



Load Data Improvement (LDI) Project for Reduced Forced Load Shedding

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Sever Power Shortage in Pakistan – 5,000 MW

Leading to extensive electricity outages, or ‘Load Shedding’



Huge Economic Losses

Causing huge reduction in industrial production / GDP growth



Cost of Power Outages to the Nation’s Economy

\$14.3 billion, or 7% of National GDP, in 2011-12



Disruption of Essential Social Services

Affecting population at large, leading to violent street protests




Government of Pakistan (GOP) placed resolving the energy crises at the top of its economic agenda



The five-year, USAID financed \$218 million Power Distribution Program (PDP) was designed to assist GOP in improving the performance and capacity of the ten state-owned distribution companies (DISCOs)

LDI to Mitigate the Problem



Obtain Near Real Time Data - Install AMRs at all Grid Substations - Rapid implementation for incomer, out going feeders, Large Industrial Customers, Small Hydel and Small Power Producers/Captive Power Plants.

Establish GPRS/GSM Communication Network and DISCO Power Distribution Centers

Centralized Data Collection - Building Historical interactive Database

Consolidated Information to National Power Control Center (NPCC) & DISCOs

LDI Key Components



AMR
Meter



ICT

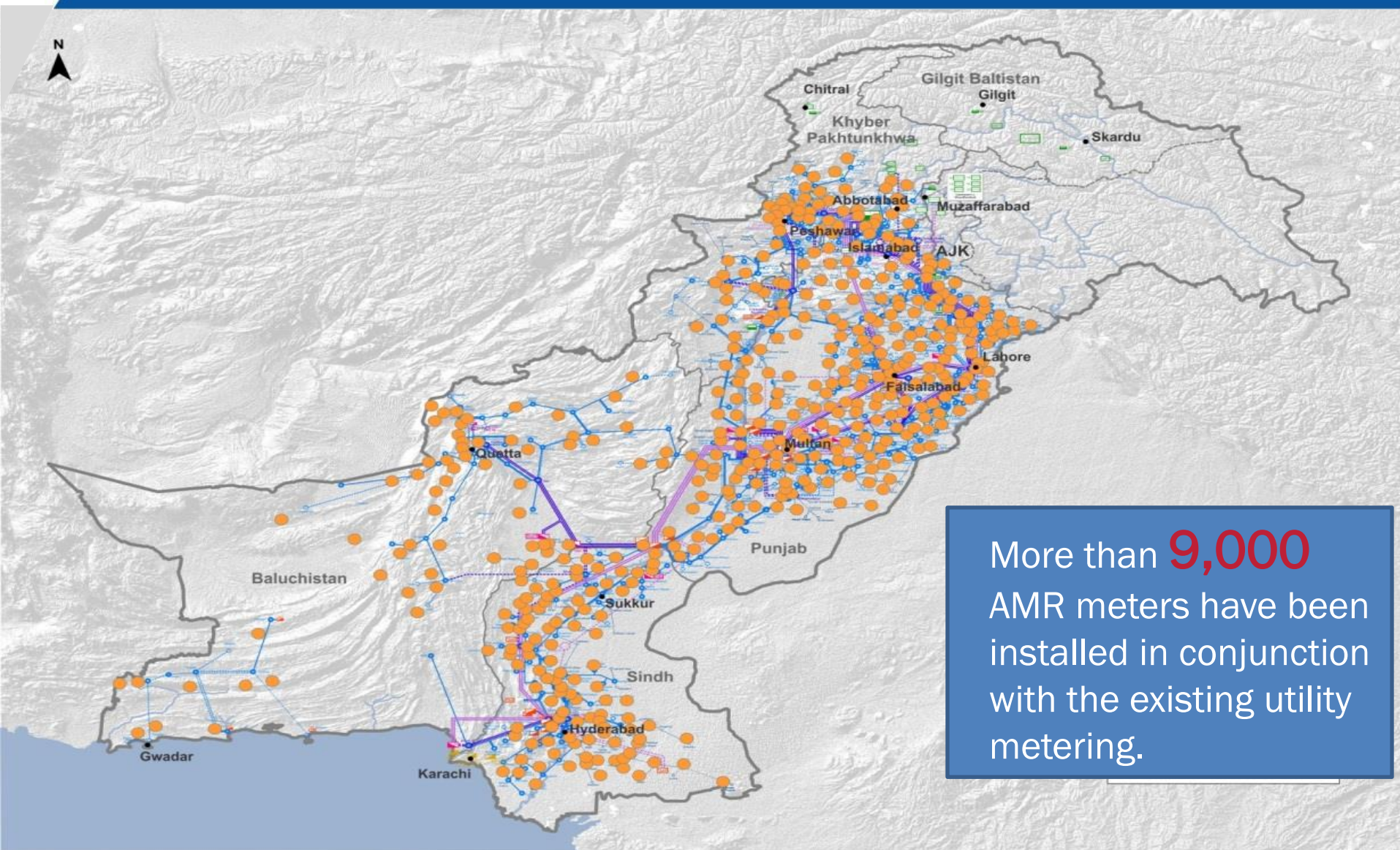
Head-end
Information &
Communication
Technology



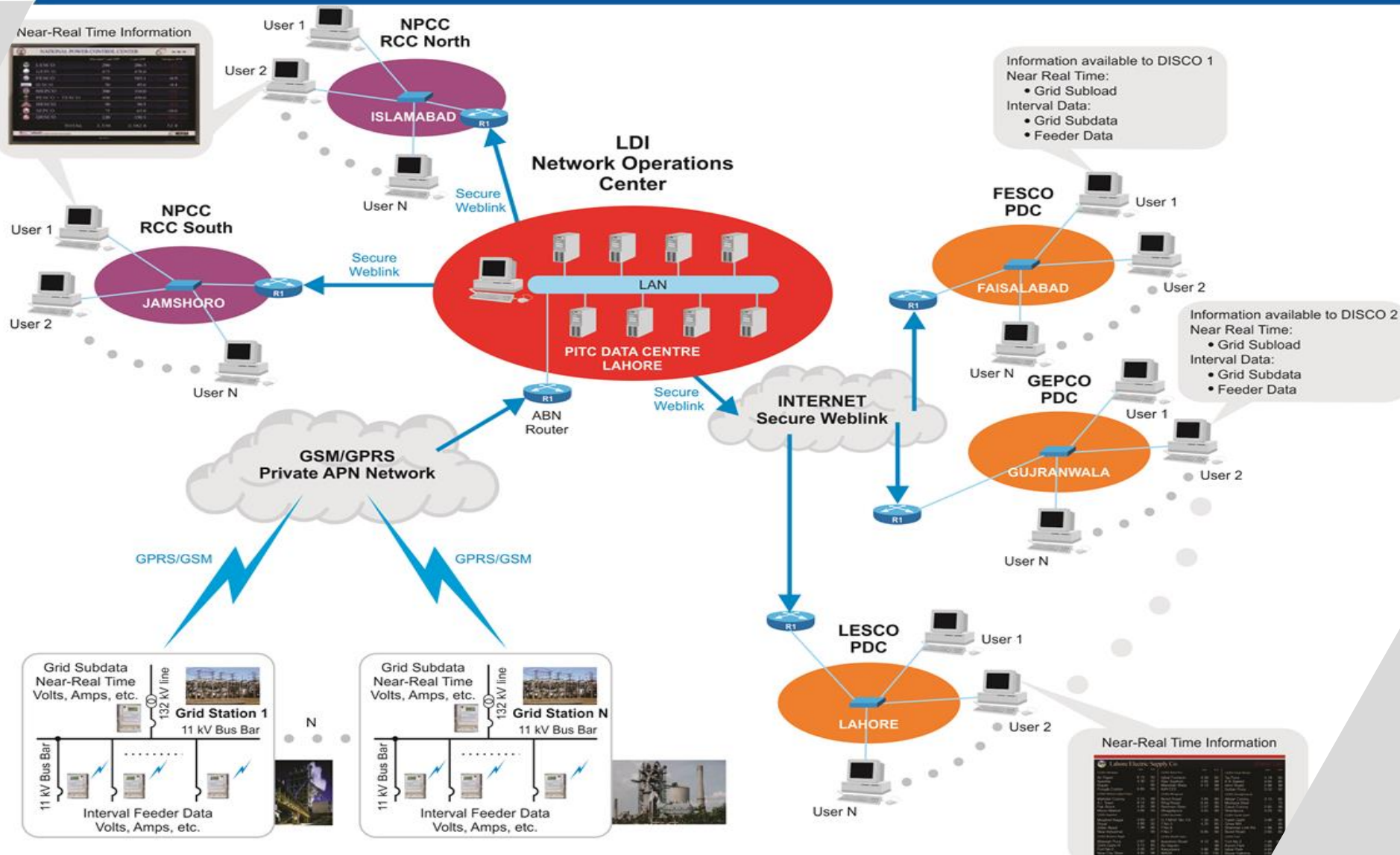
Software

- Meter Data Collector (MDC)
- Meter Data Management (MDM)

LDI Intervention



LDI System Configuration



DISCO Power Distribution Control Center



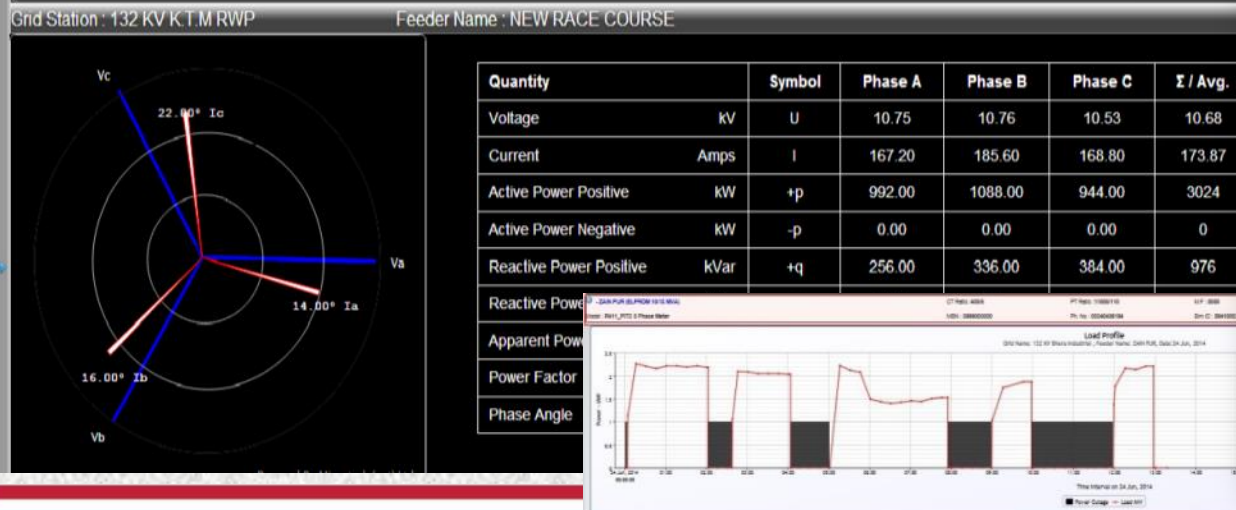
LDI Data Capturing



- Loading Data per phase
- Energy Consumption
- Load Profile
- Power Outage Events (over 150 events)
 - Reverse polarity
 - Under & over voltage
 - Phase disconnection
 - Reverse Energy

Incoming

Outgoing














LDI Display at NPCC



NATIONAL POWER CONTROL CENTER

12 : 19 : 24

	Demand - MW	Allocated - MW	Drawn - MW	Variance - MW
 PESCO	1,656	1,050	854	-196
 TESCO	287	150	87	-63
 IESCO	1,052	805	839	34
 GEPCO	1,092	740	836	96
 LESCO	2,401	1,725	1,871	147
 FESCO	1,404	915	1,071	156
 MEPCO	1,539	990	1,064	74
 SEPCO	583	380	333	-47
 HESCO	604	380	386	6
 QESCO	1,037	450	373	-77
 K-ELECTRIC 4/4 @ 12:00	656	650	656	6
TOTAL	12,310	8,235	8,370	135



USAID POWER DISTRIBUTION PROGRAM



Executive LDI Display at DISCO PDC



Achieved Results



Before

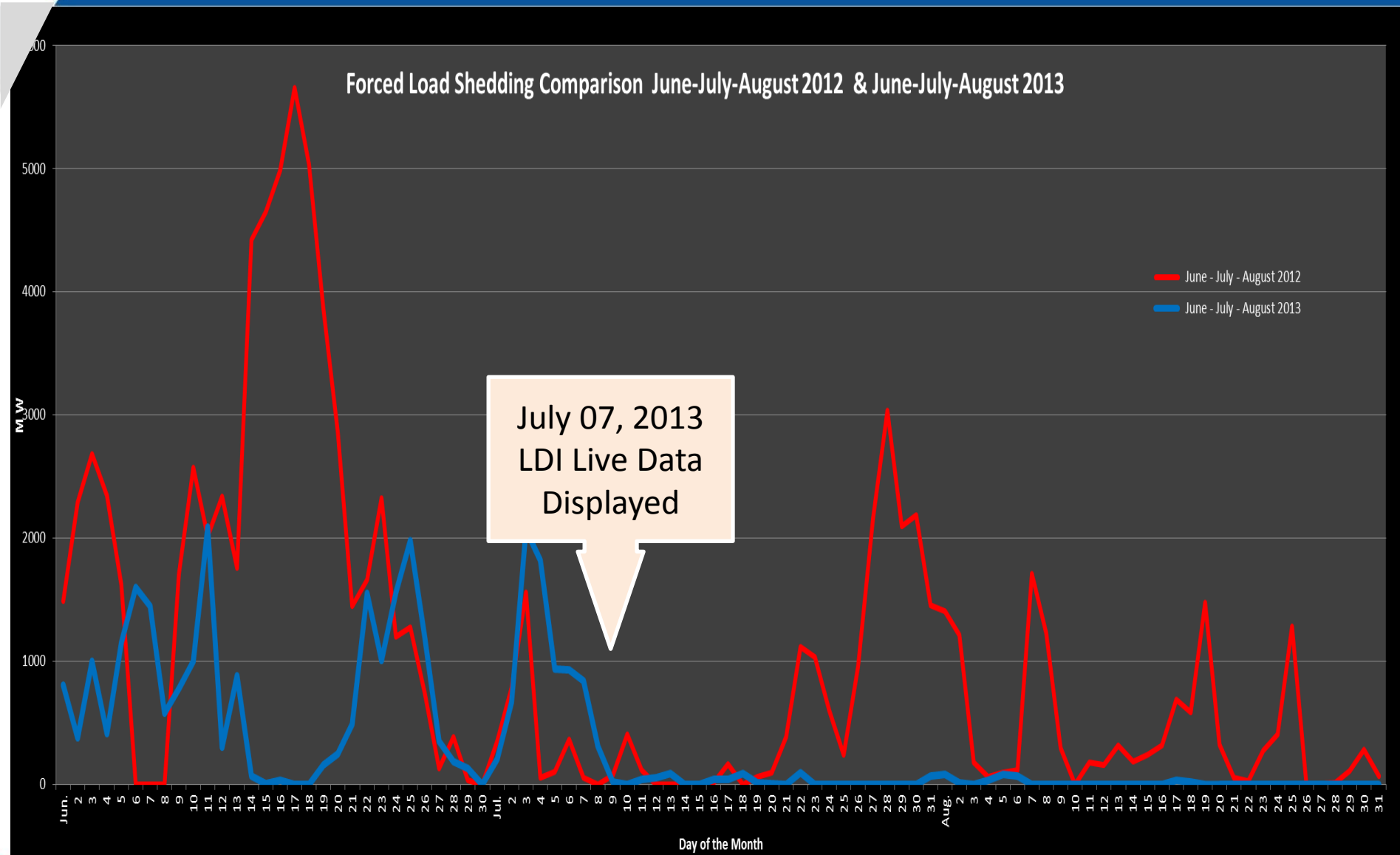
- Frequent Overcompensation in Power Dispatch
- Suboptimal Power Allocation to DISCOs
- Increased Risk of Grid Cascade Failures
- Excessive Forced Outages



After

- Optimal Power Dispatch
- Reduced Forced Load Shedding
- Improved Power Quality
- Improved National Economy

LDI Achievement



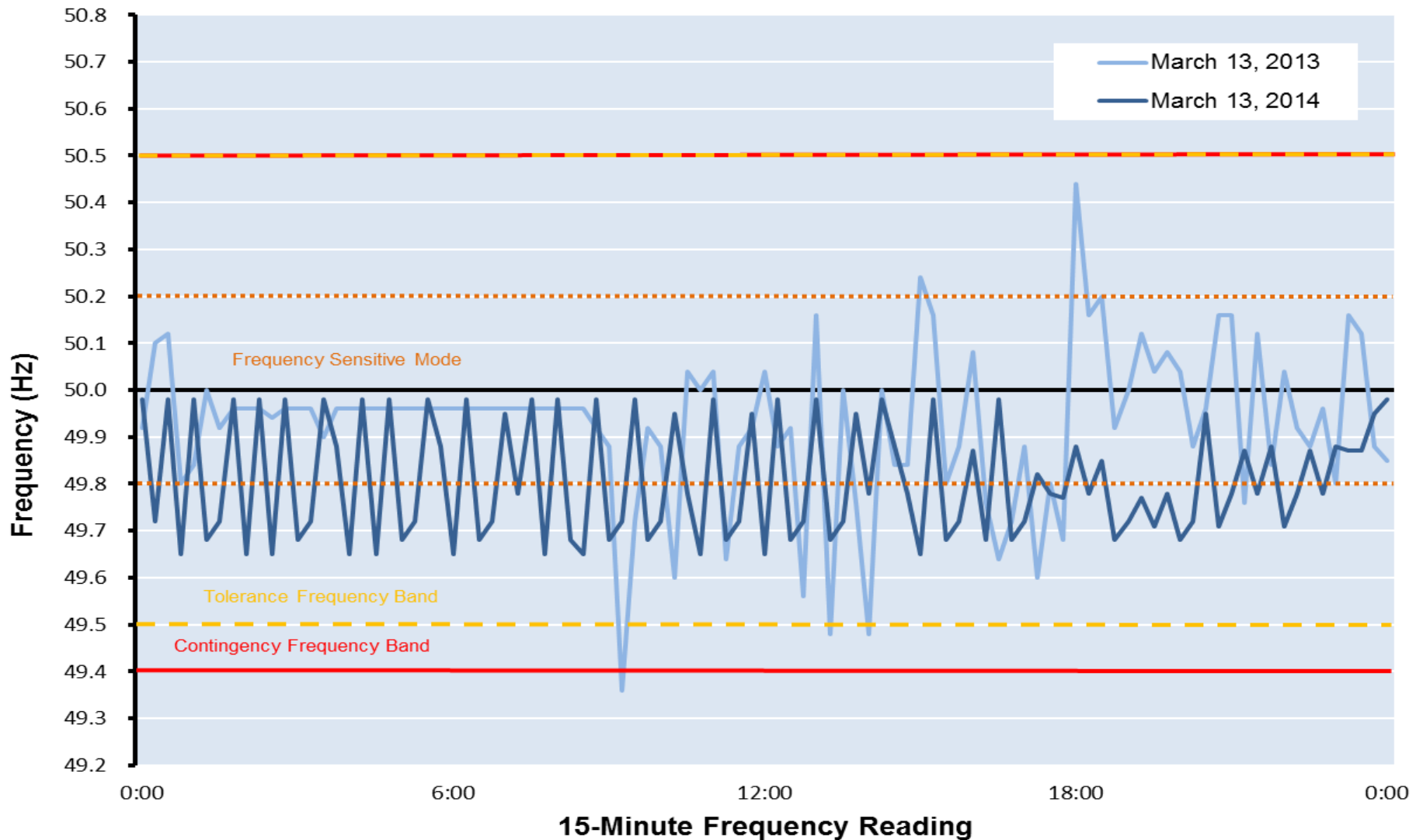
Power Availability

- Additional 643 MW of power supply have been made available to DISCOs
- LDI project helped optimizing future spinning reserves through better insight into system load requirements

Power Dispatch

- Better management of power allocation to DISCOs
- Improvement of productive use of available power supply and higher overall DISCO revenues
- NPCC has more knowledge of all power injected into the national grid system and available for dispatch to DISCOs

LDI Impact Assessment



Impacts on DISCO Operations include much greater visibility into network performance and asset management, leading to:

Better Dispatch Practices

Reduced Overloading and Damage to Power Infrastructure

Better Focused Preemptive Maintenance

Prompt Fault Detection and Correction

Improved Detection of THEFT and Corrupt Practices

Reduced Technical and Non-Technical Losses

LDI Impact Summary



- Substantial reduction of unplanned load shedding nationwide
- Improved performance of the economy, due to reduction of unplanned load shedding

Optimized power allocations resulting in increased revenue (\$63 million impact annually)

- Optimized planning with accurate and timely data from LDI database
- Improved quality of life for consumers

Overall US \$ **180 Million** impact on National Economy



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*Thank
you*