regulatory Commission hereby makes the following Regulations, namely:

1. Short Title, extent and Commencement-

(1) These Regulations may be called the **"KERC (Framework for Demand Flexibility (DF)/Demand Side Management (DSM)) Regulations, 2025."**

(2) These Regulations shall be applicable to all the Distribution Licensees or their successor entities in the State of Karnataka.

(3) These Regulations shall come into effect from the date of notification in the Karnataka Gazette.

2. Definitions-

In these Regulations, unless the context otherwise requires:

1. "**Act**" means the Electricity Act, 2003 (36 of 2003) as amended from time to time;

2. **"Aggregator**" is an entity registered with the Distribution Licensee to provide aggregation of one or more of the services like demand response services under the demand flexibility mechanism, Distributed Generation, Energy Storage etc., within the area of distribution licensee;

3. **"ARR"** means Annual Revenue Requirement;

4. "**Avoided Costs"** "means the incremental costs saved by the distribution licensee when it avoids purchase of power or distribution related costs in existing or new distribution system investment or upgrades because of implementation of DF / DSM programmes"

5. "**Baseline data**" means the data relating to the consumption and/or demand for electricity from any specified class or category of consumers or any distribution area, before a DSM/DF programme begins to provide a starting point for comparison for assessing the program impact;

6. **Bureau**" means the **Bureau of Energy Efficiency (BEE)** established under sub-section (1) of Section 3 of the Energy Conservation Act, 2001 (Central Act 52 of 2001);

7. "**Commission**" means the Karnataka Electricity Regulatory Commission;

8. **"Cost Effectiveness"** means an indicator of the relative performance or economic attractiveness of any investment in DF/DSM programme or when compared to the costs of energy produced and delivered in the absence of such an investment and as stipulated in **Chapter II of these Regulations**;

9. **"Demand Flexibility" or "DF"** means the ability of demand-side loads that can vary consumption patterns hourly or any other timescale, for making electricity more affordable to consumers with the co-benefits of reducing or deferring system costs or an end-use consumption that can increase or decrease as a demand response measure;

10. **"Demand Flexibility Portfolio Obligations" or "DFPO"** means a trajectory of flexible demand that a distribution licensee needs to ensure availability on an annual basis to provide quick ramping-up and ramping-down of the load based on the system requirements, including maximizing renewable energy integration services;

11. **"DF Demand-Side Resource"** means a saving in consumption (kWh) and/or demand (kW/KVA), as a result of implementation of DF / DSM programme (as a single or group of devices at a single or multiple locations), expressed in three important dimensions namely Quantum (kWh and/or kW), Time and Cost;

12. "**Distribution Licensee**" shall have the meaning ascribed thereto in the Act;

13. "**DF / DSM Cell**" means a specific Cell to be set-up by the Distribution Licensee for targeted activities towards implementation of the DF/DSM activities mandated under these Regulations.

14. "**DSM"** means Demand Side Management;

15. **"Energy Efficiency"** means activities or programmes that encourage consumers to reduce energy use by making investments in more efficient equipment or control that reduces energy use while maintaining a comparable level of service as perceived by the consumer;

16. **"Evaluation, Measurement and Verification or EMV"** means activities included under **Chapter III** of these Regulations, which involves evaluation, monitoring, measurement and verification of DF / DSM programmes;

17. **"Independent Verification Agency or IVAs"** are either individuals certified as energy auditors or energy managers or measurement and verification professionals or organisations with individuals certified as energy auditors or energy managers or measurement and verification professionals;

18. **"IPMVP"** means International Performance Measurement & Verification Protocol which provides guidelines that can be used to estimate the savings from the DF/DSM programmes;

19. **"Life"** means an estimate of the median number of years that the DF/ DSM

measures installed and operable under the programme or the warrantied years of service.

20. **"Load Management"** means programmes that reduce or shift peak demand from periods of high-cost electricity to non-peak or low-cost time periods, with a neutral effect or negligible increase in electric use;

21. **"Load Research"** means an activity embracing the measurement and study of the characteristics of electric loads to provide a thorough and reliable knowledge of trends, and general behaviour of the load characteristics of the consumers serviced by the distribution licensee using a variety of metering (including data capture from smart metering systems), surveys, detailed energy audits of consumer-end energy consumption to capture daily, monthly, seasonal and annual usage patterns;

22. **"MYT**" means Multi Year Tariff;
23. "**NPV**" means Net Present Value;
24. "**PCT**" or **Participant Cost Test** measures the quantifiable benefits and costs to a consumer for participating in a DF/DSM programme;
25. "**RIM**" or **Ratepayer Impact Measure** means test which evaluates the impact of the programme implementation and costs on consumers;
26. "**SCT**" or **Societal Cost Test** measures the quantifiable benefits and costs of the DF/DSM programme on society as a whole;
27. "**TRC**" or **Total Resource Cost test** means which measures the total quantifiable benefits and costs of a DF/DSM programme;

Save as aforesaid and unless repugnant to the context or the subject matter otherwise requires, words and expressions used in these regulations and not defined, but defined in the Act, or any other Regulations of this Commission, shall have the same meaning as assigned to them respectively in the Act or any other Regulations.

CHAPTER I: IMPLEMENTATION

3. Basic Principles in Licensee operations:

3.1. Demand Flexibility (DF)/ Demand Side Management (DSM):

Every Distribution Licensee shall adopt DF / DSM in their day- to-day operations, and undertake planning, designing and implementation of appropriate DF / DSM

programmes on a sustained basis that are measurable, replicable and available for smooth grid operations, balancing the supply and demand; and to ensure Resource Adequacy requirements under other Regulations.

The Licensees shall adequately staff the DF / DSM Cell as required for its activity.

3.2. Cost recovery of DF / DSM measures

Distribution Licensees may propose to recover all justifiable costs incurred by them in any DF / DSM related activity, including conducting Load Research (LR), planning, designing, implementing, monitoring and evaluating DF / DSM programmes, under Capital Investment Plan in the MYT filing and Annual reporting.

Provided that for the MYT period FY2025-26 to FY2027-28, the DF/DSM programmes shall be taken up by suitably reappropriating the approved capex, to meet the required targets as set forth in these Regulations and included in the APR proposals.

All such DF / DSM related activities/ programmes undertaken by the Distribution Licensees:

(i) Shall be cost effective for the Distribution Licensees as well as the consumers as stipulated under Chapter II of these Regulations;

(ii) Shall protect the interest of consumers and implemented in an equitable manner;

(iii) Shall result in overall tariff reductions to the consumers;

3.3. Role of Distribution Licensees:

(i) To develop a robust DF / DSM portfolio structure on a rolling basis for the MYT period for the purpose of planning.

(ii) To conduct and submit load research reports duly proposing measures to implement demand flexibility, load management, energy conservation and energy efficiency programmes;

(iii) To submit a report to the Commission:

a. On the impact on energy and demand, together with the cost-benefit analysis as stipulated under **Chapter II** of these Regulations and;

b. On the evaluation, measurement and verification of the implemented programmes stipulated under **Chapter III** of these Regulations;

(iv) Implement specific directions of the Commission.

3.4. DF / DSM Guiding Principles

The duties of the Distribution Licensees shall be as follows:

a) Development of DF / DSM portfolio: Distribution Licensees shall develop a strong portfolio of DF / DSM programmes, on the basis of comprehensive load research, that provide long-term savings and feed into the resource adequacy requirements. The DF / DSM portfolio shall contribute to the integrated resources planning requirements, resource adequacy assessment and provide a market transformation trigger. The DF / DSM programme portfolio shall broadly include the following:

(i) findings of a detailed load research and market research activity including consumers' perspectives and willingness to participate in the DF / DSM initiatives;

(ii) detailed working of the possible DF programmes to be implemented and the DFPO targets that include all components such as DF, energy efficiency and energy conservation measures;

(iii) portfolio and programme-specific cost-effectiveness assessment;

(iv) develop DF and DSM evaluation, measurement and verification procedures;

(v) funds deployment plan to meet the yearly DF targets and other energy efficiency and energy conservation portfolio roll-out on an annual basis.

b) Timelines for submission of DF / DSM portfolio and according approvals: The distribution licensees shall submit a "DF / DSM programme portfolio and implementation action plan" (format in Annexure 1) **along with the MYT Tariff filing**. On an annual basis, the distribution licensees shall submit "Status report on DF / DSM implementation" along with APR proposals for the respective years.

c) DFPO multi-year targets: Distribution Licensees shall adhere to specific demand flexibility portfolio obligations (DFPO) set-up with a following specific trajectory:

Financial Year	DFPO as percentage of peak demand experienced in previous Financial Year
FY 2026-27	0.5%
FY 2027-28	1.0%
FY 2028-29	1.5%
FY 2029-30	2.0%

The targets for subsequent years shall be notified by the Commission from time to time.

d) DFPO incentives and disincentives: Distribution Licensee shall be eligible for an incentive of INR 0.20 Crores for every MW achieved in excess of DFPO. Similarly, Distribution Licensee shall be subjected to a disincentive of INR 0.20 Crores for every MW underachievement of DFPO.

e) DF / DSM portfolio deployment: Distribution Licensees shall implement DF/DSM programmes that add to the portfolio of resource adequacy and those that include demand flexibility to provide quick ramp-up and ramp-down services, reduce peak demand and associated costly power purchase. The Demand Flexibility programmes shall also include Demand Response initiatives involving consumers agreeing to modulate their load shapes. Given the new loads that are now experienced by the Distribution Licensees, programmes proposed and implemented through these Regulations shall include, but not limited to, the following:

a) time-based and selective pumping (based on the cost of energy) in Lift Irrigation Schemes, Municipal Corporations, Urban Local Bodies, drinking water schemes at villages and cluster of villages;
b) smart charging of electric vehicles in the 2-wheeler, 3-wheeler, passenger cars, fleet vehicles, public transportation buses, freight carriers, first-mile and last-mile delivery vehicles;
c) behind-the-meter battery energy storage systems;
d) heat pumps in residential, hospitals, hotels, industries, commercial buildings;
e) thermal energy storage systems in residential, hospitals, hotels, industries, commercial buildings;
f) efficient refrigeration/cold storage programmes;

g) replacement of old/inefficient appliances with efficient appliances at consumer premises;

h) behavioural changes in the end-uses facilitated through awareness programmes that do not need any specific investments.

In addition to the above, specific energy conservation initiatives at the consumers' premises, including domestic consumers, agricultural sector etc., shall be included in the portfolio and shall be funded through the DF/DSM portfolio Capex. The said programs can be implemented by the licensees directly or through the Aggregators appointed by them. Distribution Licensee shall ensure that the Aggregators and the IVAs are separate entities.

f) Public disclosure of the DF / DSM portfolio and review documents: Distribution Licensee shall publish following documents in their websites on an annual basis:

i. Load Research,
ii. appliance use and saturation reports,
iii. DF / DSM programme portfolio and implementation action plan and
iv. Status report on DF / DSM implementation,
v. DF / DSM portfolio evaluation, measurement and verification reports.

4. DF/DSM funding:

Funding of all the DF / DSM portfolio programmes and plans to be implemented by the Distribution Licensees shall be included in the MYT filing. Distribution Licensees shall be allowed to recover all costs subject to prudence check by the Commission based on the cost-effectiveness assessment test included in Chapter II of these Regulations.

The Commission may direct the Distribution Licensees to adopt other complementing DF/DSM funding approaches such as creating a pool of funds through collection of DF-DSM Charge at a later date through tariff; if such an approach is found beneficial.

CHAPTER II: COST-EFFECTIVENESS ASSESSMENT TESTS

The economic-effectiveness of a portfolio is to assess the decision variables, inter alia DF/DSM measure/programme costs and impacts (both energy – kWh and demand – kVA or KW), discount rate, life, escalation rate and avoided cost.

5. Criteria for Cost-effectiveness:

Distribution Licensees shall submit the results of specific Cost-effectiveness Assessment test. Distribution Licensees shall evaluate **Total Resource Cost (TRC)** test as the main hurdle test; followed by the **Ratepayer-Impact Measure (RIM)** test that confirms the fact that programme implementation and costs incurred would not impact the tariffs adversely. The programme screening shall be carried out using the following tests**:**

a) **TRC as the main hurdle test:** All DF / DSM programmes that show positive number for the Net Present Value (NPV) of the Benefits over the NPV of Costs should be considered for evaluation of RIM test;

b) **RIM test:** DF / DSM Programmes that show positive number when NPV of the Benefits over the Costs, the programmes having lower impact on the Ratepayers shall be considered for implementation.

6. Total Resources Cost test:

The main hurdle test shall be carried out by calculating Net Present Value (NPV) of Benefits (B) and Costs (C). NPV for a DF / DSM measure/programme shall be determined as the difference between B and C.

Where,

B = NPV of measure/programme benefits discounted over a specified time period

C = NPV of measure/programme costs discounted over a specified time period

If the measure/programme benefit in year "t" is "B_t", and discounting rate is "r", the time period for discounting is "n" years, then B can be expressed as:

$$B = \sum_{t=1}^{n} [(Bt)/ (1+r)^{t-1}] \quad \text{(equation 1)}$$

Similarly, if the measure/programme cost in year "t" is "C_t", and discounting rate is "r", the time period for discounting is "n" years, then C can be expressed as:

$$C = \sum_{t=1}^{n} [(C_t)/ (1+r)^{t-1}] \quad \text{(equation 2)}$$

Cost elements for the TRC test shall be determined considering the following:

a) The cost of efficient device/equipment/appliance/ technology or practice, including the applicable taxes, duties and levies;

b) Installation, trial and commissioning costs associated with efficient device/equipment / appliance/practice/technology;
c) Yearly operation and maintenance costs over the life of the measure/programme;

a) Old inefficient equipment removal and safe disposal costs (if the DSM measure/programme involves replacement or retrofitting);
b) Programme administration, monitoring and evaluation costs;
c) Programme marketing costs.

Explanation:

If there are any tax credits and grants the same shall be considered as reduction in the cost. Similarly, if there is old equipment/device / appliance / technology etc., that is being replaced; the salvage value of this old equipment or device shall be considered as a reduction in the cost.

Benefits of a DF / DSM programme or a DF / DSM measure are the savings in the energy (kWh) consumed and/or savings in the demand (kW). The kWh savings shall be calculated based on the number of hours the energy efficient appliance/equipment is used and number of days in a year the appliance/equipment is used. These savings usually occur at the point of use and are experienced by the consumer installing a DF / DSM measure or consumer participating in a DF / DSM programme. To arrive at the avoided purchase of power by the licensee, the participant savings at the point of use have to be suitably adjusted to account for system transmission and distribution losses; as well as value of Grid-connected Distributed Solar PV Systems.

Thus, if **ΔS** is savings at point of use in year "t" are ΔSt expressed in kWh, and if transmission and distribution losses expressed as percentage in the same year are TL_t and DL_t, respectively, the Avoided Purchase of Power in year "t" (APPt) by the licensee would be: = $\Delta St/[(1-TL_t) \times (1-DL_t)]$.

If rate of power purchase in year "t" is R_t, then Avoided Power Purchase Cost ($APPC_t$) in year "t" would be: = $APP_t \times R_t$

Any reduction in "intra-state transmission charges", as a result of reduction in the average co-incident peak demand of the licensee shall be considered a "benefit" under this test.

While calculating energy and demand savings as benefits, year-on-year escalation rate of 5% should be considered. Tests should consider a discount rate equal to Weighted Average Cost of Capital (WACC).

Both benefits and costs shall be calculated over the "Life" of the technology being deployed. Distribution Licensee shall use the "warrantied" life of the retrofit by the technology provider as it is important to ensure that the savings considered are realized over the life-span of the equipment/appliances.

7. Ratepayer Impact Measure test:

(i) Cost elements mentioned below shall be considered for evaluation:

a) The cost of efficient device/equipment/appliance/ technology or practice, including the applicable taxes, duties, levies, etc., paid for by the licensee or to the extent paid for by the licensee;

b) Installation, trial and commissioning costs associated with efficient device/equipment/appliance/practice/technology paid for by the licensee or to the extent paid for by the licensee;

c) Yearly operation and maintenance costs over the life of the measure/programme paid for by the licensee or to the extent paid for by the licensee;

d) Old inefficient equipment removal and safe disposal costs (if the DSM programme involves replacement or retrofitting) paid for by the licensee or to the extent paid for by the licensee;

e) Programme administration, monitoring and evaluation costs paid for by the licensee or to the extent paid for by the licensee;

f) Programme marketing costs, including incentives, if any, paid for by the licensee or to the extent paid for by the licensee;

g) Decrease in licensee revenues due to the DSM programme;

(ii) Benefits of the DSM programme shall be calculated as "**Avoided Cost of Power Purchase"**. If savings due to a DSM programme/measure at point of use in year "t" are ΔSt, and if transmission and distribution losses in the same year are TL_t and DL_t, expressed as a percentage respectively, the Avoided purchase of

power in year "t" (APPt) by the licensee would be:

$= \Delta S_t/[(1-TL_t) \times (1-DL_t)]$

If rate of power purchase in year "t", is R_t, then avoided power purchase cost ($APPC_t$) in year "t" would be: = $\mathbf{APP_t \times R_t}$

(iii) While calculating energy and demand savings as benefits, year-on-year escalation rate of 5% should be considered;

Note: Tests should consider a discount rate of WACC.

(iv) Both benefits and costs shall be calculated over the "Life" of the technology;

(v) Distribution Licensee shall use the "warrantied" life of the retrofit by the technology provider, as it is important to ensure that the savings considered are realized over the life-span of the equipment/appliance.

8. Distribution Licensees shall also submit results of two more test – Participants Cost Test (PCT) and Societal Cost Test (SCT); though these are not considered in the decision-making. Methods for carrying out the PCT and SCT are provided in Annexure 2 to these Regulations.

9. Values of key inputs used in the tests:

The default input values to be considered by all Distribution Licensees in the State, shall be as follows:

a) **Avoided cost of power purchase** for TRC, RIM and PCT – Weighted Average of Highest Marginal Cost of Power Purchase related to top 10% of energy use stack for the past one year.

b) Avoided cost of power purchase for SCT – Rs. 10/kWh (prevalent ceiling rate for Day ahead market set by CERC, revised from time to time but as valid at the time of submission of the DF/DSM portfolio)

The Commission may, by order, revise the above values annually, if necessary.

CHAPTER III: EVALUATION, MEASUREMENT AND VERIFICATION

10. DSM Evaluation, Measurement & Verification Guiding Principles

Three basic types of evaluations covered under these Regulations include:

a) **Impact evaluation:** that determines the impacts (e.g., energy and demand savings) and co-benefits (e.g., avoided emissions, health benefits, job creation, energy security, transmission/distribution benefits, and water