

Shram Shakti Bhavan, Rafi Marg,
New Delhi, Dated 27 March, 2015

OFFICE MEMORANDUM

Subject: "National Smart Grid Mission" (NSGM)

Sanction of the President of India is hereby conveyed for establishment of a National Smart Grid Mission (NSGM) in Power Sector to plan and monitor implementation of policies and programmes related to Smart Grid activities in India. NSGM will be housed under Ministry of Power (MoP) considering the fact that most of the prominent stakeholders (DISCOMs, Regulators, Electrical Manufactures, Central Electricity Authority etc.) for Smart Grid are associated with MoP. Other concerned Ministries like Ministry of New and Renewable Energy (MNRE), Ministry of Urban Development (MoUD) and Ministry of Heavy Industry (MoHI) would also be associated with the Mission.

2. The total estimated cost for all the projects and NSGM activities for 12th Plan is Rs 980 crore including a budgetary support of Rs 338 crore. Details are given in **Annexure-I**.

3. It is important to note that Smart Grid is a dynamic and evolving concept due to constant technological innovations. Therefore, the objectives, structure and functioning of NSGM must be such as to allow sufficient freedom and flexibility of operations without needing to refer the matter to different Ministries / Agencies frequently. Accordingly, NSGM will have a three tier structure (**Annexure-II**). Details are as follows:

a) At the apex level, NSGM will have a Governing Council headed by the Minister of Power. The structure and membership of the Council is at **Annexure-III**. The Governing Council will have necessary functional and financial autonomy within the overall budgetary allocation for meeting its objective of rolling out Smart Grid operations in different parts of the country. Towards this end, the Council will carry out the following functions:

- (i) To approve policies and programme for smart grid implementation in the country.
- (ii) To approve the administrative and financial procedures from time to time for the effective functioning of NSGM
- (iii) To approve the annual budget of NSGM
- (iv) To cause the audit to be done and to adopt the audited accounts.
- (v) To review the implementation of NSGM's policies and programmes.
- (vi) To take such other steps for meeting NSGM's objectives as are considered necessary, within the overall approval.

The Council will meet on a half yearly basis.

b) At the second level, the NSGM will have an Empowered Committee headed by Secretary (Power). The structure and membership of the Empowered Committee is at **Annexure-IV**. The Empowered Committee will carry out the following functions:

- (i) To provide policy input to Governing Council
- (ii) To approve specific Smart Grid projects and subsequent revisions/ modifications.

- (iii) To approve procedures / guidelines for Smart Grid projects
- (iv) To approve procedures / guidelines for recruitment, hiring of consultants / advisers / experts, funds allocation etc.
- (v) To monitor implementation of Smart Grid projects.
- (vi) To approve the detailed structure, powers, procedures and guidelines from time to time for the smooth functioning and operation of NSGM Project Management Unit (NPMU).
- (vii) To permit mobilization of resources from bilateral and multilateral agencies, financial institutions etc., over and above the budgetary allocation
- (viii) To take other steps as directed by the Governing Council to meet objectives of NSGM.

The Committee will meet on a quarterly basis.

- c) In a supportive role, it is proposed to have an NSGM **Technical Committee** headed by Chairperson (CEA). The structure and membership of the Technical Committee is at Annexure-V. The Technical Committee will support the Empowered Committee on technical side and will carry out the following functions:
- (i) To develop standards, technology selection guidelines,
 - (ii) To carry out technical review of projects / activities / documents,
 - (iii) To prepare guidelines and procedures for training & capacity building etc.
 - (iv) To take other steps as directed by the Governing Council / Empowered Committee to meet objectives of NSGM.

The Committee will meet as per requirement.

- d) For day-to-day operations, NSGM will have a **NSGM Project Management Unit (NPMU)** headed by the Director NPMU. He will be a Member of the Governing Council and Empowered Committee, and Member Secretary of Technical Committee. NPMU will be the implementing agency for operationalizing the Smart Grid activities in the country under the guidance of Governing Council and Empowered Committee mentioned above. NPMU will also interact with development partners and mobilise international cooperation as per direction of Empowered Committee.
- e) NPMU will be housed at POWERGRID. The present India Smart Grid Task Force (ISGTF) Secretariat will be merged with the NPMU, to be headed by an Executive Director level officer, who will be designated as the Director NPMU. This body will be set up in POWERGRID exclusively for NSGM. NPMU will report directly to the Empowered Committee and Governing Council of NSGM through MoP. Director NPMU (i.e. head of NPMU) will report to Empowered Committee through the Joint Secretary (Distribution), MoP
- f) The NPMU will not undertake any permanent recruitment. Instead, it will be managed by officers and staff on secondment from POWERGRID and other organisations (including PSUs) or through contract appointment on temporary basis either directly or through manpower supply agencies.
- g) NPMU will have all necessary resources including requisite manpower to facilitate taking up of Smart Grid activities on a large scale in the country, and the Empowered Committee will have the necessary authority in this regard as indicated in para 3 (b) above. For smooth and proper implementation of Smart Grid activities, suitable experts, consultants and agencies can be appointed by NPMU after approval by the Empowered Committee. The services of Energy Efficiency Services Limited (EESL), which is a Joint Venture of NTPC, PFC, REC &

POWERGRID may also be utilized in this regard. The EESL works as ESCO (Energy Service Company), as Consultancy Organization for Clean Development Mechanism (CDM), Energy Efficiency etc. The performance of NPMU will be reviewed by the Empowered Committee.

- h) The operational charges for smooth functioning of NPMU which include salary, perks & allowances, performance incentives etc of the deployed manpower along with other administrative & establishment expenditure like tour, travel etc, for Smart Grid activities would be paid to NPMU from the funds of NSGM and modalities for the same will be finalized by the Empowered Committee of NSGM. In respect of officers and staff on secondment to NPMU, their entitlements in the parent organizations will be fully protected. POWERGRID and other PSUs employees will be posted in NSGM for smart grid activities on "secondment" basis and will be eligible for PRP payment as applicable in their parent organisation.
- i) Corresponding to the NSGM, each of the States will also have a State Level Mission which would be chaired by the Power Secretary of the State. The administrative / operation and maintenance expenses in this regard would be borne by respective States. NSGM will provide support for training & capacity building to State Level Project Monitoring Units (SLPMUs) for smart grid activities. NSGM will not support any expenditure towards new posts, created if any by the states for smart grid activities. A typical structure of State Level Mission is at Annexure-VI.
- j) The Smart Grid Knowledge Center (SGKC) being developed by POWERGRID with funding from MoP will act as a Resource Centre for providing technical support to the Mission in all technical matters, including development of technical manpower, capacity building, outreach, suggesting curriculum changes in technical education etc. Ministry of Power has already sanctioned Rs 9.8 crore in this regard. Expenditure on civil works is being borne by POWERGRID. The SGKC will maintain adequate training infrastructure facilities and a cumulative support of Rs 10 crore in 12th Plan is proposed to be provided to it from NSGM budget. Possibility will also be explored for bilateral and multilateral financial support from various national and international agencies in this regard. The SGKC shall undertake programs and activities envisaged for it as per the guidance from NPMU. The Head of SGKC will report to Director NPMU. A typical structure of SGKC is at Annexure-VII.
- k) The support from NSGM for implementation of Smart Grid projects would primarily consist of the following indicative (not exhaustive) list of activities:
- Assistance in formulation of projects including pre-feasibility studies, technology selection, cost-benefit analysis, financing models etc.
 - Funding of these projects, together with State Discoms and other financing agencies.
 - Training and Capacity Building for SLPMUs & Project Implementation teams
 - Technology selection guidelines and best practices
 - Facilitate Consumer Awareness initiatives
 - Project Appraisal post implementation.
- l) To start the above activities, upto 30% of the project cost of smart grid for most of the components will be provided as grant from the NSGM budget. For certain selected components such as training & capacity building; consumer engagement etc, the funding will be 100% grant as indicated at Annexure-I. The extent of funding from NSGM budget will be finalized by the Empowered Committee of the NSGM. The balance project cost (hardware, software applications, erection testing commissioning, integration etc.) is to be funded through innovative financing models which may include PPP model.


m) Details of indicative interventions for Smart Grids for 12th Plan and its implementation methodology are at Annexure-VIII.

4. The outlay of the scheme/the requirement of GBS for 12th Plan as well as year wise requirement will be met out of existing 12th plan outlay of the Ministry of Power and annual Plan allocation indicated by Ministry of Finance respectively.

5. The NPMU will submit monthly progress report indicating both financial and physical progress on the implementation of the scheme to Ministry of Power.

6. This issues with the concurrence of Finance Branch of the Ministry of Power vide their Dy. No. 48/Fin/15 dated 27.3.2015.

7. Detailed guidelines for the implementation will be issued separately.


(B.N. Sharma) 27.03.15
Joint Secretary
Tel: 23710199

To

1. Chief Secretaries of all States
2. Energy/Power Secretaries of all the State Governments
3. CMDs of State Power Utilities
4. Chairman & Managing Director, Power Finance Corporation Ltd., New Delhi.

Copy forwarded to:

1. Director, Cabinet Secretariat, Rashtrapati Bhavan, New Delhi.
2. Ministry of Finance, Department of Expenditure (DS, Plan Finance Division-II), North Block, New Delhi.
3. Ministry of Finance, Department of Economic Affairs, North Block, New Delhi.
4. NITI Aayog, Yojana Bhavan, New Delhi.
5. Chairperson, Central Electricity Authority, R.K. Puram, New Delhi.
6. Finance/Budget Section, Ministry of Power, New Delhi.
7. Controller of Accounts, Ministry of Power, New Delhi.
8. Principal Director of Audit, Economic & Services Ministries, AGCR Building, I.P. Estate, New Delhi.
9. 13th Finance Commission, Ministry of Finance, Jawahar Vyapar Bhavan, New Delhi.
10. Department of Programme Implementation, Sardar Patel Bhavan, New Delhi.

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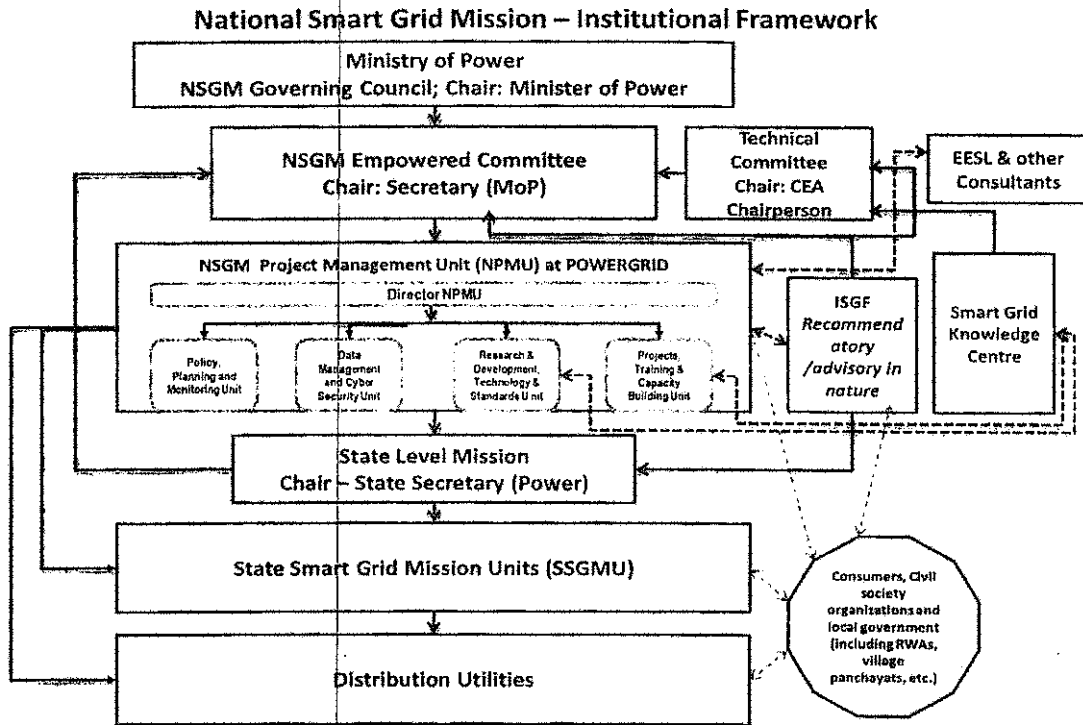
- PS to Minister of State for Power (Independent Charge)
PPS to Secretary (Power)
PS to SS(RNC) / SS (DC)
PS to Joint Secretary (Dist) / JS&FA / All JS

Estimated Expenditure Outlay for 12th Plan

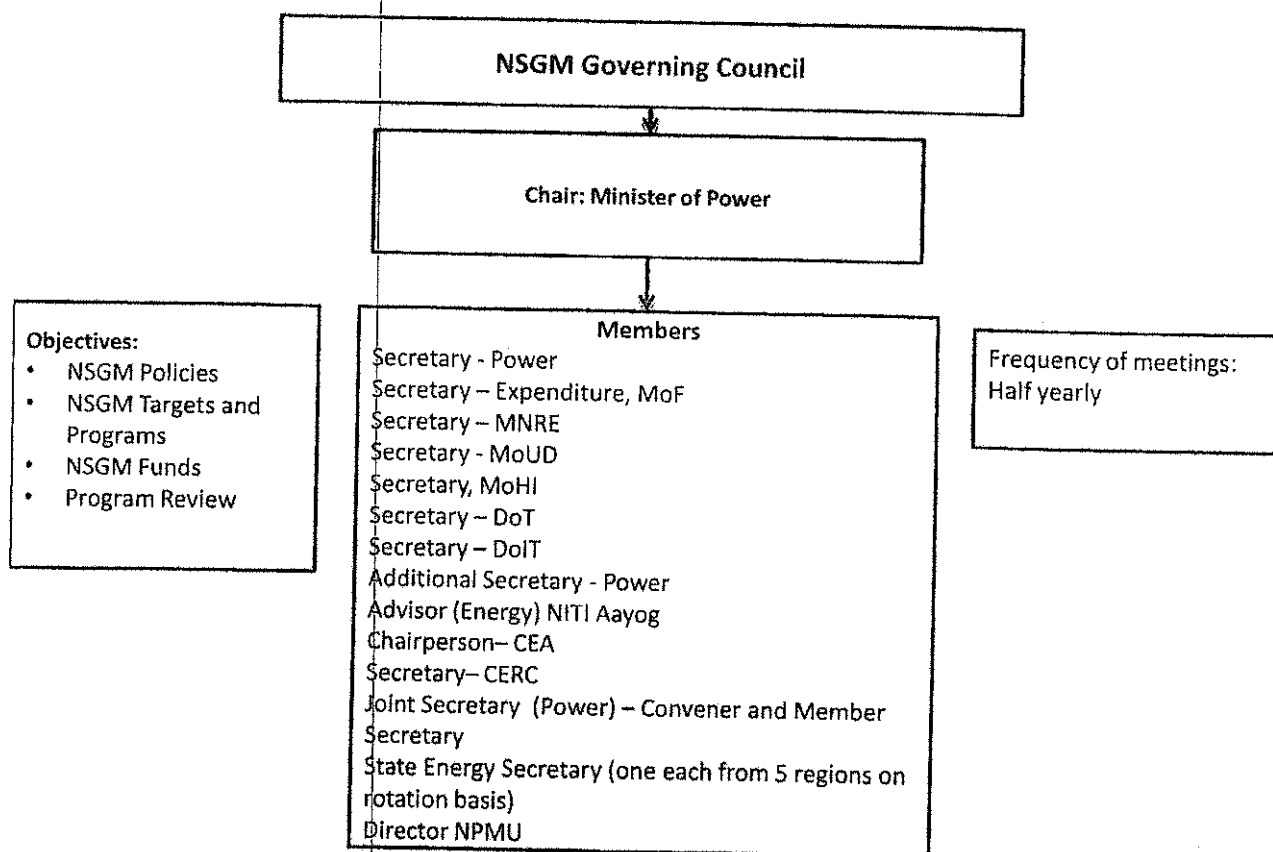
(Figures in Rs crore)

Sl	Activity	Outlay	Budgetary support (Rs crore)	Budgetary support for 12 th Plan	
				2015-16	2016-17
A.	Development of smart grid in Smart Cities	Rs 890 crore	267 (30% of project cost as grant)	120	147
B.	Development of micro grids	Rs 27 crore	8 (30% of project cost as grant)	4	4
C	Training & Capacity Building (Funding for SGKC etc)	Rs 8 crore	8 (100% grant)	4	4
D.	Consumer Engagement++ (Funding to State owned Discoms ~60)	Rs 30 crore (20 lakhs p.a. for each Discom)	30 (100% grant)	15	15
E.	NSGM Establishment, O&M etc	Rs 25 crore	25 (100% grant)	7	18
	Total Outlay	Rs 980 crore	338	150	188
				338	

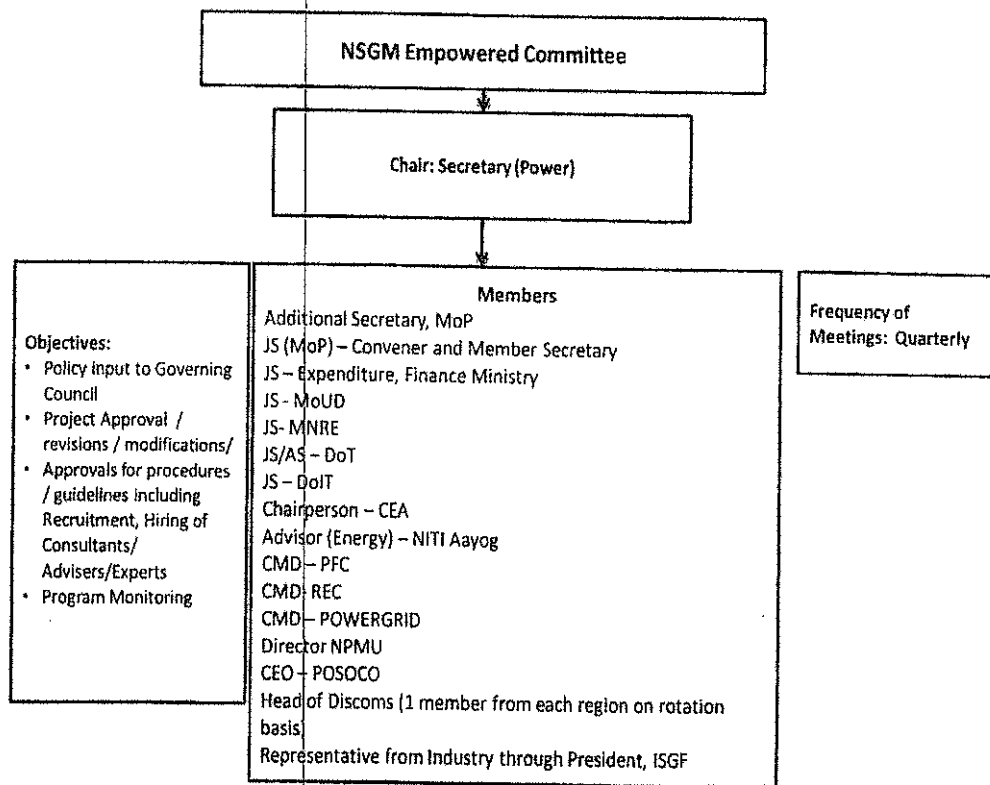
++Successful Smart Grid Deployment will require consumer engagement and participation right from the start. A structured approach is necessary to achieve this. The understanding and adapting to consumer behaviors is critical for deployment of smart grid. Huge investments are being made on studies, research and consumer education and participation initiatives worldwide and same need to be promoted under NSGM. A structured approach designed to cover key dimensions of consumer involvement shall include behavioral studies, market research, understanding consumer profile, identifying various mediums to reach (print, AV, social media, focused campaigns, meetings, etc). A model consumer engagement module along with lessons from global cases of successful deployments and failures is proposed to be developed which need to be coupled with strong communication strategy (internal and external) for maximum impact. The Rules for Consumer Privacy and Data Protection in parallel shall also be taken up to ensure consistency in approaches adopted by various states.



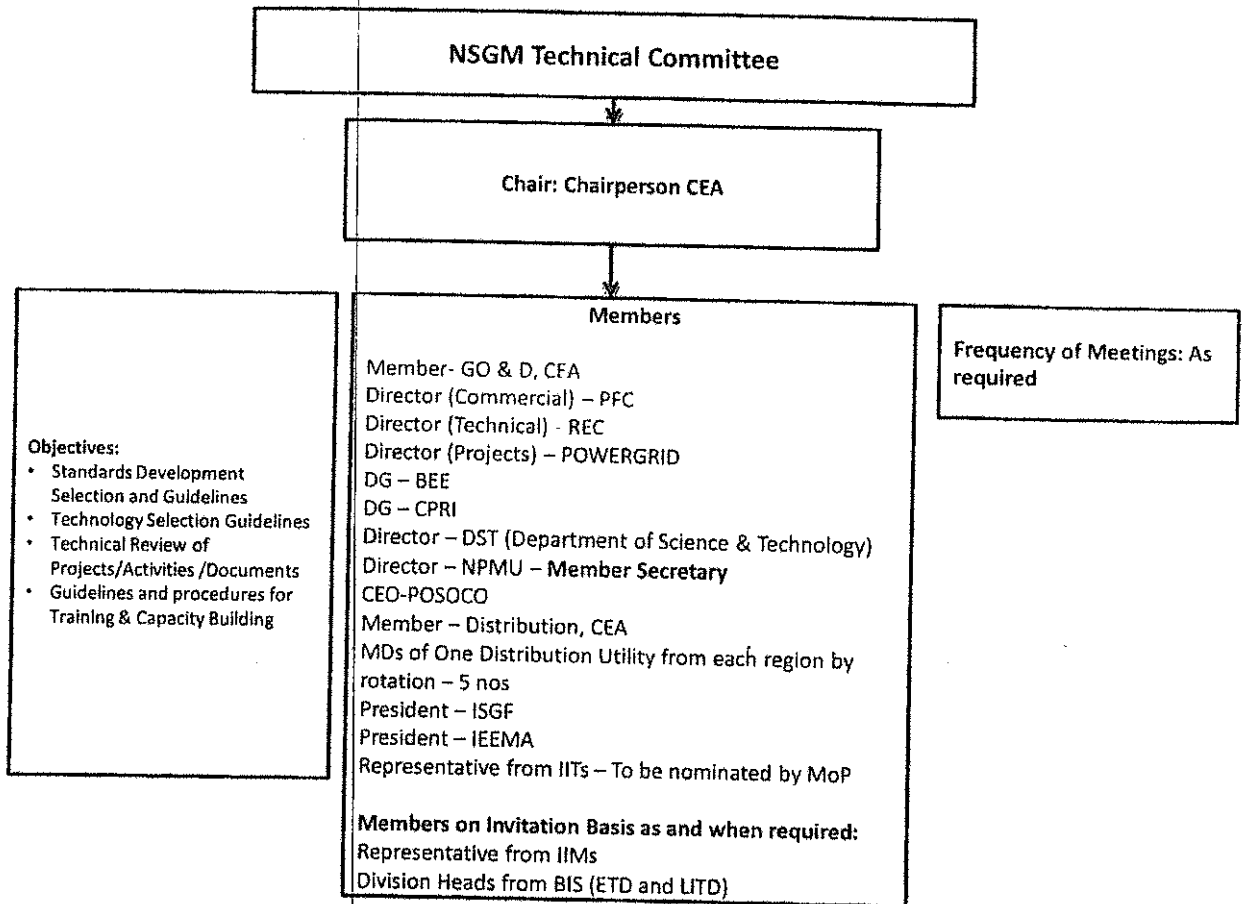
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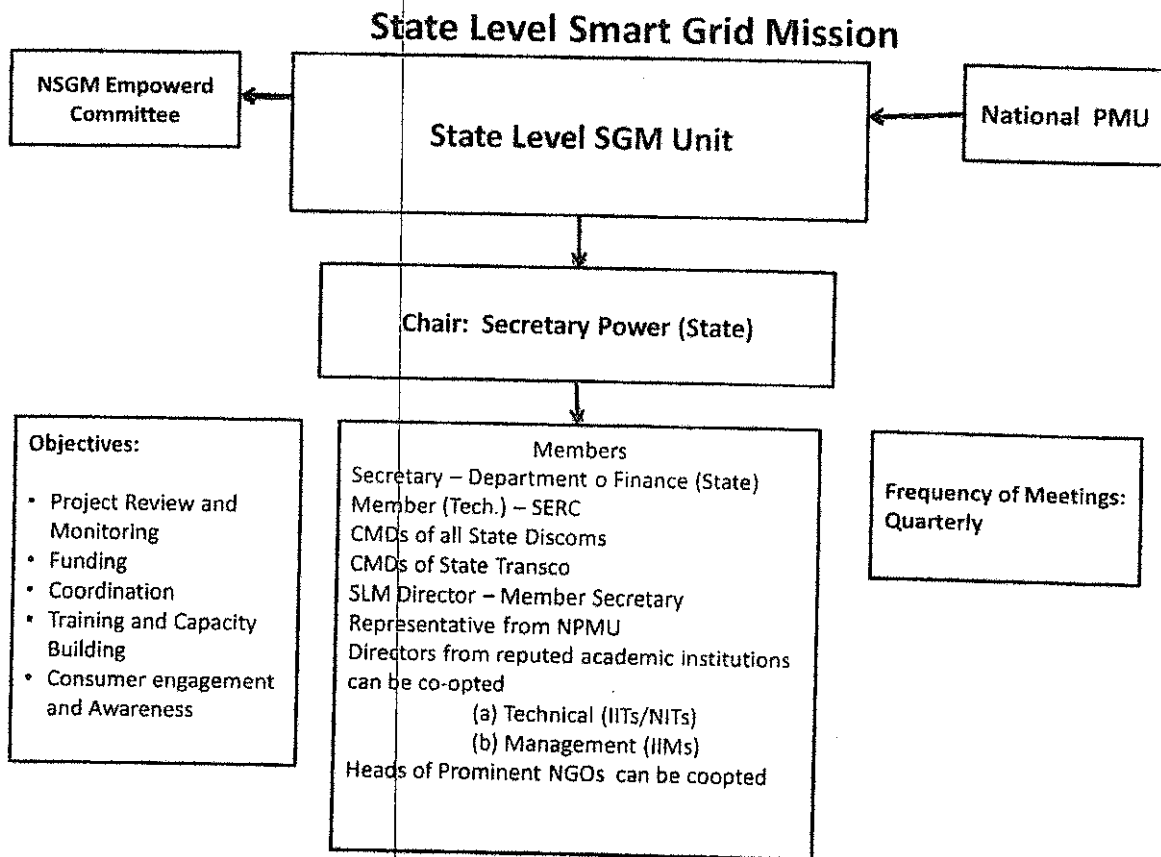
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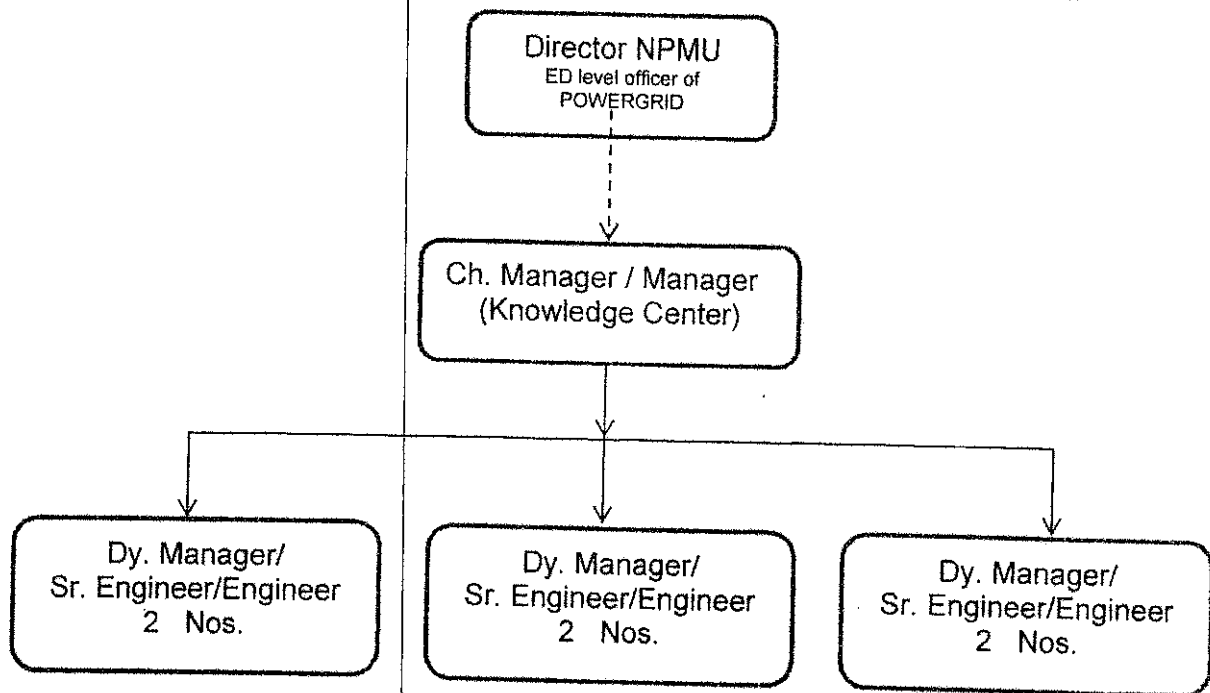


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A Typical Structure of Smart Grid Knowledge Centre (SGKC)



- *Distribution Automation*
- *Advanced Metering Infrastructure*
- *Outage Management System*
- *Demand Side Integration*
- *Power Quality*

- *Renewable Energy Generation*
- *Renewable Energy Integration*
- *Micro Grid*
- *Energy Storage*
- *Electric Vehicle*

- *Home Energy Management System*
- *Cyber Security*
- *Network Management*
- *Smart Appliances*

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Interventions in Smart Grids for 12th Plan

The indicative components of smart grids in the selected 20 cities in 12th plan would be broadly as follows:

- *Deployment of Smart Meters and AMI.*
- *Substation renovation and Modernisation with deployment of GIS wherever economically feasible.*
- *Development of medium sized Microgrids.*
- *Development of Distributed Generation in form of Roof Top PVs.*
- *Real-time monitoring and control of Distribution Transformers.*
- *Provision of Harmonic Filters and other power quality improvement measures.*
- *Creation of EV Charging Infrastructure for supporting proliferation of EVs.*

Smart grid being a new and evolving field, the activities presently envisaged are only indicative and during the course of implementation, further activities can be incorporated based on evolution of technology.

Methodology for Implementation:**Leveraging RAPDRP**

The basic infrastructure is being created under RAPDRP in large towns, over which the Smart Grid development can be superimposed. IT implementation and SCADA being carried out will be leveraged for Smart grid. The Infrastructure being created under System strengthening being done in Part-B will be leveraged for better and effective use so as to be ready to support Smart Grid technologies / functionalities upon completion. AMI will be implemented and all the consumer meters being installed in these cities will preferably be Smart Meters. Under Part-B works utility should preferably provision for RMUs, sectionalizers, path for alternate feeding etc. Substation modernization will be done under Part-B and wherever there is economic feasibility GIS will be installed.

Microgrids:

As envisaged in the Roadmap, NSGM will promote development of Microgrids in islands, SEZs, institutions and commercial hubs that would dovetail the existing projects under renewable energy projects and other international support programs.

Promotion of EVs:

Deployment of EV Charging Infrastructure envisaged under the National Mission for Electric Mobility of MoHI can be coordinated under NSGM in some of these cities.

Distributed Generation in form of Roof top PVs

Besides the promotion of grid connected solar capacity addition, JNNSM also has a mandate to encourage the rooftop solar segment. The promotion of Roof top PV based Distributed Generation will be encouraged with invigoration of Central and state government's schemes in association with MNRE and respective state governments and mechanism of funding and incentives will be worked out under their schemes.

Technology Demonstration projects for Real time monitoring & control systems for DTs and Harmonic Filter

These initiatives are directed towards improving Quality and reliability of Power and will be partly-funded under NSGM in these cities.