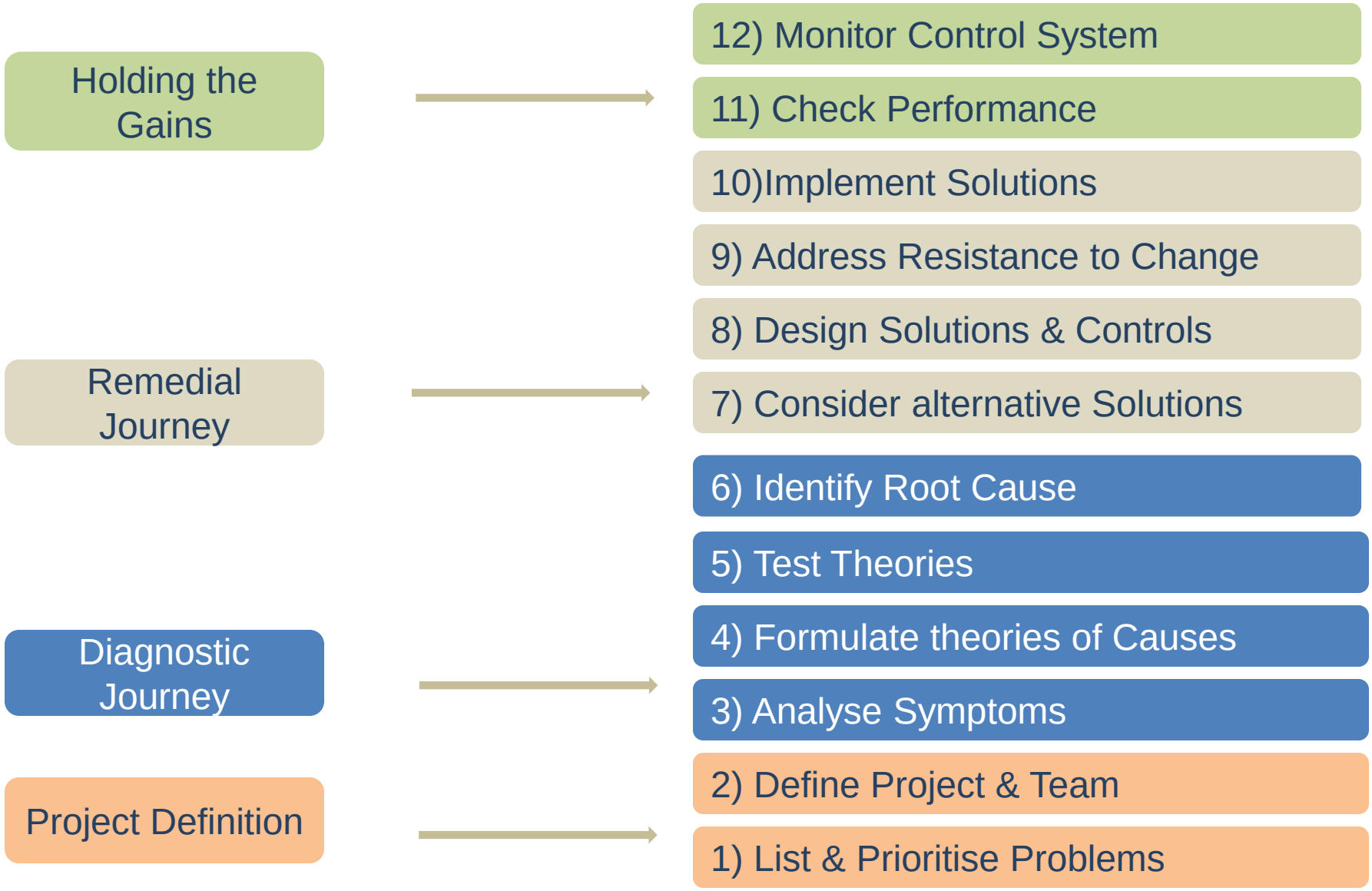
To Reduce the Energy Cost of DIAL by 1 Cr Through Identifying Potential Losses in Energy Billing by March 2020.

Recurring Cost Saving

CIP/2019-20/1138

12 Steps Methodology of Problem Solving



Project Title

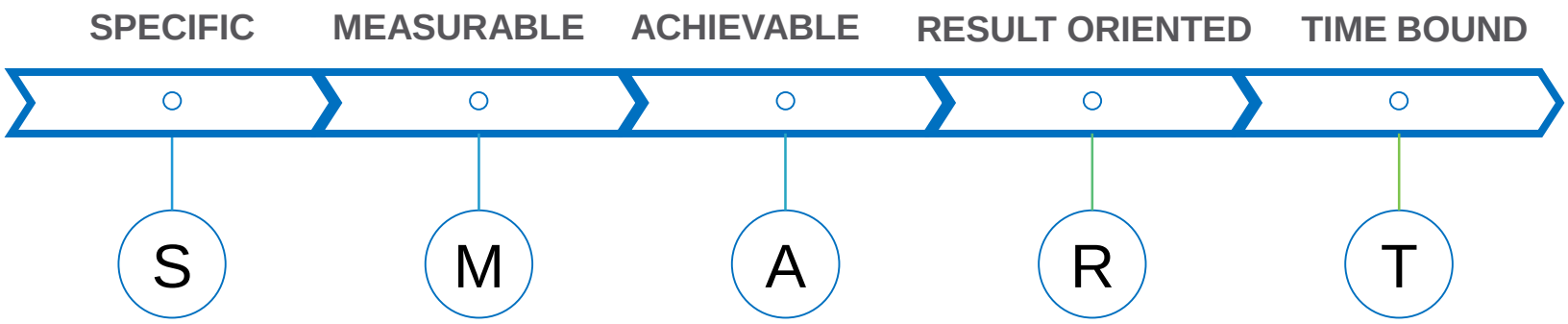
Business Excellence — Creating an Excellent Tomorrow, Today

GMR

Project Definition | Diagnostic Journey | Remedial Journey | Holding The Gains

To Reduce The Energy Cost Of DIAL By 1.5 Crore INR

Through Identifying Potential Losses In Energy Billing By March 2020



Project

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Project Definition | Diagnostic Journey | Remedial Journey | Holding The Gains

Venue	MRSS
Date	2th April-2019
Team Mentor	Mr. Roy Sebastian
Team Members	H.S Ahluwalia , Harinder Khurana, Rajesh Gupta ,Atul Singh

"Shifting of metering from 66kv to 33kV voltage at BSES Rajdhani Power Ltd, (BRPL) Mahipalpur substation, as per the DERC (Delhi Electricity Regulatory Commission) Regulations"

The Delhi Electricity Regulatory Commission was constituted to regulate power purchase and procurement process of the transmission utilities and distribution utilities including the price at which the power shall be procured from the generating companies, generating stations or from other sources for transmission, sale, distribution and supply in the National Capital Territory of Delhi.

Mission Statement

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Project Definition | Diagnostic Journey | Remedial Journey | Holding The Gains

To Reduce the Energy cost of DIAL by 1.5 Cr INR Through Identifying Potential Losses In Energy Billing

- BRPL is Supplying Power to DIAL at 66kV and 33kV voltage level and generated a bill of DIAL at 66kV voltage level. In the process of energy cost optimization it was observed that 2*50MVA transformer which are installed at BRPL S/s, losses of these transformer were adding in DIAL's every month electricity bill. DIAL raised the metering and billing issues at BSES that ,DIAL billing at 66kV voltage for both s/s is not as per DERC guidelines, which BSES opposed and referenced the AAI agreement, although DIAL continued to explain BSES but BSES has not given consent of shifting of the DIAL metering point at 33kV at BSES MHP s/s .
- DIAL approached to the SLDC and on request of the DIAL, SLDC called a meeting of DIAL and BSES, which was held at SLDC. Both DIAL and BRPL have submitted related documents to SLDC. Based on the guidelines of DERC, SLDC ruled in favor of DIAL and directed BSES to shift to the energy metering at 33kV voltage at MHP S/s.
- But BSES was not convinced with SLDC order and BSES filed a petition in the DERC court and there BSES challenged the decision of SLDC. To defend the SLDC's decision, DIAL put its stand on the case in the DERC court.
- After 2-3 hearing in DERC court, BSES finally agreed to change the metering point from 66 KV level to 33 KV level at BSES MHP s/s.

Roles and Responsibility

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Team Mentor Name: Roy Sebastian , H.S Ahluwalia / Harinder Khurana
Team Leader : Rajesh Gupta

Role	Responsibility	Department
Planning, expected outcome of after implementation of Scheme. Coordination for all activities including execution with BSES and SLDC.	Atul Singh	P&E-Electrical
Data collection and Analysis	Atul /Tapas	P&E-Electrical
Responses to petition filled by BSES at DERC court	Dinesh Kumar	Legal Team
Execution of Scheme at site	Atul /Tapas	P&E-Electrical
Compliance of Documents as per Open Access	Ramya	P&E-Electrical

Activity Plan

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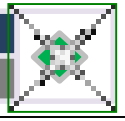
Project Definition 

Diagnostic Journey

Remedial Journey

Holding The Gains

S #	ACTIVITY	RESP	FY 19-20												REMARKS
			M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	
1	Team building & Identification and reviewing of documents.	PLAN													
		ACTUAL													
2	Communication and discussion with DISCOM (BSES)	PLAN													
		ACTUAL													
3	Submission relevant document to DISCOM	PLAN													
		ACTUAL													
4	Submission relevant document to SLDC and execution of order	PLAN													
		ACTUAL													
5	Measurement & Verification	PLAN													
		ACTUAL													

Plan

DIAGNOSTIC JOURNEY

Situational Analysis

"Regularization DIAL energy metering as per DERC guidelines i.e. at BRPL (BSES Rajdhani Power Ltd) S/s "

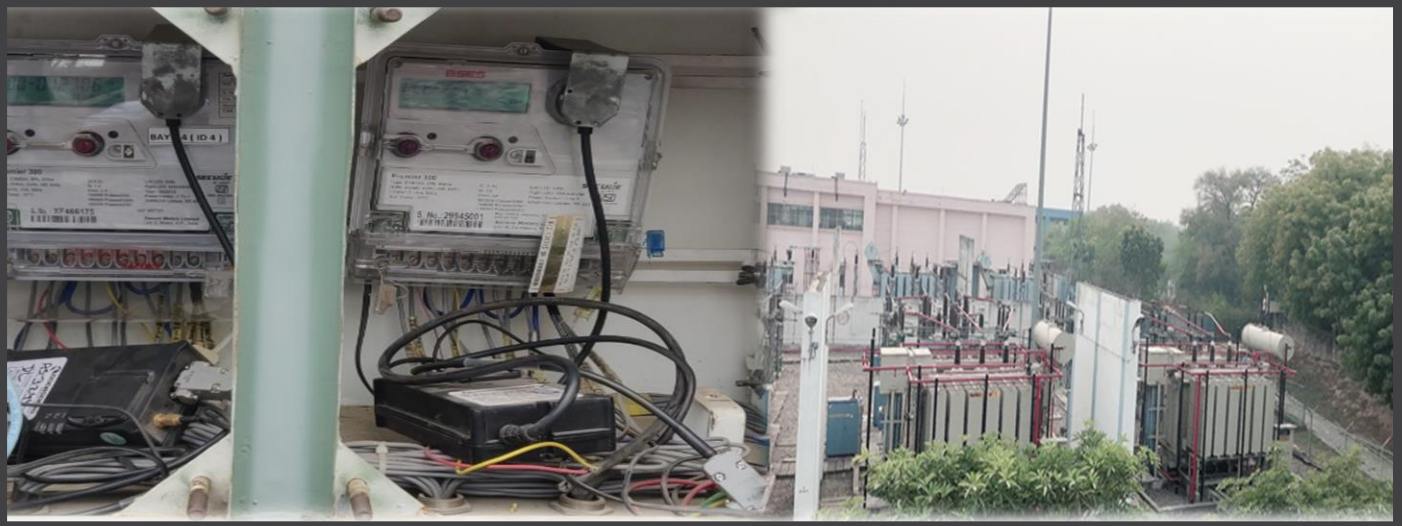
Constraints in Existing Scenario

- DIAL metering at single voltage i.e. 66kV, Even though DIAL is receiving Power supply at two different voltage i.e. 66kV at MRSS and 33kV at T1 & T2 .
- Billing to DIAL at single voltage level of 66kV, incurring the losses to DIAL
- Metering at two Different substation
- Billing process stablish by AAI

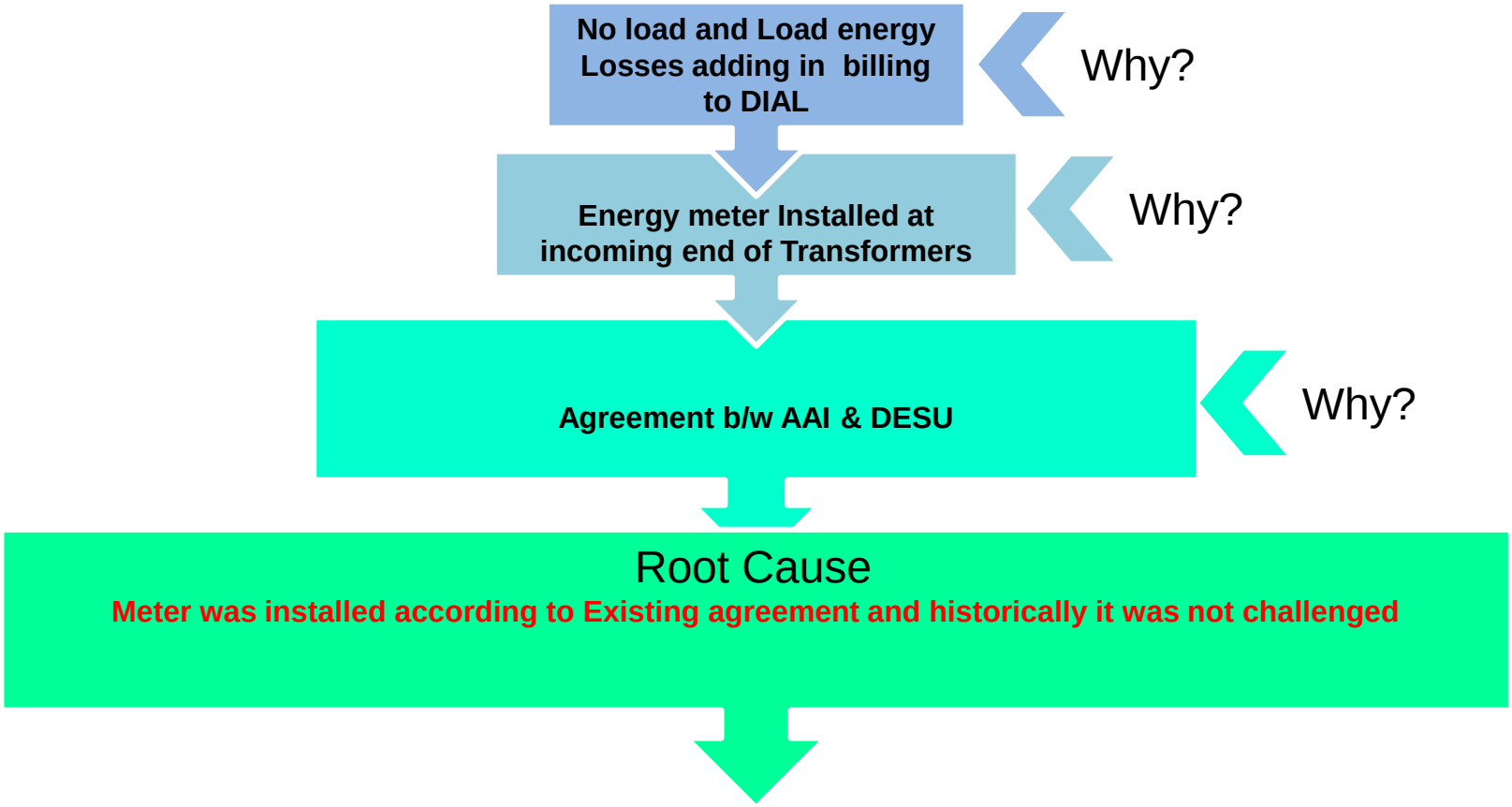
Diagnostic Journey

BRPL Supplying Electrical Power to DIAL at 66KV & 33KV voltage and generating the monthly Electricity bill to DIAL at 66kV voltage level.

At MHP S/s, BSES Palam substation is having 2 no's of Power transformer and each transformer is 66/33kV, 50 MVA. At a time only one Transformer is feeding power to IGIA Substations and 2nd Transformer at No load condition. Transformer installed at BRPL 66kV Palam Substation losses were adding in DIAL consumption every month since meters are installed at 66kV side.



WHY-WHY ANALYSIS



REMEDIAL JOURNEY

Remedial Journey

Project Definition | Diagnostic Journey | Remedial Journey | Holding The Gains

01

DIAL raised the metering and billing issues, Conveyed to BSES that ,DIAL billing is at 66kV voltage at both s/s is not as per DERC guidelines, which BSES opposed and referenced the AAI agreement, although DIAL continued to explain BSES but BSES has not given consent of shifting of the DIAL metering point at 33kV at BSES MHP s/s xxx

Raising the Billing Issue With BSES

02

DIAL approached to the State Load Dispatch Center (SLDC) and on request of the DIAL, SLDC called meeting on dated 03.04.20 in between DIAL and BSES, which was held at SLDC. Both DIAL and BRPL has submitted related documents like connection agreement copies , in between of AAI and DESU, In between AAI and BRPL (BSES Rajdhani Power Ltd.), in between of DIAL and BRPL to the SLDC. Based on the guidelines of DERC, SLDC ruled in favor of DIAL and directed BSES to shift to the energy metering at 33kV voltage at Mahipalpur S/s.

Approaching SLDC for Resolution

03

But BSES was not convinced with SLDC order and BSES filed a petition in the DERC court and there BSES challenged the order of SLDC. To defend the SLDC's decision, DIAL put its stand on the case in the DERC court with help of FIAL Legal team.

BSES Filing Petition in DERC Court

04

After 2-3 hearing in DERC court, BSES finally agreed for settlement out off court for change the metering point from 66 KV level to 33 KV level at BSES MHP s/s with condition that DIAL shall not challenge for any previous losses. The condition of BSES has been taken up with DIAL Management , where DIAL management has given the approval of settlement.

Settlement Out of DERC Court

Plan Vs Actual

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		ACTUAL													
5	Measurement & Verification	PLAN													
		ACTUAL													

Plan Actual Delay

Holding the Gains

To calculate the loss of energy consumption and to convince the BRPL, we tested the transformer and matched it with Transformer factory test report of transformer of the same size

Transformer factory test report consist of the Transformer No Load losses value as well Load losses value

For data analysis, we recorded the energy consumption of the no load transformer for a month

The recorded consumption was then compared with the consumption recorded in the ABT meter, the ABT has a provision to record the consumption in every 15 minute slot.

Microsoft Excel Worksheet

Meter file, at 66KV voltage

Microsoft Excel Worksheet

Meter file, at 33KV voltage

Adobe Acrobat Document

Transformer Test report

Holding the Gains

Energy Consumption

In BRPL monthly energy bill which also consist the meter wise detailed energy consumptions, meter no 176 which was reinstalled, recorded Zero consumption after shifting from 66kV voltage to 33kV voltage

Details of re-installed meter 176

XF466172	kWh	30-03-2020					4,056,000.00
XF466172	kW	30-03-2020					6,900.00
XF466172	kVAh	30-03-2020	149.44	29-02-2020	135.88	300,000.00	4,068,000.00
XF466172	kVA	30-03-2020	0.02			300,000.00	6,900.00
XF466172	kVAhP	30-03-2020					1,023,000.00
XF466172	kVAhO	30-03-2020					981,000.00
XF466173	kWh	30-03-2020					1,536,000.00
XF466173	kW	30-03-2020					4,800.00
XF466173	kVAh	30-03-2020					1,536,000.00
XF466173	kVA	30-03-2020					4,800.00
XF466173	kVAhP	30-03-2020					402,000.00
XF466173	kVAhO	30-03-2020					336,000.00
XF466174	kWh	30-03-2020					2,814,000.00
XF466174	kW	30-03-2020					7,200.00
							2,832,000.00
							7,200.00
							699,000.00
							759,000.00
		2020	101.24	29-02-2020	94.62	300,000.00	1,986,000.00
XF466175	kW	30-03-2020	0.01			300,000.00	2,400.00
XF466175	kVAh	30-03-2020	101.87	29-02-2020	95.20	300,000.00	2,001,000.00
XF466175	kVA	30-03-2020	0.01			300,000.00	2,400.00
XF466175	kVAhP	30-03-2020	26.20	29-02-2020	24.49	300,000.00	513,000.00
							471,000.00
XF466176	kWh	30-03-2020	51.10	29-02-2020	51.10	300,000.00	
XF466176	kW	30-03-2020				300,000.00	
XF466176	kVAh	30-03-2020	52.21	29-02-2020	52.21	300,000.00	
XF466176	kVA	30-03-2020				300,000.00	
XF466176	kVAhP	30-03-2020	13.35	29-02-2020	13.35	300,000.00	

Performance–Post Implementation

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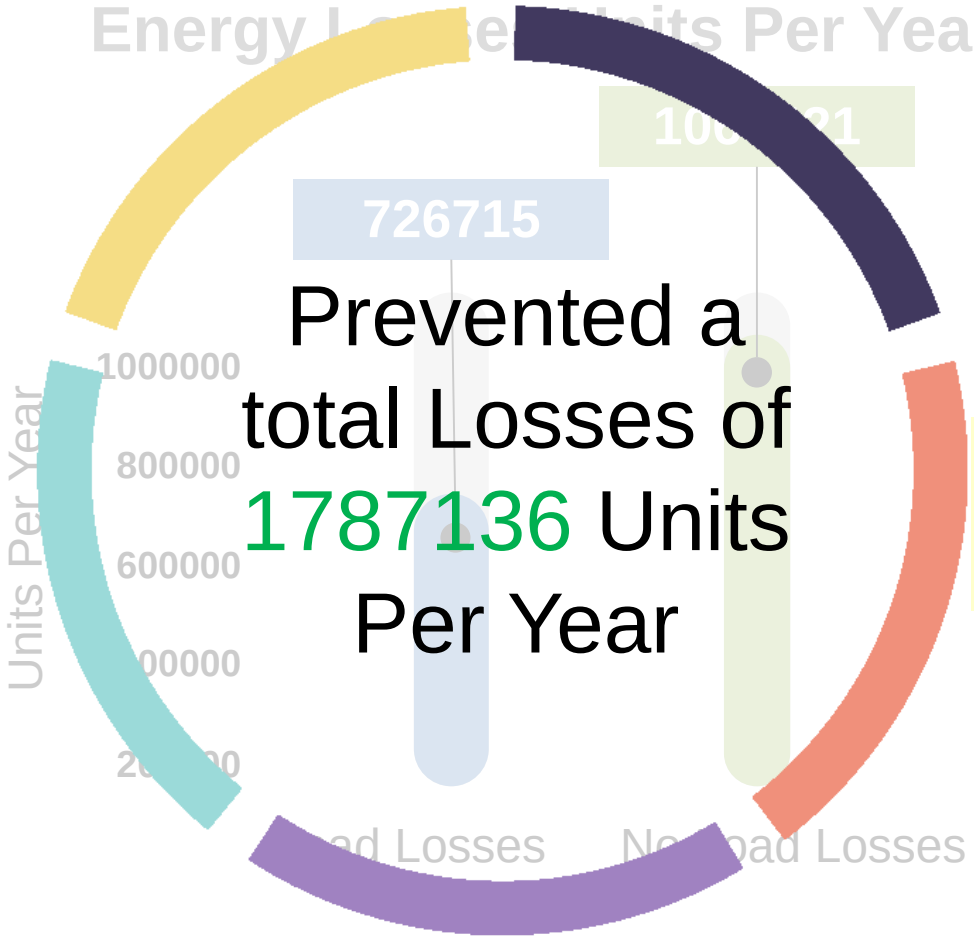
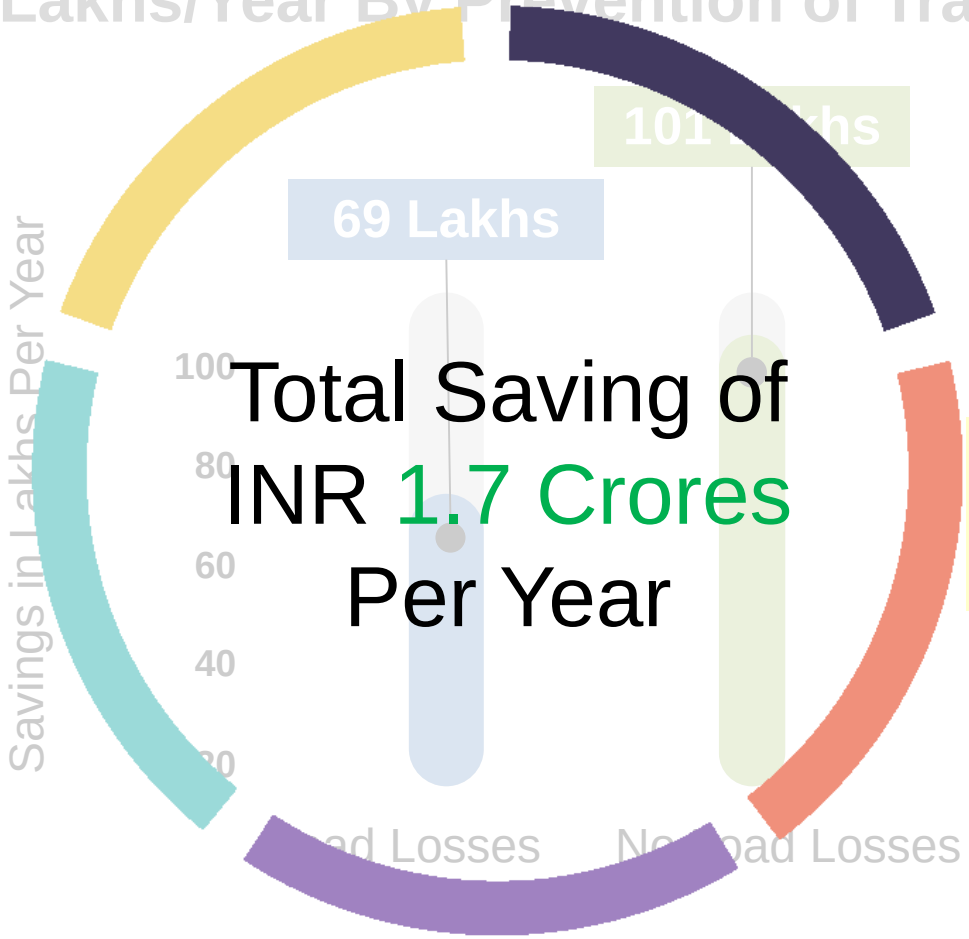


Prevented a total Losses of 1787136 Units Per Year

A Total Losses of **1787136** Units Per Year

Performance–Post Implementation

Saving in Lakhs/Year By Prevention of Transfer Losses



Total Saving of INR 1.7 Crores Per Year

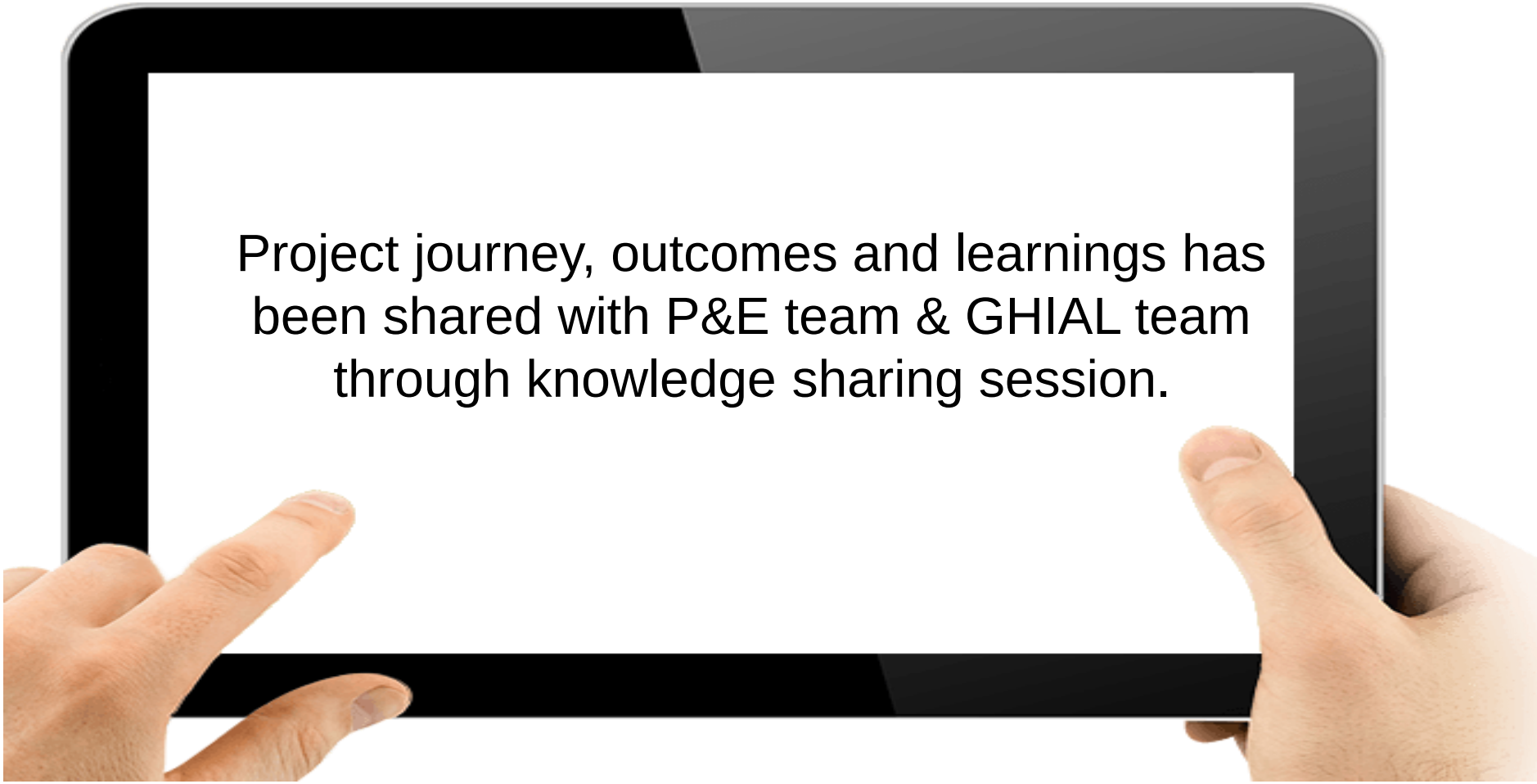
A Total Saving of **1.7 Crores INR** Per Year

Summary of Benefits

Summary of Key implementation steps	Non - Financial Benefits (Process Measures / Cycle time etc.)	Financial benefits (Language of money)
Shifting of metering point of 2* 50 MVA Power Transformer from 66 KV to 33 KV voltage at BSES Palam substation.	.	Recurring saving of approx. 1.7 Cr. per year, which will also vary with the aging of asset. Microsoft Excel Worksheet

Audited Savings

Knowledge Sharing Session



Thank You