REC’S EXPERIENCE IN ACCOMPLISHMENT OF RURAL ELECTRIFICATION OF GOVERNMENT SCHEMES
DEENDAYAL UPADHYAYA GRAM JYOTI YOJANA (DDUGJY)
• Scheme announced by Hon’ble Finance Minister in Budget speech - July 2014.

• CCEA approved scheme on 20.11.2014

• Office Memorandum conveying approval of scheme issued on 03.12.2014 by Ministry of Power, Government of India.
Components of DDUGJY

(a) Separation of agricultural and non-agricultural feeders

(b) Strengthening and augmentation of sub-transmission and distribution infrastructure in rural areas, including metering of feeders/distribution transformers/consumers

(c) Rural electrification – subsumed from erstwhile RGGVY scheme

Outlay of scheme

- Components (a) & (b) : Rs. 43,033 crore with a GBS of Rs. 33,453 crore
- Components (c) : Rs. 32,860 crore with a GBS of Rs. 29,574 crore
- Total outlay : Rs. 75,893 crore with a GBS of Rs. 63,027 crore
**DDUGJY – OBJECTIVE**

An integrated scheme to facilitate 24x7 power supply

- **Feeder Separation**
  - Effective demand side management
  - Regulated supply to agricultural consumers and continuous power supply to non-agricultural consumers

- **Strengthening of sub-transmission and distribution system**
  - Electrification of un-electrified villages/habitations to provide access to electricity to rural household
  - Improvement in quality and reliability of power supply.

- **Metering**
  - Help in identifying high loss pockets and initiating measures for reduction of AT&C losses

- **Erstwhile RGGVY subsumed in DDUGJY as ‘RE’ Component**
DDUGJY - Scope of Work

1. Feeder Separation
   • Erection of HT lines for new feeders
   • Reorientation / realignment of existing lines
   • Installation of distribution transformers incl. augmentation
   • Regrouping of consumers (Agriculture and non-agriculture)

2. Strengthening of Sub-transmission and distribution system
   • Creation of new sub-stations & associated 33 KV lines
   • Augmentation of existing sub-station capacity
   • Establishment of new distribution transformers (DTs)
   • Augmentation of existing DTs capacity
   • Erection of 11 KV lines and LT lines
   • High Voltage Distribution System (HVDS) & Aerial Bunched Cable (ABC)
DDUGJY - Scope of Work

3. Metering
   • Feeders and Distribution Transformers
   • All consumers
   • Replacement of faulty & electro-mechanical meters
   • Installation of Pillar box for relocation of meters

4. Micro-grid and off-grid distribution network
   • Decentralized Distributed Generation using renewable energy sources in off grid and grid connected areas
DDUGJY : New Features

• Complete flexibility to States for selecting scope of works as per their need and priority

• No population criteria, Villages/hamlets with population below 100 also eligible

• District Electricity Committee (DEC) headed by senior most Member of Parliament, now merged in DISHA
  - To review and monitor implementation of scheme
  - States to consult DEC while formulation of DPRs

• Mandatory E-tendering

• Uniform Procurement Policy with Standard Bidding Document and Technical Specifications
DDUGJY : New Features

• Gram Panchayat covered under SAGY to be necessarily covered in DPRs
• 100% subsidy for deployment of Project Management Agency
• 100% subsidy to connect all 33/11 KV sub-stations under National Optical Fibre Network
• All Discoms including Private Discoms, RE Cooperative Societies now eligible
DDUGJY : Implementation Strategy

• Formulation of DPRs by State Power Utilities/ DISCOMs in consultation with DEC

• State Level Standing Committee (SLSC) headed by Chief Secretary of the State to recommend DPRs

• Online submission of DPRs to REC through web-portal for appraisal

• Approval of DPRs by Inter-Ministerial Monitoring Committee headed by Secretary (Power)

• State Power Utilities/DISCOMs to award contracts for execution of works within six months of approval

• Projects to be completed within 24 months from award
DDUGJY : Monitoring

• At State Level

✓ State Power Utility / DISCOMs and Project Management Agency
✓ District Electricity Committee, Now merged with DISHA
✓ State Level Standing Committee

• At Central Level

✓ Rural Electrification Corporation (REC)
✓ Ministry of Power
✓ Inter-ministerial Monitoring Committee
## DDUGJY: Sanction of New Projects

Projects with total cost of Rs. 42550 Crore have been approved for 32 States/UTs

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Particulars</th>
<th>Sanctioned Cost (Rs. Crore)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Feeder Separation</td>
<td>15,191</td>
</tr>
<tr>
<td>2.</td>
<td>System Strengthening</td>
<td>9997</td>
</tr>
<tr>
<td>3.</td>
<td>Access to households</td>
<td>10246</td>
</tr>
<tr>
<td>4.</td>
<td>Metering</td>
<td>3,859</td>
</tr>
<tr>
<td>5.</td>
<td>Electrification of un-electrified villages (Grid)</td>
<td>1,511</td>
</tr>
<tr>
<td>6.</td>
<td>Electrification of un-electrified villages (Off-Grid)</td>
<td>1,142</td>
</tr>
<tr>
<td>7.</td>
<td>SAGY works</td>
<td>398</td>
</tr>
<tr>
<td>8.</td>
<td>Provision for Project Management Agency</td>
<td>206</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>42,550</strong></td>
</tr>
<tr>
<td>Particular</td>
<td>DDUGJY</td>
<td>Erstwhile RGGVY</td>
</tr>
<tr>
<td>----------------------------</td>
<td>--------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Feeder Segregation</td>
<td>✓</td>
<td>✘</td>
</tr>
<tr>
<td>Systems Improvement</td>
<td>✓</td>
<td>✘</td>
</tr>
<tr>
<td>Metering</td>
<td>✓</td>
<td>✘</td>
</tr>
<tr>
<td>SAGY</td>
<td>✓</td>
<td>✘</td>
</tr>
<tr>
<td>Electrification of Un-electrified villages</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
## DDUGJY v/s Erstwhile RGGVY

<table>
<thead>
<tr>
<th>Particular</th>
<th>DDUGJY</th>
<th>Erstwhile RGGVY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incentives/ disincentives</td>
<td>✓</td>
<td>X</td>
</tr>
<tr>
<td>Stand alone system</td>
<td>✓</td>
<td>X</td>
</tr>
<tr>
<td>Habitation coverage</td>
<td>All habitations</td>
<td>Habitation of population 100 and above (300 and above in X and XII plan)</td>
</tr>
<tr>
<td>Focus</td>
<td>Holistic upgradation of the distribution sector including access to all households</td>
<td>Electrification of villages/habitations of more than 100 population.</td>
</tr>
</tbody>
</table>
VILLAGE ELECTRIFICATION ON MISSION MODE UNDER DDUGJY
DDUGJY - Electrification of Un-electrified Villages

• Hon’ble Prime Minister on 15th August 2015 announced:
  “The Government has resolved to connect with electricity, all the
  18500 villages which still remain without power, within the next
  1000 days, with the help of States and Local Bodies”

• Electrification of all remaining 18452 un-electrified
  villages taken up on mission mode under DDUGJY

• Target Date of completion : 1st May 2018
DDUGJY - Electrification of Un-electrified Villages

• New Initiatives

✓ 12 Stage milestone based monitoring with defined timelines
✓ Deployment of GVAs for field visits and updating of progress on GARV App
✓ Launch of GARV App for near real time updating of progress with photographs
✓ Off-grid / DDG solution for villages in remote areas
✓ Rigorous review and monitoring at Central level
**DDUGJY - Electrification of Un-electrified Villages**

<table>
<thead>
<tr>
<th>Year</th>
<th>2015-16</th>
<th>2016-17</th>
<th>2017-18</th>
<th>2018-19</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target</td>
<td>5686</td>
<td>8360</td>
<td>14046</td>
<td>18452</td>
</tr>
<tr>
<td>Achievement</td>
<td>7108</td>
<td>6015</td>
<td>3736</td>
<td>1515</td>
</tr>
<tr>
<td>(18374)*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Against the target of 18452 Un-electrified Villages, 18374* villages have been electrified.
- 1270 Villages have been found un-inhabited and 35 villages have been De-Electrified.
PRADHAN MANTRI SAHAJ HAR GHAR BIJILI YOJANA
SAUBHAYGYA
SAUBHAGYA: INTRODUCTION

• Government of India has formulated a scheme called Pradhan Mantri Sahaj Bijli Har Ghar Yojana – Saubhagya under Ministry of Power.

• Achieve universal household electrification by providing last mile connectivity to all household in rural and urban areas by March 2019.

• Total Budget – Rs 16,320 Crores

• GBS of Rs 12,320 Crores from Govt. of India

• About 300 Lakh un-electrified households were to be electrified under this scheme

• REC Limited is the Nodal Agency for implementation of the scheme
Saubhagya - Energizing millions in India

**Target** - Electrification of all 300 Lakhs households electrified by March 2019

- The **biggest electrification scheme** in the world

- The number of beneficiaries is larger than the population of **many European Countries**.

- To achieve its goal, the government of India had to electrify **50,000 households per day**
STRATEGIES ADOPTED FOR HOUSEHOLD ELECTRIFICATION

Technology intervention:
✓ Development of Mobile App by States for registration & verification of documents
✓ Integration of Billing Software with Saubhagya portal for facilitating reflection of new connections in the Saubhagya Portal regularly

By States/Discoms:
✓ Engage existing Contractors of ongoing projects for Saubhagya, wherever possible
✓ Deploy Turnkey Agencies according to requirement of targeted household connections
✓ Flexibility in implementation: either through turnkey or Departmentally or both
✓ Facilitate and ease Material procurement by engaging actively with manufacturers
✓ Dedicated teams at Divisional/Block/Discom level for smooth implementation Launching; Organising Camps and Melas
Saubhagya : Power to Empower

- Access to modern energy i.e. electricity to all willing households
- Substitution of Kerosene for lighting purposes
- Improvement in quality of life of rural / urban poor through
  - Improvement in delivery of education services
  - Improvement in delivery of health services
  - Improvement in access to communications (radio, television, mobile)
  - Improvement in public safety through lighting
  - Increased economic activities and job opportunities
  - Increased productivity in agriculture and other economic activities
  - Reduction in drudgery; especially for women, in daily chores
CHALLENGES OF ELECTRIFICATION

✓ Households - remote areas and scattered
✓ Difficult terrain to reach households
✓ Geographical challenges - Riverine / Marshy / snow bound
✓ Transportation bottlenecks – Head loading / helicopters / bamboo bridges / rafts & boats
✓ Poor/inadequate power infrastructure
✓ Left wing extremism affected areas
✓ Forest areas - requiring special clearance
✓ Shortage of materials - Poles, Distribution Transformers
Saubhagya Beneficiaries...
Challenges Faced...
SPECIFICATIONS OF DISTRIBUTION TRANSFORMERS IN RE SCHEME

• First time 5, 10, 16 & 25 KVA DTRs were permitted in Central funded schemes.
  • Amorphous core with copper windings, or
  • CRGO - Cold Rolled Grain Oriented Silicon Steel with Copper or Aluminium windings
• 3 star ratings and then BIS stamped
• Single phase transformers were burnt in large quantities in Bihar, Jharkhand & Madhya Pradesh.
• Ministry of Power nominated a committee comprising members from National Quality Monitors, Powergrid, NTPC/NESCL, NHPC, BSEB & REC to examine the case of DT failure in Bihar & Jharkhand.
• Five groups were formed, who visited 170 villages in Bihar & 60 villages in Jharkhand. Approx. 500 transformers were inspected by the teams.
• Possible reasons for failure as per report
  ➢ Overloading due to hooking, additional load etc.
  ➢ Bypassing of protection - both LT & HT
• XII Plan and DDUGJY (New) Scheme
  ➢ Standard Bidding Document - Technical Specification
  ➢ Standard ratings
  ➢ Condition to procure CRGO crore from the PowerGrid listed vendors and traceability of documents pertaining to procurement
  ➢ In technical specification, losses of four star rating was specified as per IS 1180 (Part-1):2014
  ➢ Notification by Ministry of Heavy Industries & Public Enterprises on Distribution Transformers about BIS certified manufacturer
100% Village and 100% Households

On 15\textsuperscript{th} August 2014, Hon’ble Prime Minister has set target for completion of electrification of balance 18,452 villages in 1,000 days

- This task was completed well before timelines
- 19,769 villages were reported electrified

On 25\textsuperscript{th} September’2017, Government of India launched its ambitious Saubhagya scheme for 100\% household electrifications.

- This task was also completed except about 20,000 HHs in Chhattisgarh having Naxal activities
- 2.62 Crore households were reported electrified
## Power Transformers in Rural Electrification scheme

<table>
<thead>
<tr>
<th>Scheme/Plan Name</th>
<th>Project (Nos)</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>New</td>
<td>Augmented</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Scope</td>
<td>Achievement</td>
<td>Balance</td>
<td>Scope</td>
<td>Achievement</td>
</tr>
<tr>
<td>DDUGJY (New)</td>
<td>636</td>
<td>1,825</td>
<td>1,207</td>
<td>618</td>
<td>1,692</td>
<td>1,290</td>
</tr>
<tr>
<td>DDUGJY-RE XII Plan</td>
<td>273</td>
<td>172</td>
<td>96</td>
<td>76</td>
<td>978</td>
<td>811</td>
</tr>
<tr>
<td>DDUGJY-RE XI (Ph-II)</td>
<td>72</td>
<td>41</td>
<td>44</td>
<td>0</td>
<td>278</td>
<td>302</td>
</tr>
<tr>
<td>DDUGJY-RE XI Plan</td>
<td>341</td>
<td>287</td>
<td>287</td>
<td>0</td>
<td>492</td>
<td>346</td>
</tr>
<tr>
<td>DDUGJY-RE X Plan</td>
<td>235</td>
<td>402</td>
<td>402</td>
<td>0</td>
<td>424</td>
<td>424</td>
</tr>
<tr>
<td>Grand Total</td>
<td>1,557</td>
<td>2,727</td>
<td>2,036</td>
<td>694</td>
<td>3,864</td>
<td>3,173</td>
</tr>
</tbody>
</table>
# DTRs in Rural Electrification scheme

<table>
<thead>
<tr>
<th>Scheme/Plan Name</th>
<th>Project (Nos)</th>
<th>Distribution Transformers (Nos)</th>
<th>Scope</th>
<th>MVA</th>
<th>Achievement</th>
<th>MVA</th>
<th>Balance</th>
<th>MVA</th>
</tr>
</thead>
<tbody>
<tr>
<td>DDUGJY (New)</td>
<td>636</td>
<td>4,10,146</td>
<td>16,756</td>
<td>2,63,516</td>
<td>7,955</td>
<td>1,46,630</td>
<td>8,800</td>
<td></td>
</tr>
<tr>
<td>DDUGJY-RE XII Plan</td>
<td>273</td>
<td>3,55,487</td>
<td>11,148</td>
<td>2,92,304</td>
<td>7,956</td>
<td>63,183</td>
<td>3,191</td>
<td></td>
</tr>
<tr>
<td>DDUGJY-RE XI (Ph-II)</td>
<td>72</td>
<td>1,85,384</td>
<td>5,902</td>
<td>1,58,232</td>
<td>1,763</td>
<td>27,152</td>
<td>4,138</td>
<td></td>
</tr>
<tr>
<td>DDUGJY-RE XI Plan</td>
<td>341</td>
<td>3,05,023</td>
<td>5,266</td>
<td>2,28,860</td>
<td>3,409</td>
<td>76,163</td>
<td>1,857</td>
<td></td>
</tr>
<tr>
<td>DDUGJY-RE X Plan</td>
<td>235</td>
<td>2,78,075</td>
<td>4,244</td>
<td>2,60,306</td>
<td>3,974</td>
<td>17,769</td>
<td>270</td>
<td></td>
</tr>
<tr>
<td>Grand Total</td>
<td>1557</td>
<td>15,34,115</td>
<td>43,318</td>
<td>12,03,218</td>
<td>25,060</td>
<td>3,30,897</td>
<td>18,258</td>
<td></td>
</tr>
</tbody>
</table>
## Status of Rural Electrification Scheme

<table>
<thead>
<tr>
<th>Scheme/Plan Name</th>
<th>Project (Nos)</th>
<th>11 KV Lines (Ckt. Kms)</th>
<th>Scope</th>
<th>Achievement</th>
<th>Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>DDUGJY (New)</td>
<td>636</td>
<td>1,09,835.82</td>
<td>96,020.39</td>
<td>13,815.43</td>
<td></td>
</tr>
<tr>
<td>DDUGJY-RE XII Plan</td>
<td>273</td>
<td>1,64,774.76</td>
<td>98,710.49</td>
<td>66,064.27</td>
<td></td>
</tr>
<tr>
<td>DDUGJY-RE XI (Ph-II)</td>
<td>72</td>
<td>1,17,544.62</td>
<td>59,962.82</td>
<td>57,581.8</td>
<td></td>
</tr>
<tr>
<td>DDUGJY-RE XI</td>
<td>341</td>
<td>2,08,370.94</td>
<td>1,42,628.33</td>
<td>65,742.61</td>
<td></td>
</tr>
<tr>
<td>DDUGJY-RE X</td>
<td>235</td>
<td>1,54,528.57</td>
<td>1,39,620.6</td>
<td>14,907.97</td>
<td></td>
</tr>
<tr>
<td>Grand Total</td>
<td>1557</td>
<td>7,55,054.71</td>
<td>5,36,942.63</td>
<td>2,18,112.08</td>
<td></td>
</tr>
</tbody>
</table>
The major defects observed in Distribution Transformers at site are as follows:

• Oil leakage found on Power Transformer.
• Low oil found in breather oil cup.
• Silica gel found saturated.
• Only one neutral earthing of Power Transformer.
• G.I flat strip for earthing Power Transformer & Circuit Breaker found welded.
• PTR Earthing not proper.
• Silica Gel breather found saturated/missing from DTRs.
• LA found damaged in some DTRs.
• Breather found missing from some DTRs.
• Oil Leakage was found in DTR body.
• Silica Gel breather found missing.
Oil Leakage found at DTR
Transformer body found rusted
DTR is found rusted.
Base channel nut bolts are found rusted.
Oil leakage found on DTR, Breather found missing
Oil Leakage found at DTR, Bolt not used for mounting transformer
Oil Leakage found at DTR
Oil Leakage found at DTR
Arcing horns not installed properly at DTR
Oil leakage found at DTR
Breather found missing
DO fuse found missing, DTR Belting not Done
DTR body found rusted
LA is not connected to phase at DTR
Breather found saturated
Bi metallic clamps not used
Silica gel breather and arcing horns missing at DTR
HT busing found broken
Oil Leakage found at DTR
DTR bushings above tank
LT Terminals are above fins
Thank you