KARNATAKA ELECTRICITY REGULATORY COMMISSION

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

NOTIFICATION

KERC/DF/DSM/2025-26/1719, Dated: 10.03.2026.

Karnataka Electricity Regulatory Commission [Framework for Demand Flexibility (DF) / Demand Side Management (DSM)] Regulations, 2026.

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 demand, reduce energy consumption during high-demand periods, and shift 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 Distribution licensees 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 Distribution licensees 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 greenhouse gas emissions and also to improve the efficiency of the energy system. By managing demand on the grid, distribution licensees 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 National Electricity Policy and Tariff Policy along with provisions 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 had issued **Draft Karnataka Electricity Regulatory Commission [Framework for Demand flexibility /Demand Side Management] Regulations, 2025** inviting comments from stakeholders and also held Public Hearing in the matter on 19.12.2025. The Commission has considered the views/comments/suggestions received from the stakeholders.

As per 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 Regulations, namely **Karnataka Electricity Regulatory Commission [Framework for Demand flexibility /Demand Side Management] Regulations, 2026**.

Order

After considering the views/ objections/ comments/ suggestions of the stakeholders on the draft regulations, the Commission hereby approves the **Karnataka Electricity Regulatory Commission [Framework for Demand flexibility /Demand Side Management] Regulations, 2026.**

Sd/-	**Sd/-**	**Sd/-**
(P. RAVI KUMAR)	**(H.K. JAGADEESH)**	**(JAWAID AKHTAR)**
CHAIRMAN	**MEMBER (LEGAL)**	**MEMBER**

KARNATAKA ELECTRICITY REGULATORY COMMISSION

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NOTIFICATION

KERC/DF/DSM/2025-26/1719, Dated: 10.03.2026.

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 i.e., " **Karnataka Electricity Regulatory Commission (Framework for Demand Flexibility (DF)/Demand Side Management (DSM)) Regulations, 2026**.

1. Short Title, extent and Commencement-

(1) These Regulations may be called the **"Karnataka Electricity Regulatory Commission (Framework for Demand Flexibility (DF)/Demand Side Management (DSM)) Regulations, 2026."**

(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 services, like demand response, 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 in any distribution area, before a DSM/DF programme or event is initiated so as to provide a starting point for assessing impact of the said program;

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 demand response measure of consumers or the ability of consumers to adjust their electricity consumption in response to system signals, such as electricity prices, grid stability and reliability, so that the licensee can manage the electricity demand on various time scales on real time (hourly or seasonal) for reaping the benefits of integrating variable renewable energy, reducing or deferring peak demand, help to provide quick ramping services and or enabling distributed grid support".;

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 energy (kWh) and/or power (kW/kVA) saved or used 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 dimensions namely quantum (kW/kWh) 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. **"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.

19. **"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;

20. **"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;

21. **"MYT**" means Multi Year Tariff;
22. "**NPV**" means Net Present Value;
23. "**PCT**" or **Participant Cost Test** measures the quantifiable benefits and costs to a consumer for participating in a DF/DSM programme;

24. "**RIM**" or **Ratepayer Impact Measure** means test which evaluates the impact of the DF/DSM programme implementation and costs on consumers;
25. "**SCT**" or **Societal Cost Test** measures the quantifiable benefits and costs of the DF/DSM programme on society as a whole;
26. "**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 measures in their day- to-day operations, and undertake DF / DSM potential assessment, 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 Distribution Licensees shall establish the DF / DSM Cell in its jurisdiction. DF/DSM cell shall be responsible for monitoring and reporting the progress of DF/DSM program to the Commission.

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 (Annual Performance Review) 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 for 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 appropriate measures for implementing relevant programs such as demand flexibility, demand response programmes, 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 filing**. On an annual basis, the distribution licensees shall submit "Status report on DF / DSM implementation" along with APR (Annual Performance Review) proposals for the respective years.

c) DFPO multi-year targets: Distribution Licensees shall adhere to specific demand flexibility portfolio obligations (DFPO) 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%

Note: "As the Commission had already issued the MYT Orders for the period FY26 to FY28, above specified targets for FY 27 and FY28 shall remain the same. However, for the years subsequent to FY28, targets may be appropriately revised if necessary based on the proposals submitted by Distribution licensees".

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 (EV) 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.
i) heavy load appliances in the residential and commercial sectors, like air conditioners.

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 has to propose DF/DSM programme based on load research and action plan in every MYT period and publish the following documents in their websites.

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.

Distribution Licensee shall publish evaluation reports and status implementation reports on an annual basis.

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;

d) Old inefficient equipment removal and safe disposal costs (if the DSM measure/programme involves replacement or retrofitting);
e) Programme administration, monitoring and evaluation costs;
f) 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: = $\mathbf{\Delta St/[(1-TL_t) \times (1-DL_t)]}$.

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 savings) that directly result from a programme. Impact evaluations support cost-effectiveness analysis aimed at identifying relative programme costs and benefits.

b) **Process evaluation** that assesses programme delivery, from design to implementation, in order to identify bottlenecks, efficiencies, constraints, and potential improvements. Timelines in identifying opportunities for improvement is essential.

c) **Market effects evaluation** that estimates a programme's influence on encouraging future DF/DSM projects because of changes in the energy market place.

Entire **Evaluation, Measurement & Verification** (**EMV**) process for all the demand flexibility and demand side management projects and programmes shall be managed in a transparent manner using online and real-time assessment tools wherever feasible. The Distribution Licensees shall empanel Independent Verification Agencies (IVAs), who are either individuals or organizations with expertise defined under these Regulations. The Commission may choose to have an IVA to evaluate the programmes directly as well on a case-to-case basis if it chooses to do so.

11. Impact Evaluation:

The impact evaluation expressed as gross energy/demand savings and the demand flexibility created shall be determined by comparing energy use and demand after a DF / DSM programme is implemented (i.e. the reporting period) with the energy use and demand if the programme has not been implemented (i.e. the baseline). The estimated savings shall be determined by the following equation:

Estimated savings = (baseline use) – (reporting period use) ± (appropriate adjustments)

The impact evaluation shall primarily be carried out using either of the three approaches:

a) Measurement & verification approach;
b) Deemed savings approach; and
c) Large-scale data analysis.

11.1 Measurement & verification approach

The Distribution Licensees shall be responsible for measurement & verification methodologies to workout savings. **The distribution licensee should propose the evaluation process that complies with the BEE guidelines/any other Indian standards at the approval stage of the new demand side management**

programmes. If the distribution licensees wish to propose any other suitable methodologies, the portfolio and programmes should include those explicitly with justifications thereto.

11.2 Deemed savings approach:

Deemed savings (also referred to as "stipulated" savings) shall be reported on the basis of historical savings values of typical DSM projects. Sources of deemed savings values must be documented in the evaluation plan.

The deemed savings determined for a sample of projects shall be applied to all the projects in the DSM programme to estimate the programme-level savings. The deemed savings approach shall be recommended by the distribution licensee for DSM programmes that are repeated and have fixed operating conditions (e.g. operating hours) and well-substantiated savings values (e.g. energy consumption patterns). Distribution licensees shall propose this approach when well documented and systematically validated sources, such as historical evaluations, are available for certain types of technologies.

11.3 Large-scale data analysis:

In case of established homogeneous energy use patterns and implementation of programmes in such categories, the savings evaluation can be carried out using time-series comparisons of energy use before and after the implementation of demand side management programmes. The other approach shall include comparison of energy use of participants and non-participants.

12. Process evaluation:

Distribution licensees shall also include robust process evaluations to improve the programme design and cost-effectiveness of the proposed measures. Process evaluations shall be structured in order to examine the efficiency and effectiveness of DF/DSM programme implementation procedures and system.

13. Market Effect Evaluation:

The EMV shall also assess Market effects as a result of the specific DF / DSM programmes. This evaluation shall include:

a) Assessment of additional DF / DSM programmes implemented by the participants without the support from distribution licensee.

b) Additional entities implementing the technical interventions promoted through the distribution licensee's DSM programmes.

c) Assessment of pricing, changes in pre-dominant efficiencies and availability of efficient products in the market.

14. Empanelment of Independent Verification Agencies:

Distribution Licensees shall empanel Independent Verification Agencies (IVAs). The IVAs shall be selected based on the following criteria:

a) IVAs should be individual consultants, consultancy organizations, academic/research institutions, civil society organisations and/or consortia thereof;

b) IVAs should have at least one BEE Certified Energy Auditor or Certified Energy Manager; or a Certified Measurement & Verification Professional (CMVP) certified by any national or international certification agency on their team in case of consultancy organizations/consortia thereof; and

c) Shall possess experience in design, implementation, review, measurement, verification and statistical analysis related to large datasets. The IVAs appointed for specific projects should not have been involved in DF / DSM programme design, implementation, review, and any related activity.

15. EMV report formats:

The EMV reports submitted by the IVAs shall include at a minimum the following – DF/ DSM portfolio / programme description, description of the proposed impact, process and market evaluation methodologies, description of measurement instruments, sampling process, reporting period, baseline period, metering/measurement accuracies, statistical analyses carried, list of assumptions, survey instruments used and annexes including the key raw data, list of respondents with their contact details, and credentials of IVAs.

CHAPTER IV: MISCELLANEOUS

16. Powers to remove difficulties:

If any difficulty arises in giving effect to any of the provisions of these Regulations, the Commission may by order, take suitable action, not being inconsistent with the

Act, which appears to the Commission to be necessary or expedient for the purpose of removing difficulties.

17. Orders and Practice Directions:

Subject to the provisions of the Act, the Commission may from time-to-time issue orders and practice directions in regard to the implementation of these Regulations.

18. Repeal and Savings:

1. Save as otherwise provided in these regulations, the Karnataka Electricity Regulatory Commission (Demand Side Management) Regulations, 2015 shall stand repealed from the date of commencement of these Regulations.

2. Notwithstanding such repeal, anything done or any action taken or purported to have been done or taken, including any procedure, minutes, reports, confirmation or declaration of any instrument executed under the repealed regulations, shall be deemed to have been done or taken under the relevant provisions of these regulations.

19. Power to Amend

The Commission may, at any time, vary, alter, modify or amend any provisions of these Regulations.

20. Interpretation:

If any question arises relating to the interpretation of any provision of these Regulations, the decision of the Commission shall be final.

21. Power of Relaxation:

The Commission may in public interest and for reasons to be recorded in writing, relax any of the provisions of these Regulations.

By the Order of the Commission,

Secretary
Karnataka Electricity Regulatory Commission

Annexure 1: Format of DF / DSM programme portfolio and implementation action plan

DF / DSM Detailed Project Report (DPR) to be submitted by the Distribution Licensees for the approval of the Commission shall be required to include the following **(for ARR proposal**):

PROJECT DATA FORMAT:

Name of the Distribution Licensee: ……
Zone/ Circle /Division /Location :……/……/……/…….

Name/Description of the DF/DSM Work:……
Estimated Cost: ……
Proposed Date of Commencement:……..
Targeted Date of Completion:……

BRIEF DESCRIPTION OF THE WORK

i. **New Proposals** shall include**:**
    a. overview of the Plan,
    b. the DF / DSM target for the Plan period;
    c. total funding envisaged for the MYT period with a break up of funds for programmes and funds for administration and management of DF / DSM effort by the licensee, listing and brief description of the DF / DSM programmes proposed to be implemented for meeting the DF / DSM targets set by the Commission;
    d. Plan level and individual DF / DSM programme level cost effectiveness, including impact on consumer tariffs;
    e. qualitative and/or quantitative contribution of the Plan;
    f. year wise break up of achievement of targets and funds requirement;

ii. Briefly record the reasons (circumstances necessitating) for taking up the Work in comparison with following (if applicable):

a. achievements of the past multi-year plan as against the targets;
b. the reasons and explanations if the targets set have not been achieved;
c. fund usage;
d. justification on the major constraints faced in the implementation of various programmes;
e. suggestions /facts to be considered for future implementation

iii. **Characteristics to be considered for proposal:**

a. Present time series (past 5 years) information about power situation in general, including demand met, load shedding, if any;
b. the consumer base of the licensee – total number of consumers, consumers by rate category;
c. Total consumption and break-up of the same by consumer and rate category;
d. Source wise energy purchase and the average rate of purchase of power; Load duration curve, peak load by season, typical average daily, seasonal and weekly load curves;
e. Forecast of demand, energy requirement, sales and revenue requirement over the next five years (Plan period), including elaboration of methodology used, data used, statement of underlying assumptions used and basis for the assumptions, sensitivity analysis carried out and changes in assumptions and other conditions assumed for carrying out sensitivity analysis.

f. **Primary/Major objective or the purpose intended to be achieved in terms of quantifying the results intended (Ex: reducing the peak load of ---- MVA/kVA (in comparison with targets approved by the Commission if applicable)**

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g. **Action Plan for achievement of primary objective:**

a. To be achieved in full on commissioning

b. To be achieved in phases of

1st Year……%,

2nd Year:….%,

3rd Year: ……%.

h. **DF / DSM Plan targets and the resource availability estimates:** Details on the proposed DSM targets and the resource requirements for meeting the targets.

i. **List other intended objectives, if any to be achieved and the time planned for achievement of targets such as identification of sectors, segments and end-uses:** Details on the sectors such as domestic, commercial, industrial, agriculture, segments such as consumer category, such as – offices, hospitals, hotels, malls, banks, industrial cluster - industrial estate, geographical area, street lighting, gram panchayat water supply systems, specific feeders, etc. and end-uses (lighting, pumping, heating, space cooling, air-conditioning, etc.) target for be the achievement and justification for choosing these sectors, segments and end-uses.

Name of the Objectives	**Targeted time of achievement**
1. ……	……
2. ……	……
3. ……	……
4. ……	……
5. ……	……

j. **Identification of DF / DSM measures/technology options / portfolio plans to achieve DSM targets:**

Detailed process (including justification) to be used for identification of DSM measures and technologies (within the identified sectors, segments and end-uses) that are intended to achieve the targets.

k. **Details of financing plan for the project to be undertaken, if any. Else provide the sources from which the funds were diverted**

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l. **Planning of Expenditure:**

Year 1:Rs. ……..
Year 2:Rs. ……..
Year 3:Rs. ……..

a. Provide the list of alternatives considered. If the alternatives are provided, mention the basis on which the proposed scheme is finalised.

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b. Details of Cost Benefit Analysis as specified in these Regulations.

……
……

iv. **Individual Programme Description:** For each of the DSM programme included in the final identified portfolio of DSM programmes, provide information highlighted at the end of this Annexure.

v. **Annual and cumulative achievements:** Details of annual contribution that will come forth from various DSM programmes in the final identified portfolio (to ensure that the Plan cumulative targets are met).

vi. **DF/DSM Plan EMV:** Details on the EMV Plan for the DSM Plan as per the **Chapter III** of these regulations.

vii. **DF/DSM Plan monitoring and reporting:** Details on the monitoring and reporting Plan (frequency, minimum content, format, indicators and means of verification chosen).

viii. **Implementation Plan:** Details on the schedule of implementation of different elements of the programmes, portfolio and plan; also qualifying the same with submission of activity charts.

Note:

The cost effectiveness shall be calculated as per tests indicated in chapter II of these Regulations

To Be submitted in APR (Annual Performance Review):

Elements of Detailed Project Report (DPR) Document:

This shall be a reference document for the licensee and all stakeholders. This shall have information on the consumer segments along with identified DSM measures to be implemented and have information on incentives achieved and features of consumer/vendor interface, delivery options, institutional relationships, detailed programme implementation plan with time lines and implementation responsibilities. The APR(Annual Performance Review) shall include the following elements.

1. **Programme description:**
    a. Description of DSM measures and technologies, the programme is intending to implement, relevant pricing, quality assurance and replacement/guarantee policy as per prevailing Regulations.
    b. Consumer segments the programme is targeting, including eligibility criteria to be used for identification of potential consumers within the identified target segment.
    c. Other stakeholders (financiers, energy services companies, equipment vendors, consultants, energy auditors, trade associations, groups of persons, NGOs, academic institutions, government organisations) involved in the implementation process, description of their roles and

responsibilities and manner of participation.

d. Barriers the programme is addressing.

e. Strategy the programme proposes to use, including proposed incentives, if any, strategies to motivate consumers and other stakeholders to participate in the programme, description of payment and collection mechanism and equipment/appliance/service delivery mechanism.

f. Description of programme management and implementation arrangements, including description of institutional relationships and internal programme tracking systems followed by the licensees.

2. **EMV, Monitoring & Reporting:**

This shall include EMV and monitoring and reporting plans:

a. Description of baseline calculation and description of monitoring and verification methodology.

b. Description of DSM programme monitoring, review and impact (in terms of programme participation, in terms of increases in penetration level of efficient devices and technologies, and in terms of load reduction/energy savings) analysis system/mechanism.

3. **Details of Implementation schedule as per actuals v/s target:**

4. **Annual and cumulative savings** due to the programme with all the assumptions used in savings estimation process, including base line considered.

5. **Annual programme funding requirements**: This shall include description of financing arrangement and share of distribution licensee, vendors, consumers, retailers, State government, Central government, etc.

6. **Cost effectiveness calculation details**, including programme costs and benefits, impact on consumer tariffs, with explicit description of all the input values considered and cost effectiveness calculations.

7. **Dispute Resolution Mechanism:** Appropriate mechanism to be followed for resolution of disputes arising during programme implementation stage.

Annexure 2: Methods to carry out the PCT and SCT

1. Participants Cost Test (PCT)

This test provides a measure of the quantifiable benefits and costs to an "average" consumer for participating in a DSM programme. Since many consumers do not base their decision to participate in a DSM programme entirely on quantifiable variables (many times consumers decision to buy an appliance/device/equipment are based on factors such as discount offered, features, brand value, initial cost, etc.), this test may not fully represent the benefits and costs of a programme to a consumer.

1.1 Costs

In its simplest form, the costs in this test are the programme costs paid by the participant. In addition, any increase in electricity bill of the participant as a result of the DSM programme is also to be considered as costs under this test. Thus the "Cost" elements usually associated with this test are:

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

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

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

d) Old inefficient equipment removal costs (if the DSM measure/programme involves replacement or retrofitting) paid for or to the extent paid for by the participant;

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

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

g) Increase in participant electricity bill due to the DSM programme.

If there is old equipment/device / appliance / technology etc. that is being replaced; the salvage value of this old equipment or device is considered as a reduction in the cost. Similarly, if there is tax credit or incentive offered to the consumer the same can be treated as reduction in cost. Conventionally, the same will be treated as benefits accruing to the participant as a result of DSM programme under PCT.

1.2 Benefits:

Benefits under this test are the reduction in consumer's electricity bills, tax credit received by the consumer, and incentives received by the consumer.

1.3 Test Results:

The NPV will be used as the primary evaluation criterion. An NPV value of zero or above will indicate that PCT test has been passed. It would also mean that the DSM programme is beneficial for an "average" participating consumer. On the other hand, a NPV value of less than zero will indicate that the DSM measure/programme being evaluated for PCT has failed the PCT, i.e. participation in a DSM programme is not beneficial for the consumer.

Tax credits and incentives appear on the benefit side of the NPV equation under this test. Thus, the benefit side of the DSM programme can be boosted by offering incentives or tax credits. For DSM programmes that show negative NPV values, the PCT test can help identify the threshold level of tax credit/incentive that would need to be offered to make the DSM programme beneficial from participant perspective. Such threshold value will be the tax credit/incentive values for which NPV is zero.

Sensitivity analysis with respect to various assumptions should also be conducted in order to understand the level of influence of each assumption on the NPV value.

2. Societal Cost Test (SCT):

The Societal Cost Test is structurally similar to the Total Resource Cost Test. However, since the SCT goes beyond the TRC test in that it attempts to quantify the change in the total resource costs to society as a whole rather than to only the service territory (the licensee and its consumers), it would be necessary to consider different values for some of the input variables such as power purchase rate, discount rate, etc. More specifically, the Societal Test differs from the TRC Test in the following ways:

2.1 The value of power purchase rate will need to be the "**social cost of power"** which could be considered as the consumers' willingness to pay for power or the price the consumers are willing to pay for power. In the Indian context, ceiling rate for Day Ahead market set by the CERC can be used as a proxy for consumers' willingness to pay for power, and thus the social cost of power can be taken as per **Regulation 9** of these Regulations.

2.2 Since taxes, duties, levies, tax credits etc. are treated as a transfer payment in the Societal Test, they should be excluded from the calculations.

2.3 The value of the discounting rate under SCT should be the societal discount rate. In the context of DSM programmes, the licensees could use the societal discounting rate as per **Regulation 9** of these Regulations.

Certain indirect benefits such as reduction in greenhouse gases that takes place as an effect of implementing a DSM measure should be considered while calculating SCT.

By Order of the Commission

Secretary

Karnataka Electricity Regulatory Commission

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