

RURAL ELECTRIFICATION IN INDIA

CUSTOMER BEHAVIOUR AND DEMAND

GLOBAL FORUM-World Energy Transition

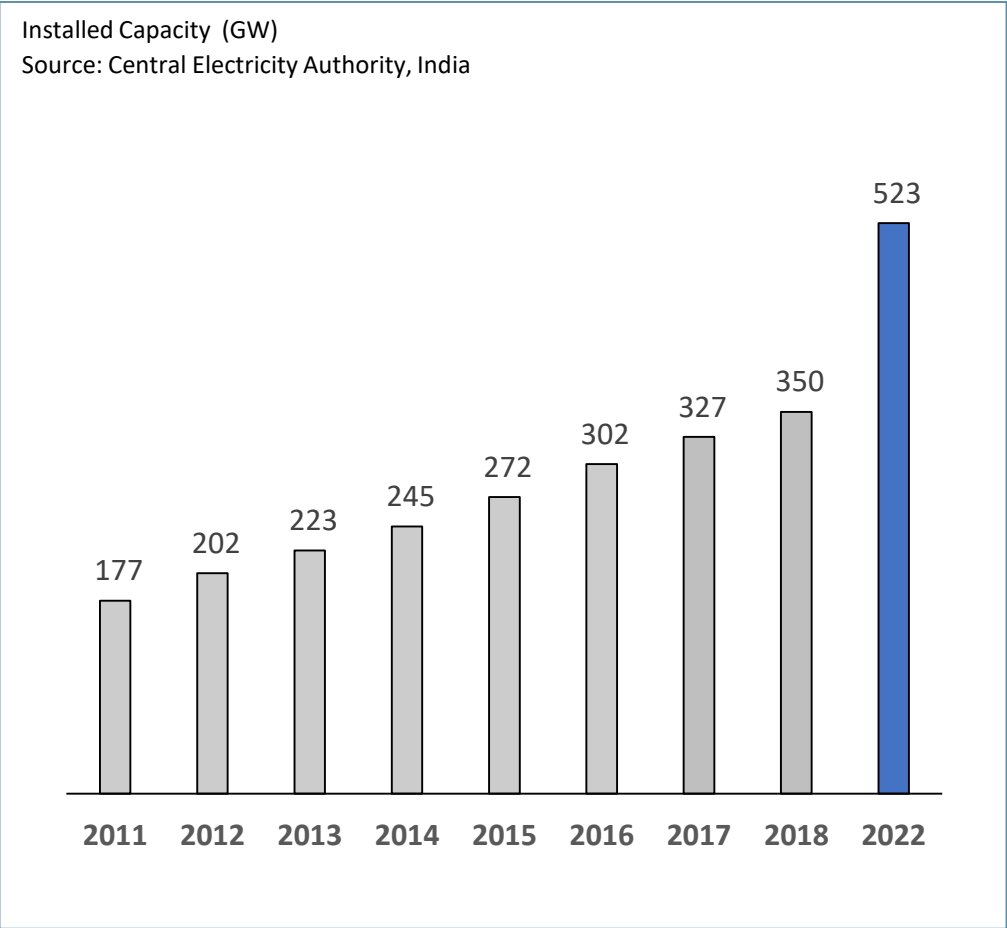


March, 2019

INDIA'S RURAL ELECTRIFICATION

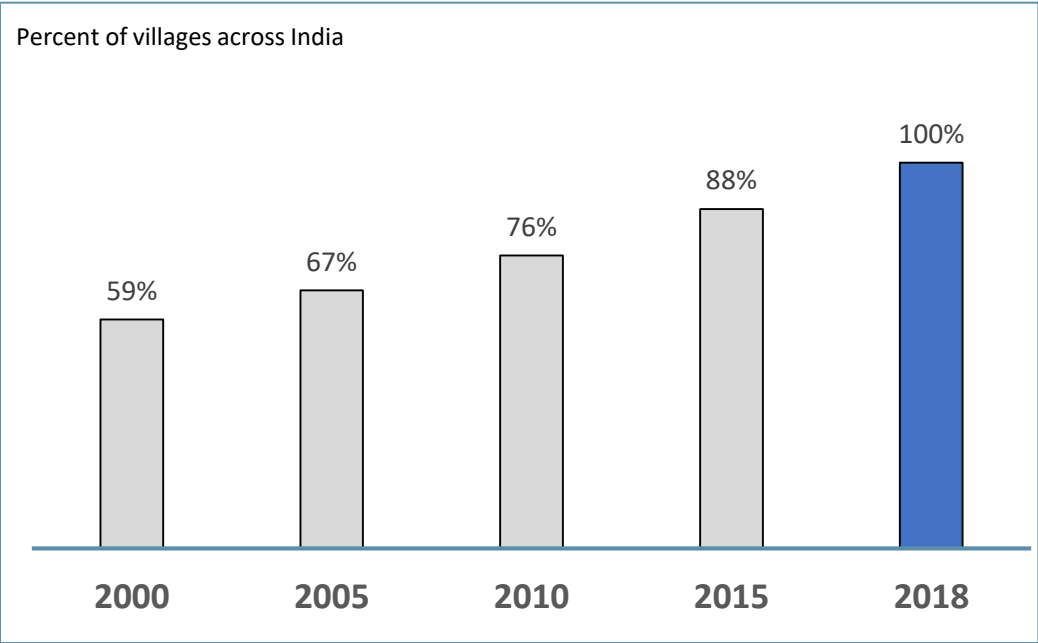
Rural electrification in India: Several wins

Installed capacity has almost doubled over 7 years and is projected to grow further



Source: World Bank, 2018; Energy Access Outlook, 2017

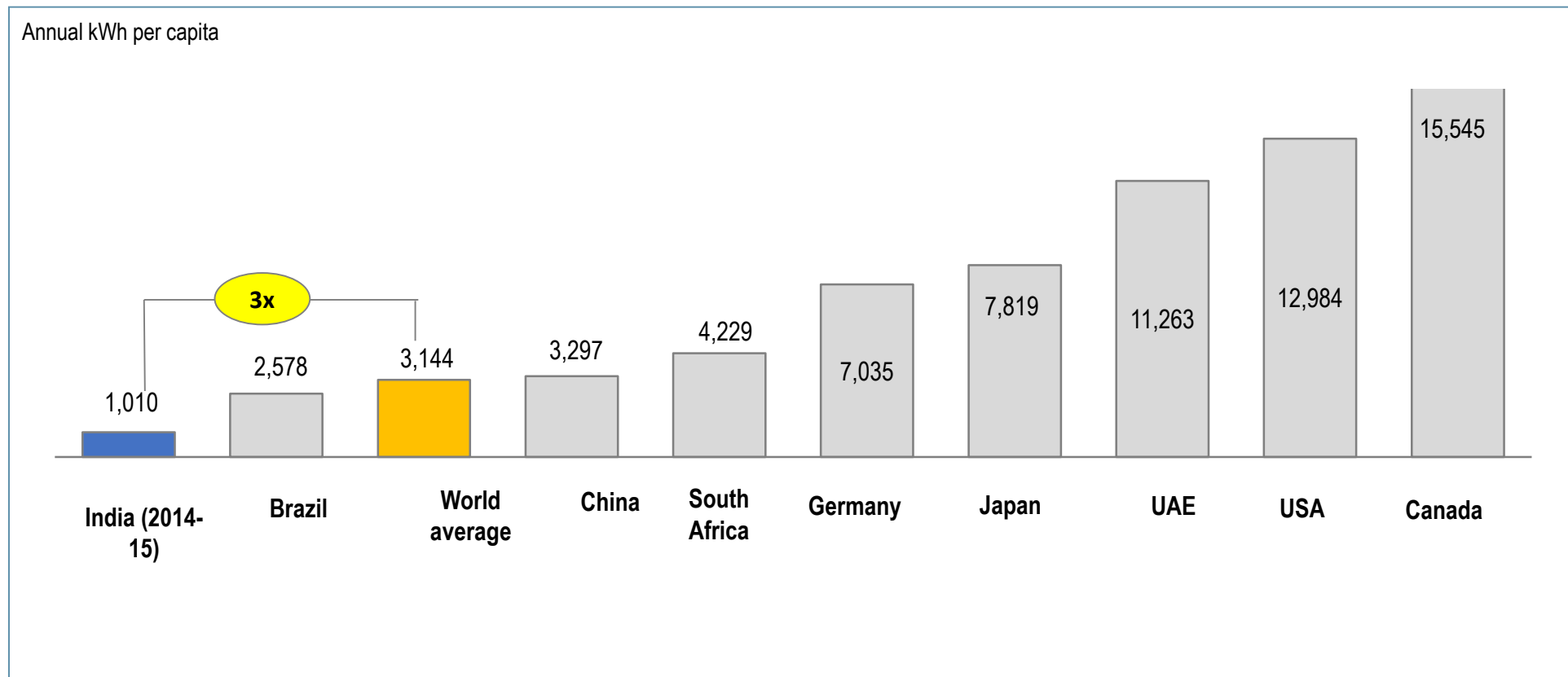
Grid distribution network has also expanded



			
Household (HH) Electrification ¹	76%	88%	99%
			
Supply Hours - Rurali ²	4-6 Hours	8-10 Hours	14-18 Hours

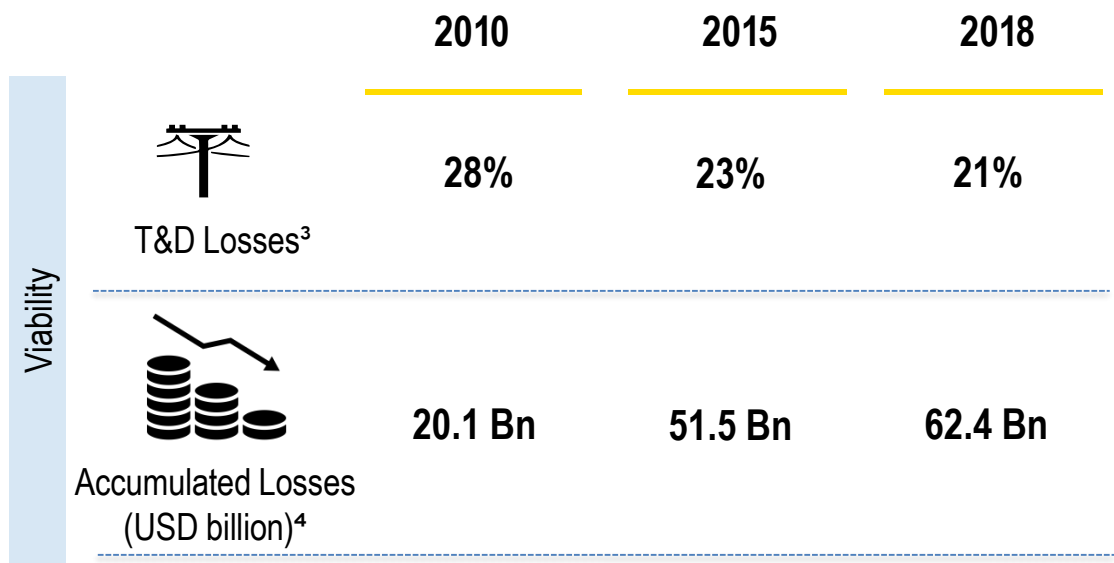
Per capita electricity consumption is low, but is projected to grow

Electricity consumption in India growing at 6% - 7%



However, Public Utilities are struggling to serve rural customers viably

YoY losses, driven by gap between average cost of supply (ACS) and average revenue realized (ARR)



The rural segment has been unprofitable**

US Cents per unit of power

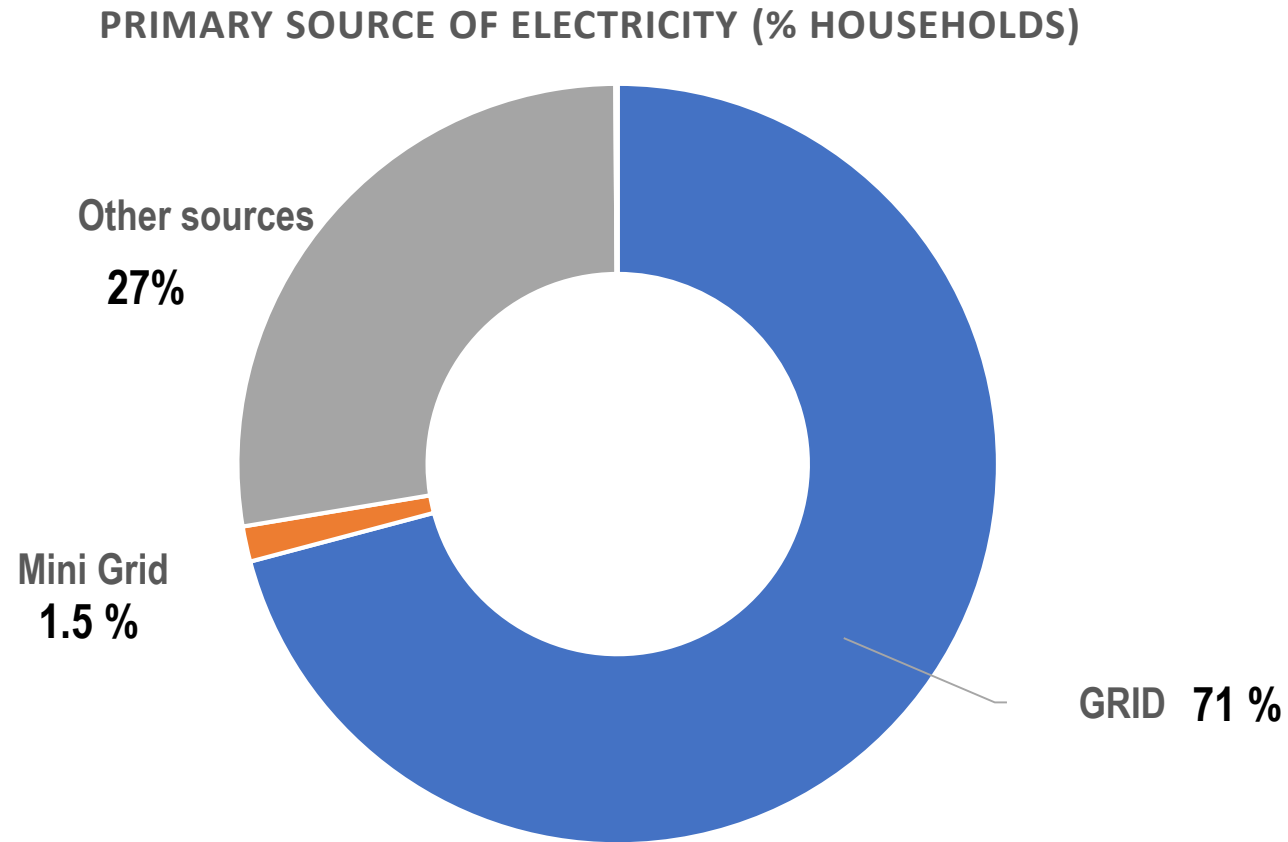
Govt. Utility Average per Unit Realizations (2017)			
Parameters ⁵	Overall	Rural	Urban/ Commercial
Tariff/Unit	6.60	2.90	9.30
Cost/Unit	7.70	8.30	7.50
Surplus/(Gap)/ Unit	(1.10)	(5.40)	1.80

* Estimates fir FY 2017 and 2018 as per data available in ARR filing by DISCOMS to regulator

** Using West UP (PVVNL) tariff petition; excluding all categories which are not broken into rural and urban such as institutions, HV customers, etc; Rural customers domestic at Rs 1.27 and enterprise at 3.37

Source: Report on performance of state utilities Jun-16

And rural customers continue using multiple sources for lighting and electricity



Others include: Solar Home System, Solar lanterns, Diesel gensets, Rechargeable batteries, Kerosene lamps, Torch, candles and Emergency lights

Customer dissatisfaction from the grid services is high

41%
**Unsatisfied
Customers**



**GRID USERS
DISSATISFACTION
WITH GRID ELECTRICITY**

Dissatisfaction is driven by:

Poor redress services

Power cuts: 1 in 2 households with grid-electricity face power cut of at least eight hours per day

Poor Metering/Billing: There is a high share of unmetered connections and billing is highly irregular

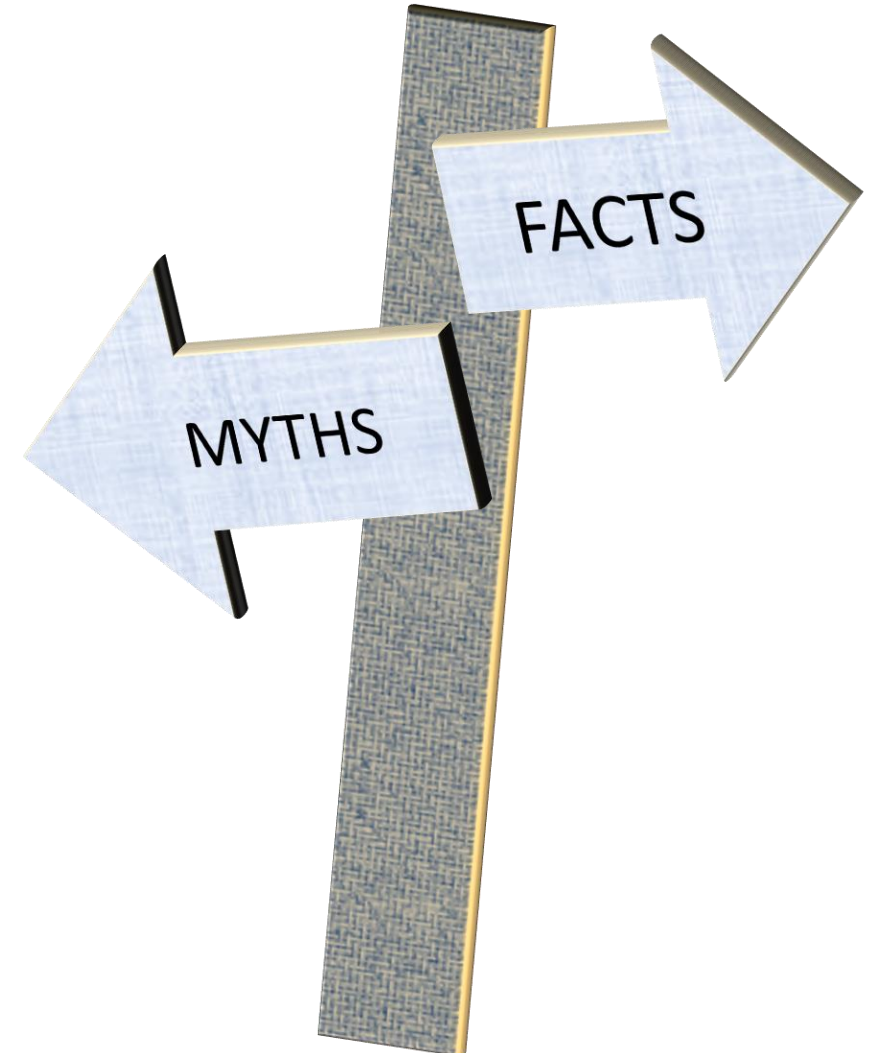
And myths about serving rural segment remain

Rural electricity
DEMAND IS LOW

Rural customers
CAN'T AFFORD
ELECTRICITY

Rural customers
DON'T PAY

HIGH RATE OF
THEFT

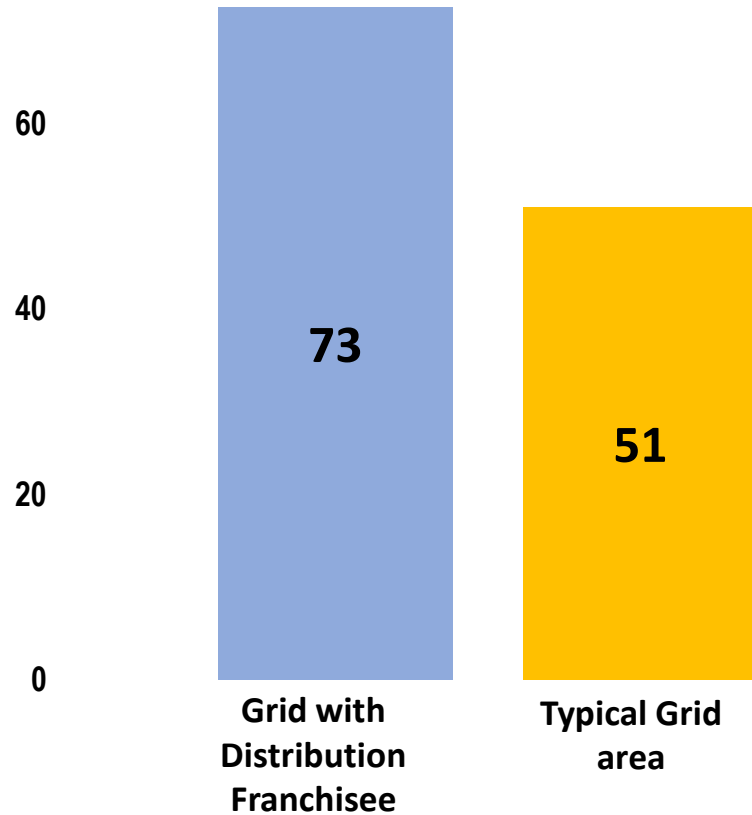


SPI's LEARNING

SPI's Learning 1:

Service and Reliable electricity drive Customer Satisfaction

Comparison of Customer Satisfaction (% Satisfied) between 2 grid serviced geographies



What drives customer satisfaction?

Supply Hours

Evening Supply Hours

Metered Connection

On-time billing

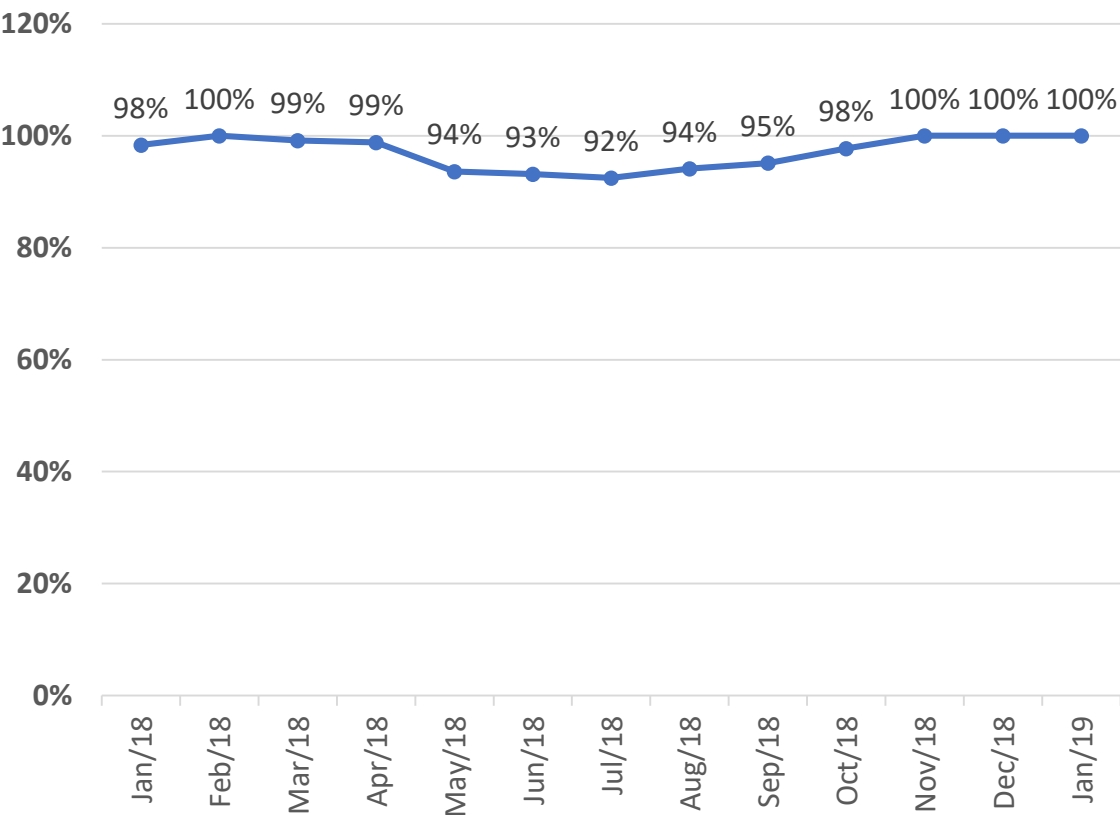
Complaint redress

Stable voltage

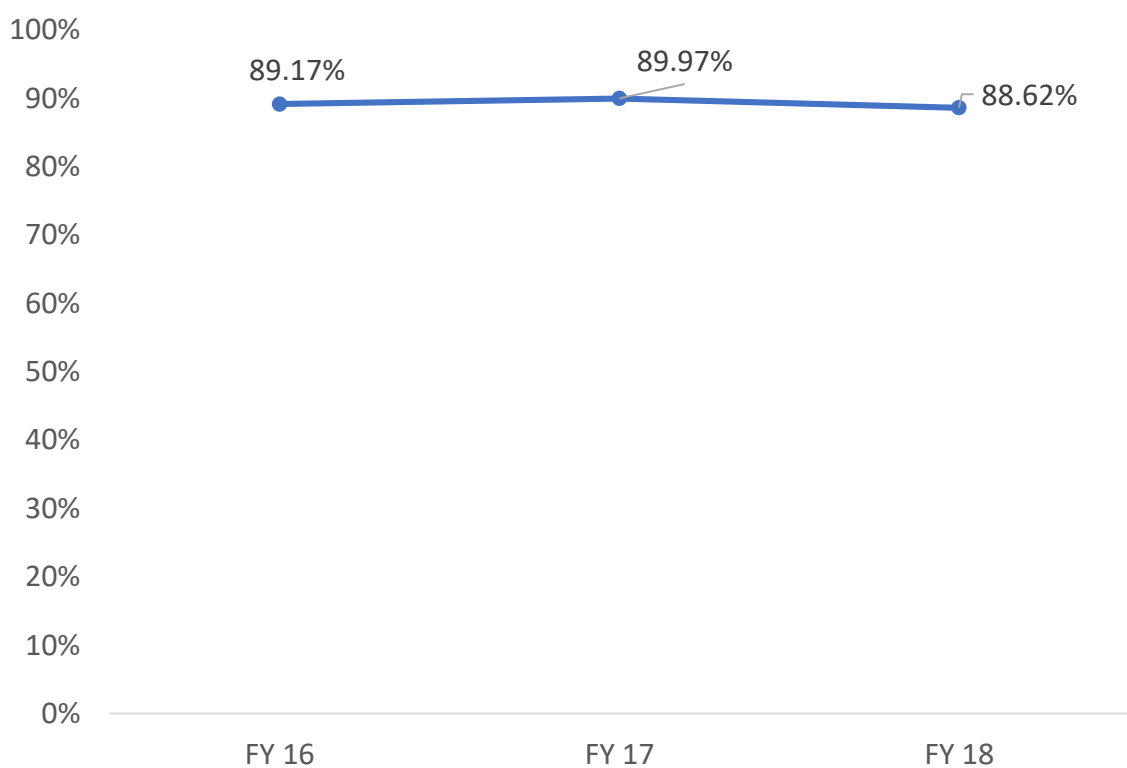
SPI's Learning 2:

Rural customers pay for reliable service

Trend-line data of 1-year collection efficiency of 19000+ number of customers across 150+ Smart Power Mini-grids in India

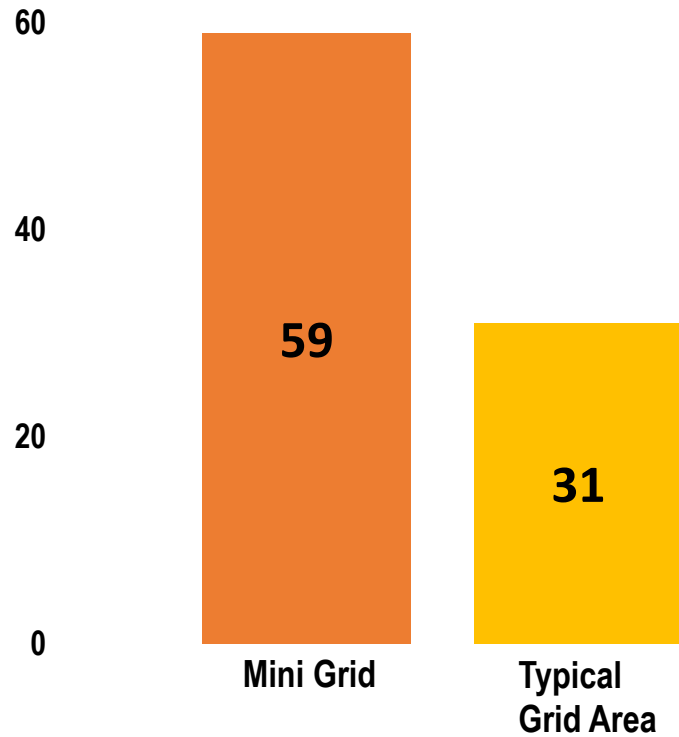


Trend-line of collection efficiency in grid areas with improved service

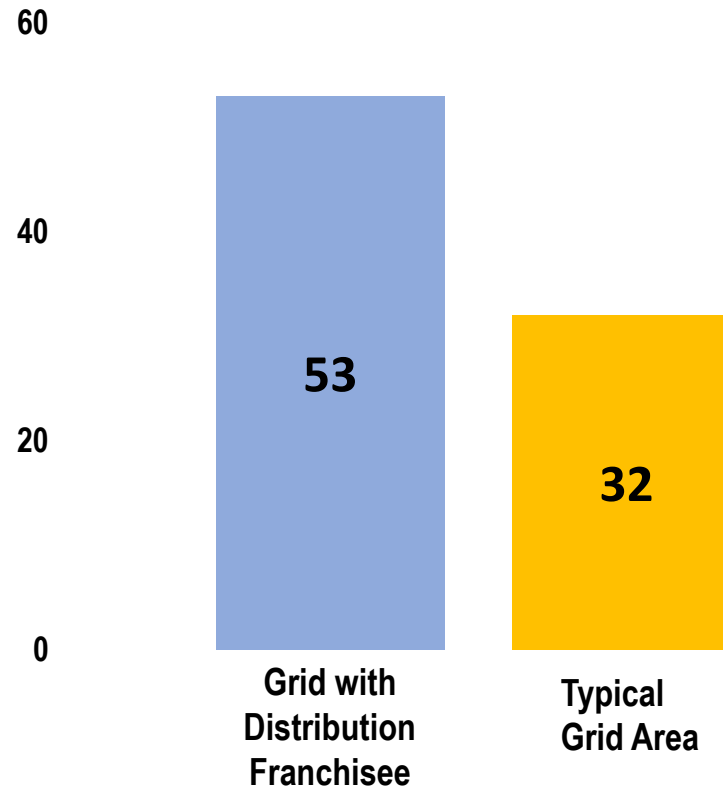


SPI's Learning 3: Customer service drives the perception of affordability

Comparison of Affordability Perception
(% Agree) between Mini-grid and Grid
served geographies



Comparison of Affordability Perception (%
Agree) between Grid serviced geographies



What drives affordability perception?

Reliability

Evening Supply Hours

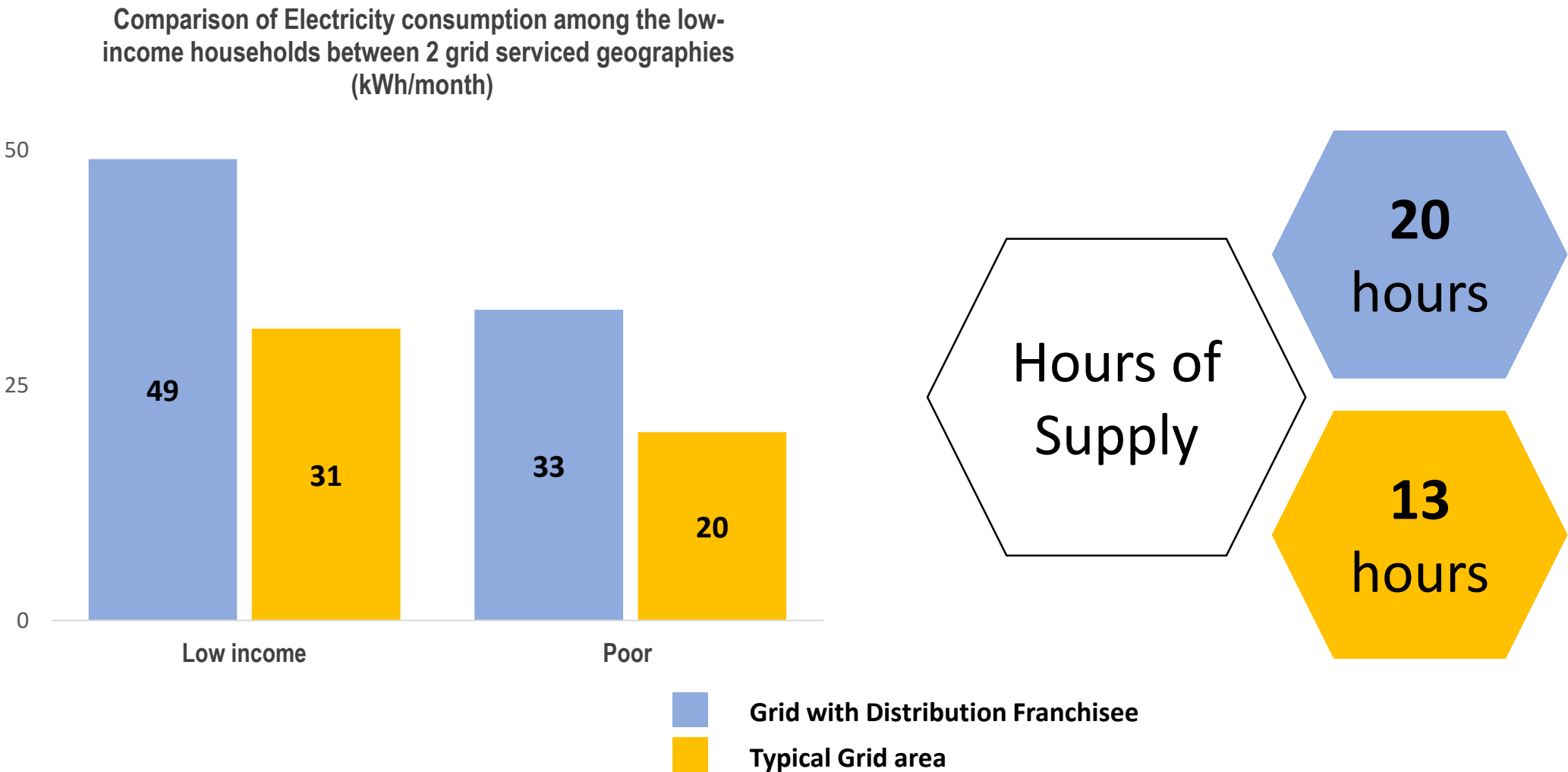
On-time billing

Complaint redress

Stable voltage

SPI's Learning 4:

Even among the low-income segment, electricity consumption increases with increased hours of supply

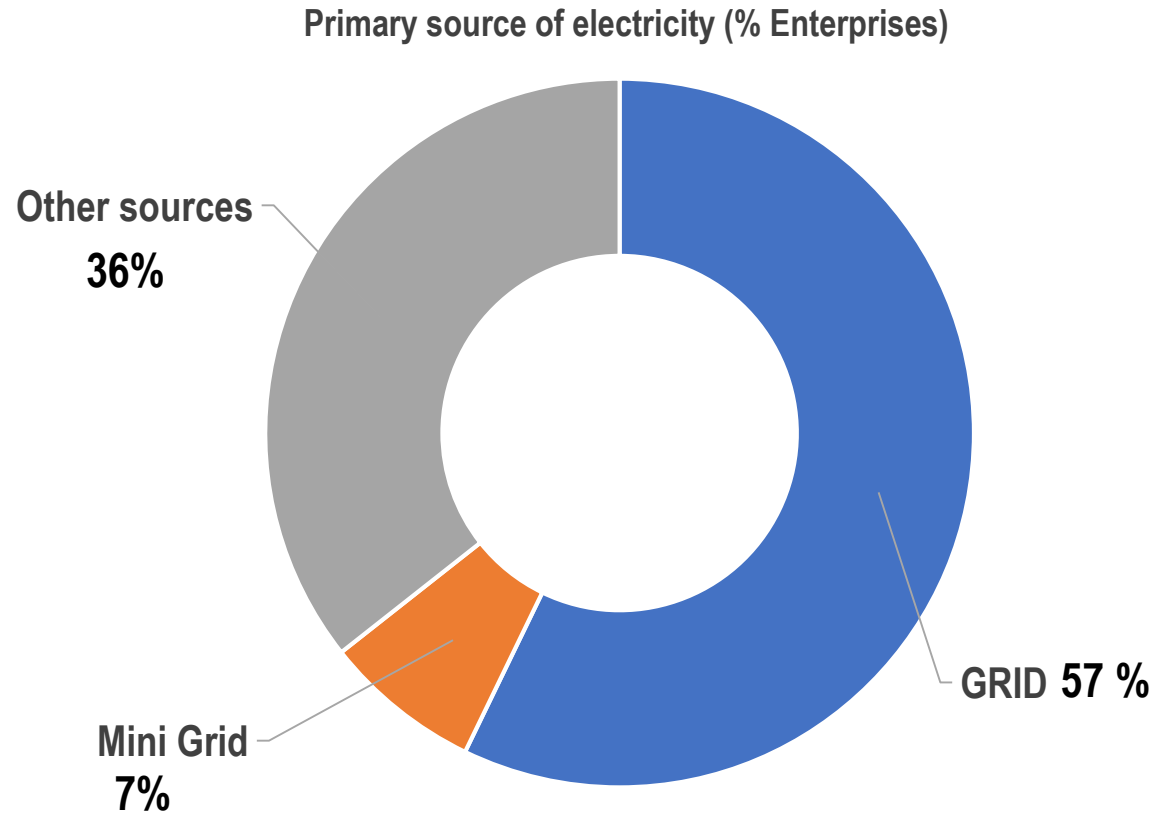


Source: SPI-ISEP, John Hopkins Research study covering 12000+ customers in India, Feb 2019

SPI's Learning 5:

Rural microenterprises are an important segment and can't be ignored

Rural Micro-enterprises are 'high consuming' & 'paying' customers with stable demand



Despite the physical availability of grid-electricity almost half of rural enterprises in surveyed states of India relied on non-grid sources like **diesel generators, solar systems, batteries etc.**

Other sources include: Solar Home System, Solar lanterns, Diesel gensets, Rechargeable batteries, Kerosene lamps, Torch, candles and Emergency lights

ABOUT SPI'S WORK

SPI has enabled the world's largest portfolio of mini grids supplying homes and businesses

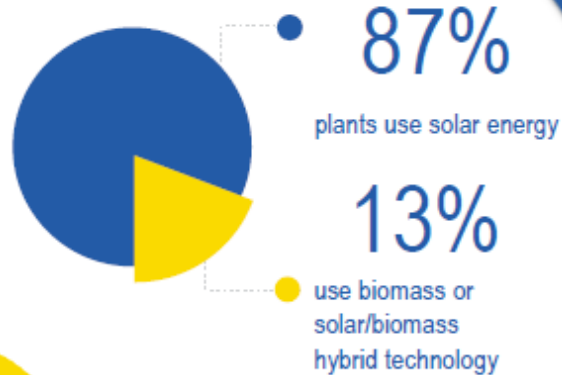
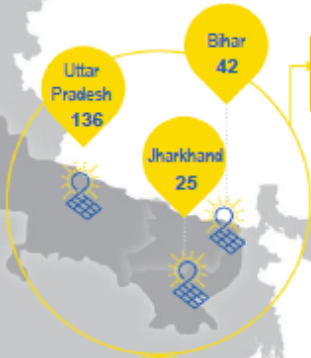
Smart Power mini-grids

Providing electricity access to more than 203 villages of India



Impacting the lives of **77,259** people

200 Mini Grids



19,350
Overall customers

7 MW
Overall installed capacity

12,315



Households

5,540



Shops

1,305



Commercial users

148



Telecom towers

42



Institutions & micro-enterprises

We have demonstrated that the poor will pay for power to improve their lives

Average collection rates

97%

Annual increase of energy consumption

15%

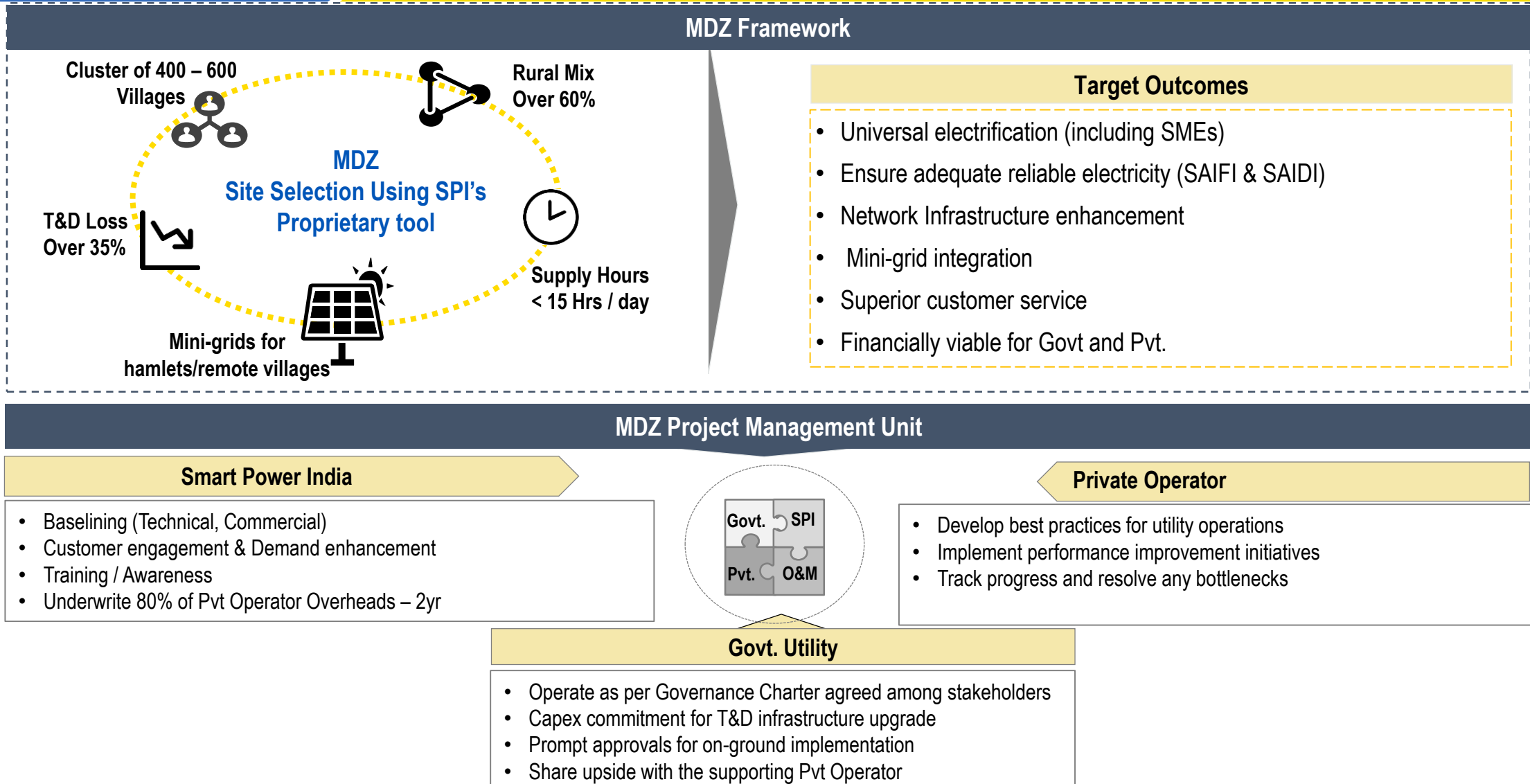
Homes ending use of kerosene and diesel

25%

Increase in monthly revenues for small businesses

12-15%

SPI is piloting a Model Distribution Zone (MDZ) in partnership with a DisCom



Thank You

