

BTS in Rural India: PMGSY Solar Water Pumping Scheme

India's Rural Energy Dilemma: Connectivity vs. Irrigati [...]



BTS in Rural India: PMGSY Solar Water Pumping Scheme

India’s Rural Energy Dilemma: Connectivity vs. Irrigation

Across India’s 600,000 villages, two critical challenges intersect:

- 250,000+ telecom BTS sites suffer 8+ hour daily power cuts, relying on diesel gensets that cost operators ₹9,000 crore annually
- Agriculture’s 18% power demand goes unmet, with 30 million farmers depending on erratic grid/diesel pumps

The PMGSY Scheme (now covering 768,892 km of rural roads) provides the infrastructure backbone to deploy an innovative solution: integrated [solar systems](#) powering both telecom towers and irrigation pumps simultaneously.

Technical Breakdown: How Hybrid Solar BTS+Pump Systems Work

Core Components

Telecom Side	Pump Side	Shared Infrastructure
<ul style="list-style-type: none"> • 5-10kW solar PV array 	<ul style="list-style-type: none"> • 6-12kW solar pump inverter 	<ul style="list-style-type: none"> • Smart energy management system (EMS)
<ul style="list-style-type: none"> • HighJoule HJESS sodium-ion batteries (20-125kWh) 	<ul style="list-style-type: none"> • 7.5HP AC motor with VFD 	<ul style="list-style-type: none"> • MPPT charge controllers
<ul style="list-style-type: none"> • IP65 enclosures (50°C rated) 	<ul style="list-style-type: none"> • 20,000L/day water output 	<ul style="list-style-type: none"> • Remote monitoring platform

Energy Flow Optimization

- **Daytime:** Solar PV prioritizes pump operation (peak irrigation hours)
- **Night/Cloudy:** Stored battery power ensures 99.9% BTS uptime
- **Excess Energy:** Diverted to community microgrids (PM-KUSUM compliant)

PMGSY’s Policy Synergies: Making Projects Viable

Financial Incentives

- PM-KUSUM: 60% subsidy on solar pumps
- M-SIPS: 25% capex reimbursement for telecom infrastructure
- NOFN: Additional grants for digital inclusion projects

Example ROI:

- 5kW BTS + 3HP pump system (₹18-22 lakhs)
- 3.2 year payback with subsidies
- ₹1.2 lakh/year savings vs diesel

Proven Success: Uttar Pradesh & Andhra Pradesh Case Studies

Uttar Pradesh Pilot (2023)

- 5 solar BTS sites co-located with 8 solar pumps
- **Results:**
 1. 98% network uptime (from 72%)
 2. 60% lower irrigation costs
 3. 300+ women accessing Agri-tech via reliable connectivity

Andhra Pradesh Deployment

- 47 systems over 12 months
- **Outcomes:**
 1. 92% diesel reduction
 2. 318 farmers gaining year-round irrigation
 3. 99.4% telecom availability

Why HighJoule's Solutions Lead the Market

Differentiators

- **Climate-Adapted Design**
 1. Liquid-cooled batteries (45-50°C performance)
 2. Anti-dust PV coatings (tested in Rajasthan & Gujarat)
- **Modular Scalability**
 1. From single 5kWh BTS (HJ-51.2V100Ah)
 2. To 1MWh cluster solutions (like Eritrea 2MWh project)
- **End-to-End Compliance**
 1. PMGSY road access planning
 2. PM-KUSUM subsidy documentation
 3. DISCOM grid-tie approvals

Implementation Roadmap (8-16 Weeks)

Key Steps:

- Terrain mapping (solar irradiance + water table depth)
- Load profiling (BTS power demand vs pump requirements)
- Energy-sharing algorithm customization

The Future: Aligning with India's 2030 Goals

This model directly supports:

- 50% diesel reduction in telecom (DoT target)
- 100% 4G coverage (BharatNet initiative)
- Climate-smart agriculture (PM-KUSUM Phase-III)

Contact Us

For catalog requests, pricing, or partnerships, please visit:
<https://www.hijoule.com>



Scan QR Code
Visit Our Website