IFC International Finance Corporation

GSMA Green Power for Mobile

In partnership with the Netherlands

smartfren

live smart

Power Management & Efficiency



Contents

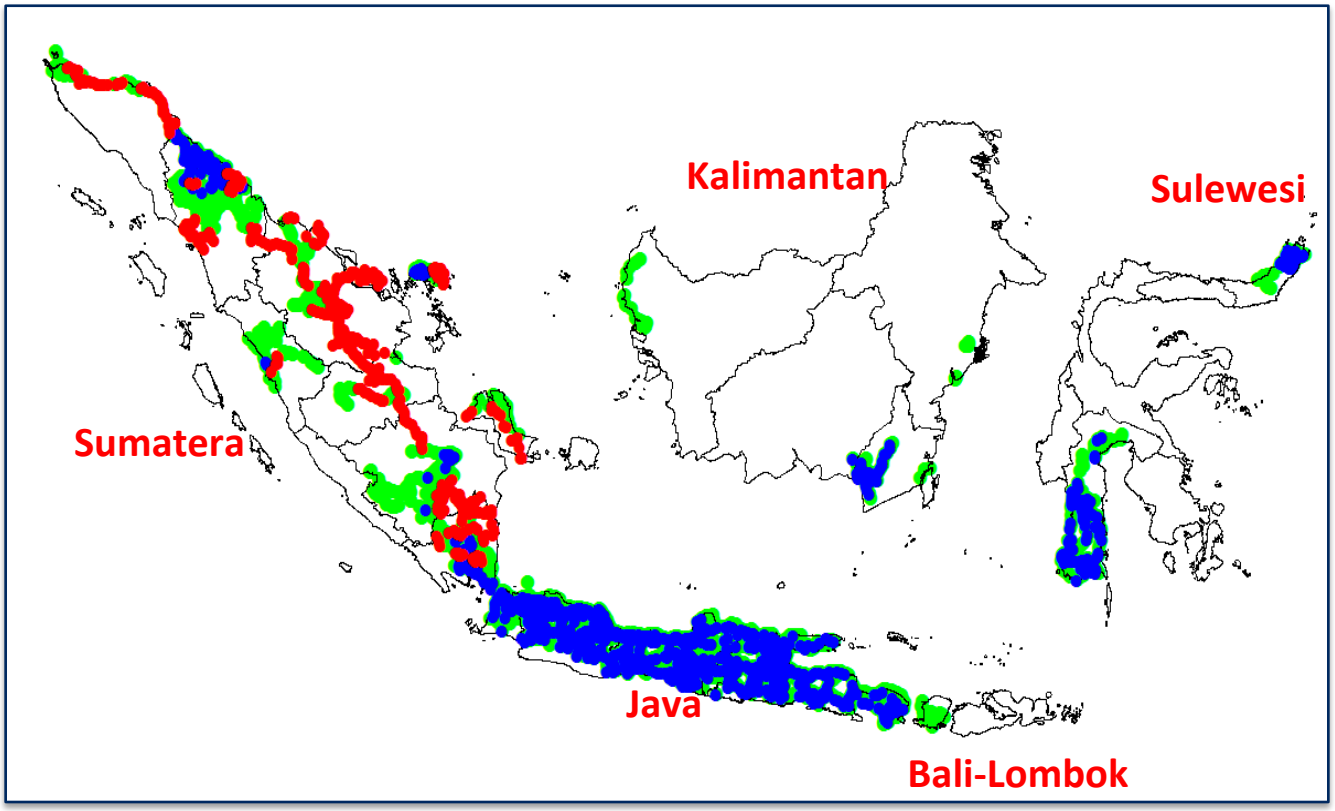
No.	Contents
1	Background & Challenges in Power Management
2	Supply & Maintenance Model
3	Opex & Energy Cost Trend
4	Power Management Roadmap

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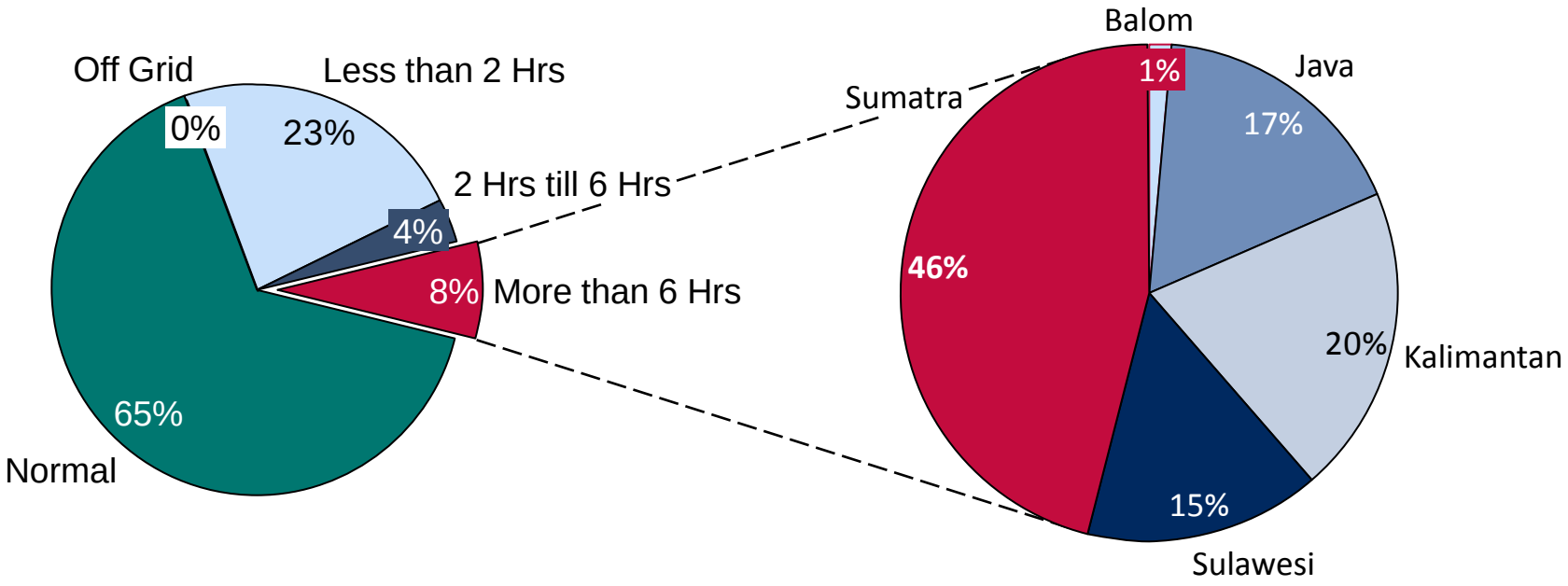
Background of SmartFren

- Smartfren was launched in 2010 as a merger of 2 CDMA2000 operators
- Offers voice and mobile broadband service on CDMA 850Mhz and 1900Mhz bands
- Widest EVDO Network in Indonesia with over 5700 BTS sites in 17 provinces
- First operator in Indonesia to launch EVDO Rev.B Phase 2, peak rates upto 14.7Mbps



Challenges in Power Management

Power Outages Profile

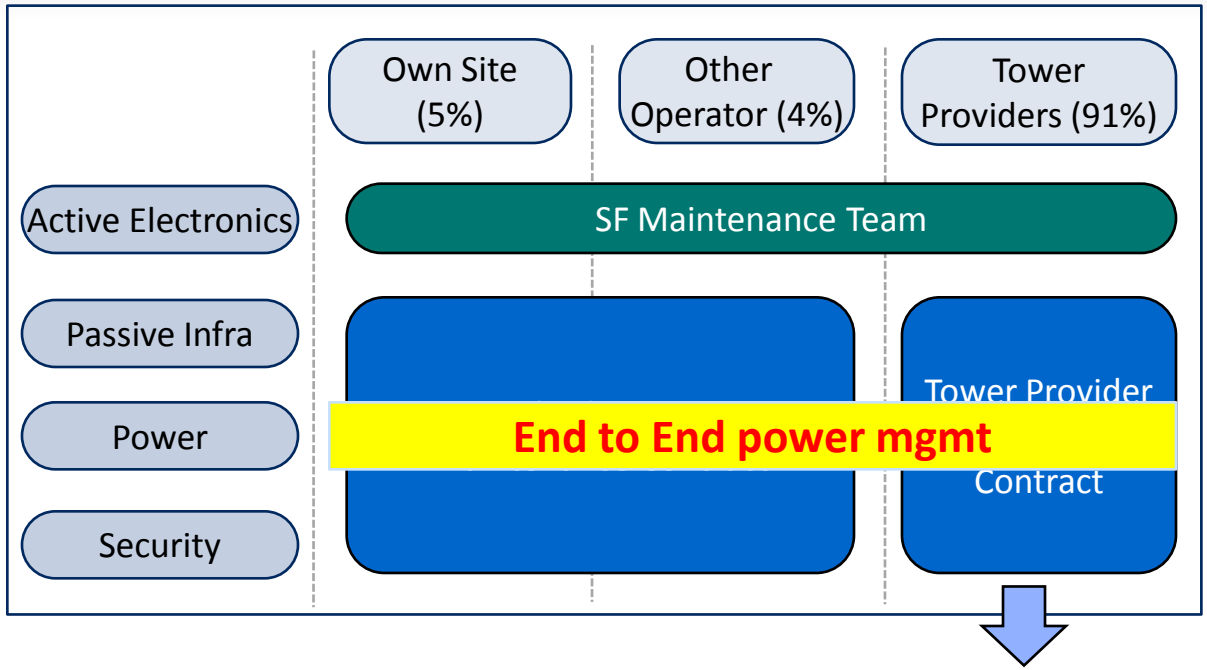


- Off-Grid Sites have been minimized by design & during deployment
- Major challenge: outages for >6hrs - mainly in Sumatera

Contents

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Supply and Maintenance Model



What's the blocking issues:

- Economy of scale?
- High cost of conventional energy?
- Need to rethink business model?

Big Opportunity for Power Service Company – to handle both supply & maintenance of power for operators

Top-10 Tower Providers: Power Backup Service Snapshot

TP Name	SLA for back up genset (hours)	Actual resolution time (Avg in hrs)	Meet SLA	Not meet SLA
Tower Provider #1	3	3.17	86%	14%
Tower Provider #2	4	4.1	83%	17%
Tower Provider #3	4	8.91	69%	31%
Tower Provider #4	4	3.47	87%	13%
Tower Provider #5	3	6.54	68%	32%
Tower Provider #6	4	8.63	67%	33%
Tower Provider #7	3	4.12	84%	16%
Tower Provider #8	3	4.56	80%	20%
Tower Provider #9	3	6.43	65%	35%
Tower Provider #10	4	4.65	87%	13%

- All current providers cannot meet the SLA for power backup

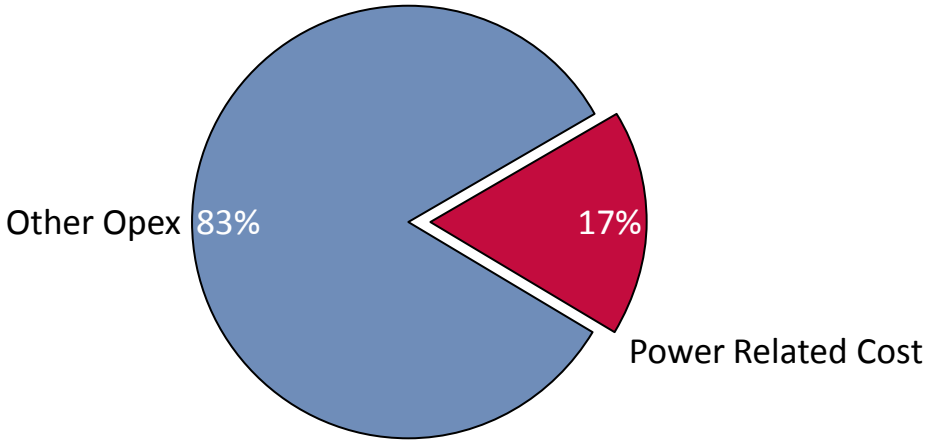
- Constraints: limited resources to address during power outages. No having secondary power backup on-site.

Contents

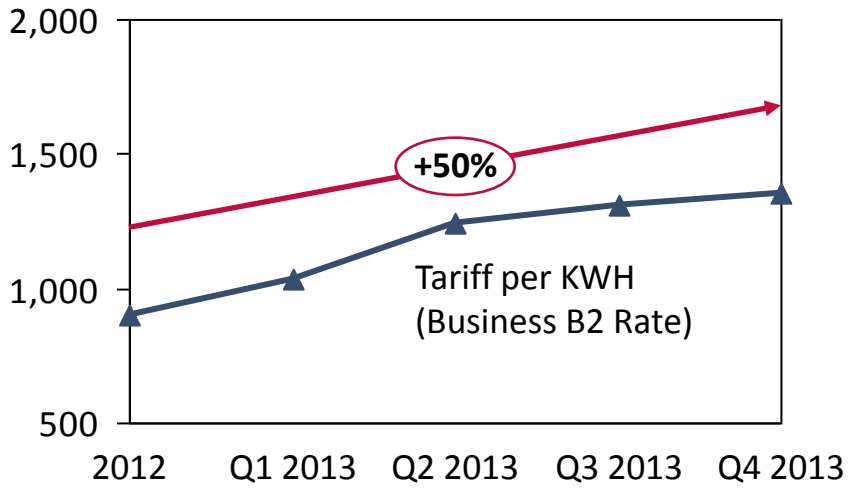
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Opex and Energy Cost Trend

Network Opex Breakdown



Energy Tariff Trend

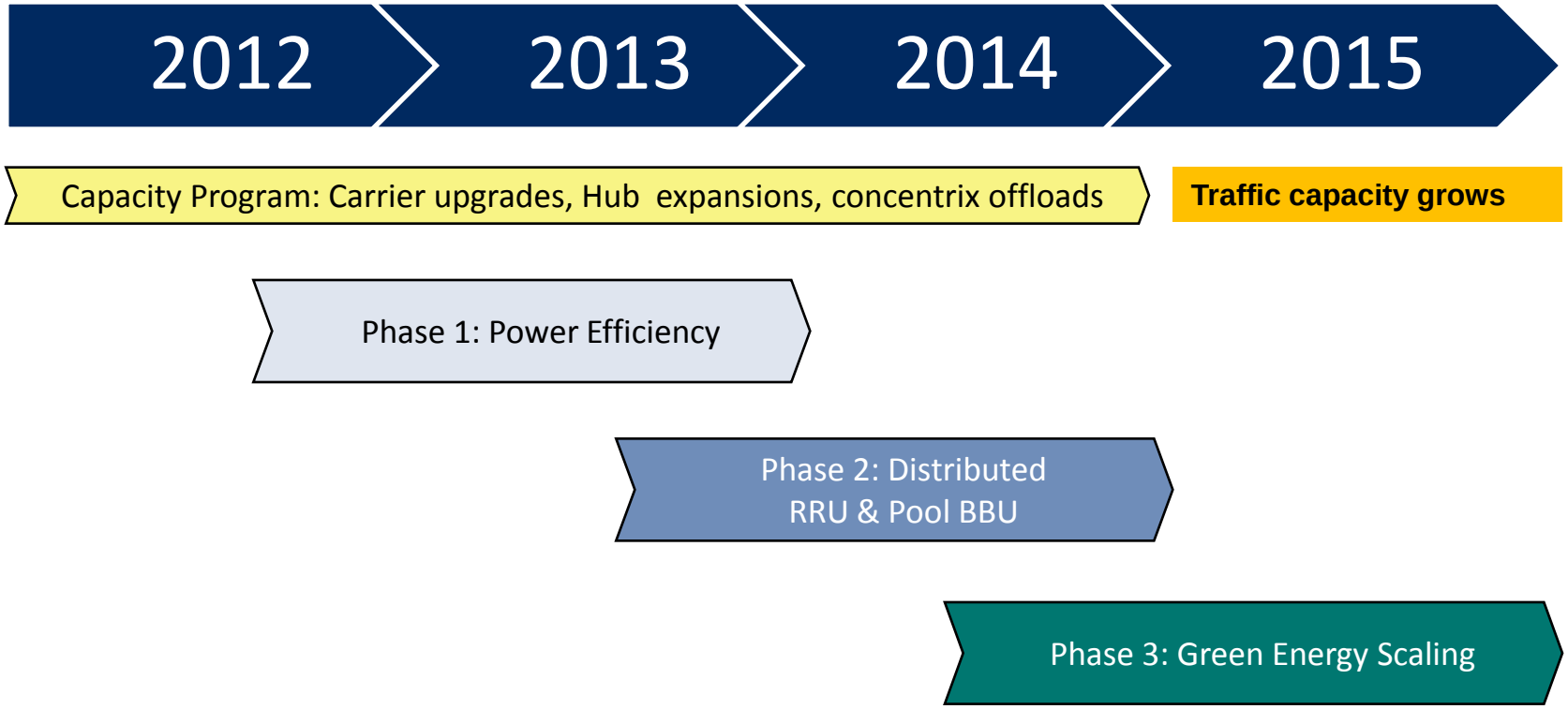


- Power related cost contributes to 17% of total Opex
- In 2013, Opex will be significantly impacted by power tariff increase
- The key challenge: how to manage power related Opex?
- Solution: Power efficiency and moving to alternative power source
- Opportunities: Power Service Company with hybrid/green energy model

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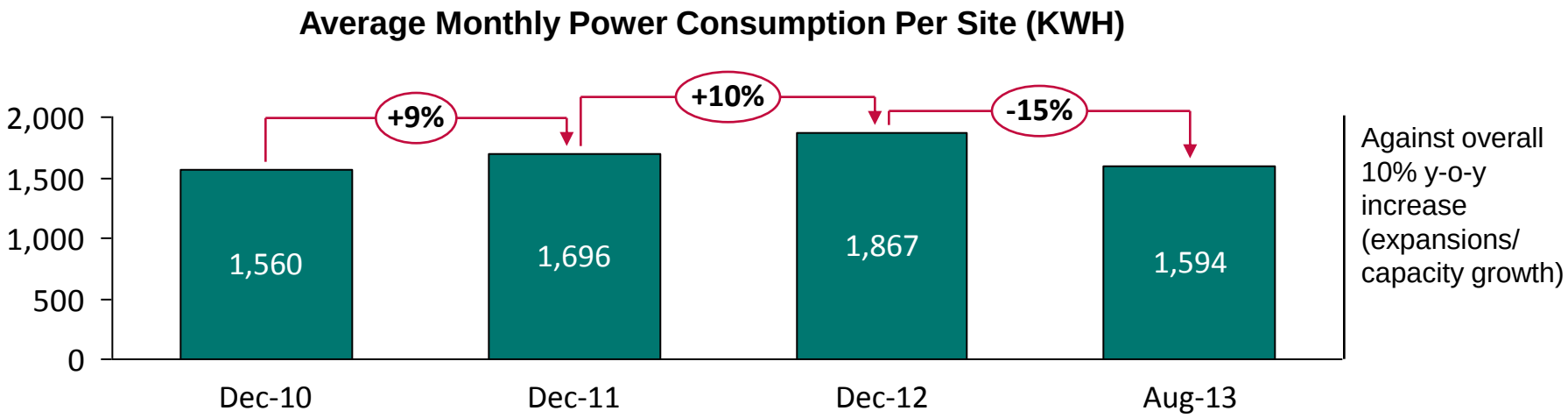
Power Management Roadmap



Goals:

- Smart power management by efficiency and employing newer technologies
- Building sustainable alternative energy for long run

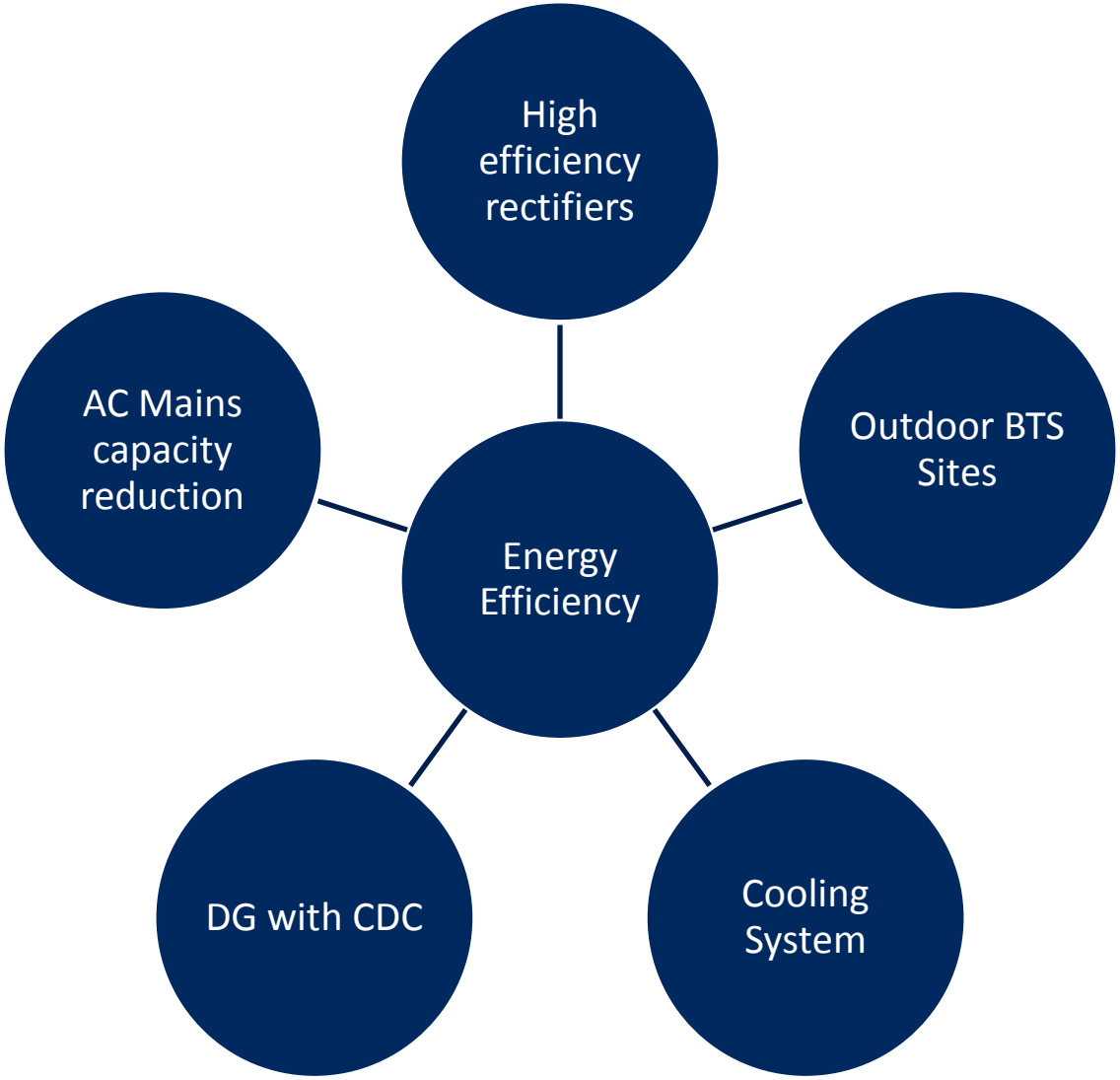
Result of Power Efficiency Initiatives



Energy saved = 3276 kWH / yr / BTS
CO2 footprint reduced = 2950 kg / yr / BTS

CO2 footprint reduced = 16,800 tons / yr

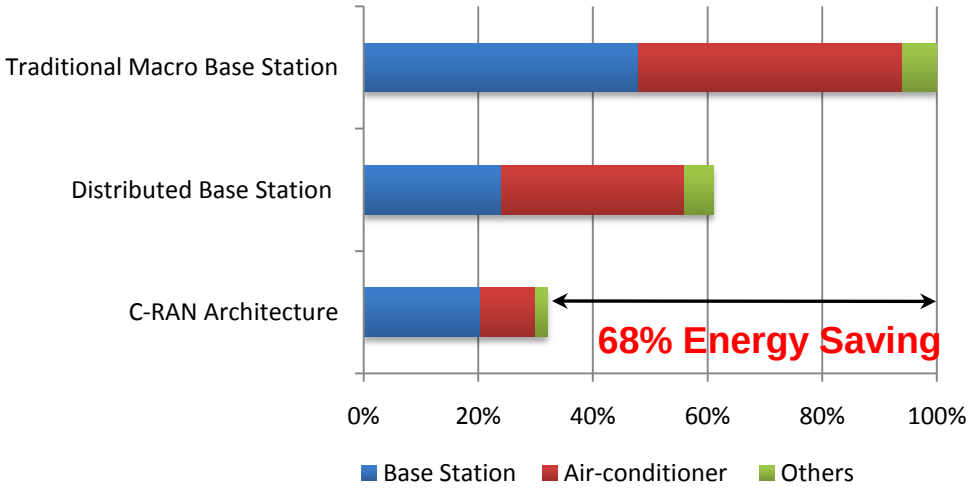
Power Efficiency Initiative



Technology Driven Energy Efficiency (2013)

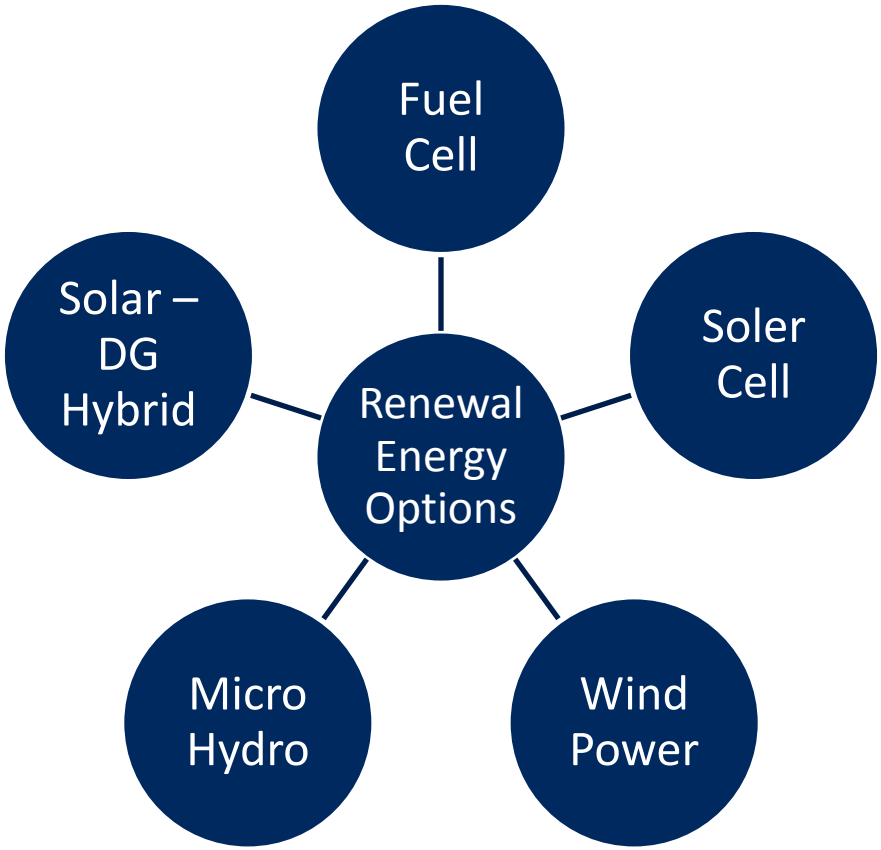
RAN Energy Consumption Breakdown	Base Station	Air-conditioner	Others (MW, Lights etc)	Total	Energy Saving (%)
Traditional Macro Base Station (Shelter Based)	48%	46%	6%	100%	
Distributed Base Station (BBU in Shelter + RRU on tower)	24%	32%	5%	61%	39%
C-RAN Architecture (BBU Pooled at BSC to 144 RRU)	20.4%	9.6%	2%	32%	68%

Benchmarked: Based on Pilot cluster (144 cells)





Green Energy Feasibility and Trial



SF is open to new green energy solutions which are sustainable and economic

Conclusion

1. Power Supply and Maintenance Challenges gives opportunity for Power Service Company in Indonesia
   - Increasing Opex due to higher cost of conventional energy
   - Unreliable grids with frequent or prolonged outages

2. Efficiency of energy consumption is fundamental before employing renewable energy

3. SmartFren is looking for sustainable and economic solution for Green Energy.