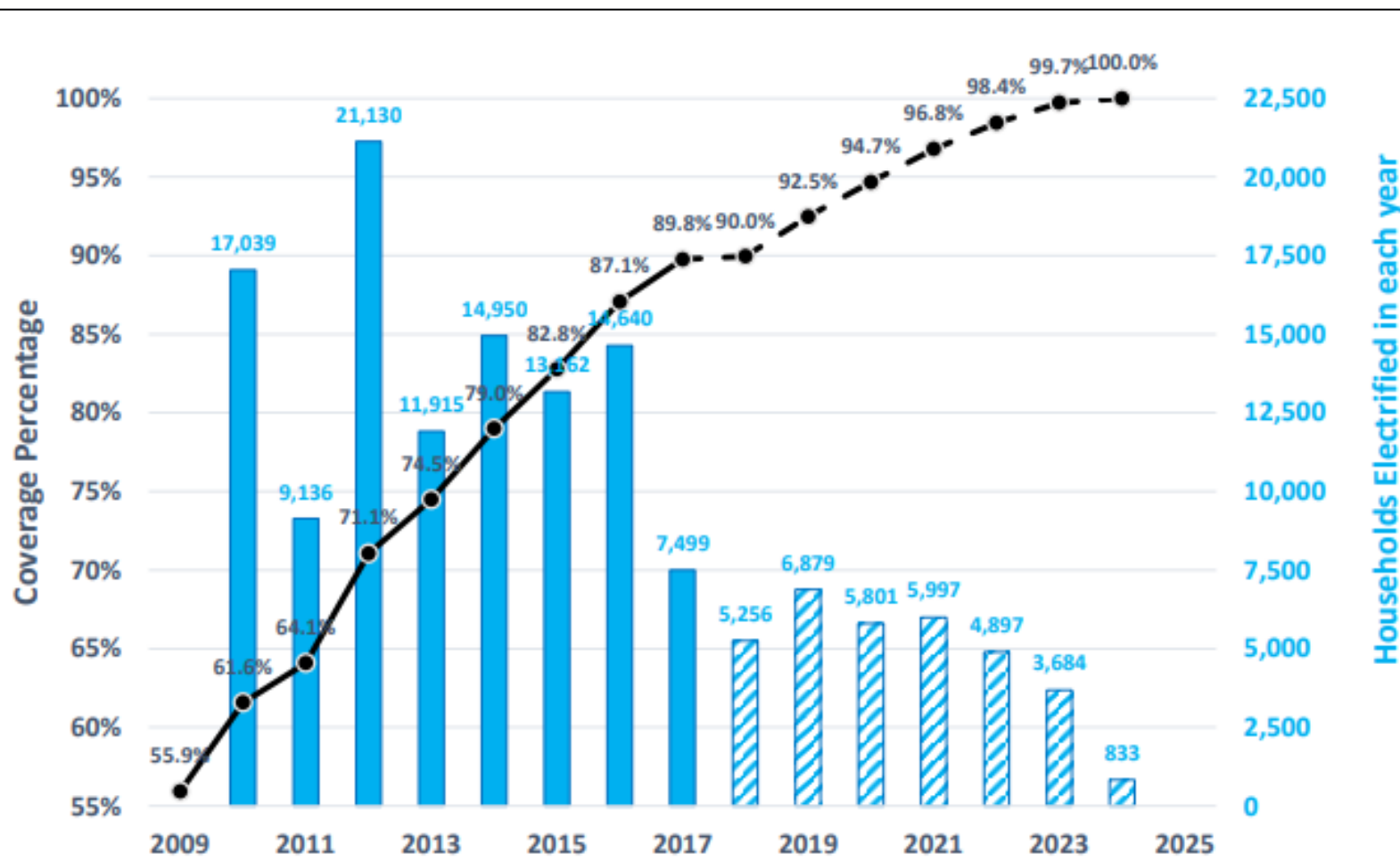




Sarawak Alternative Rural Electrification Scheme

Providing electricity to off-grid communities in Sarawak

Sarawak Rural Electrification Coverage and Projection



Rural Electrification Status

Rural electrification coverage is 90% (end 2017)

Un-electrified villages

Village: 1,252; Household: 27,448

Category 1

(near to grid and
with ready road
access)

Vil: 265;
HH: 4,977

Category 2

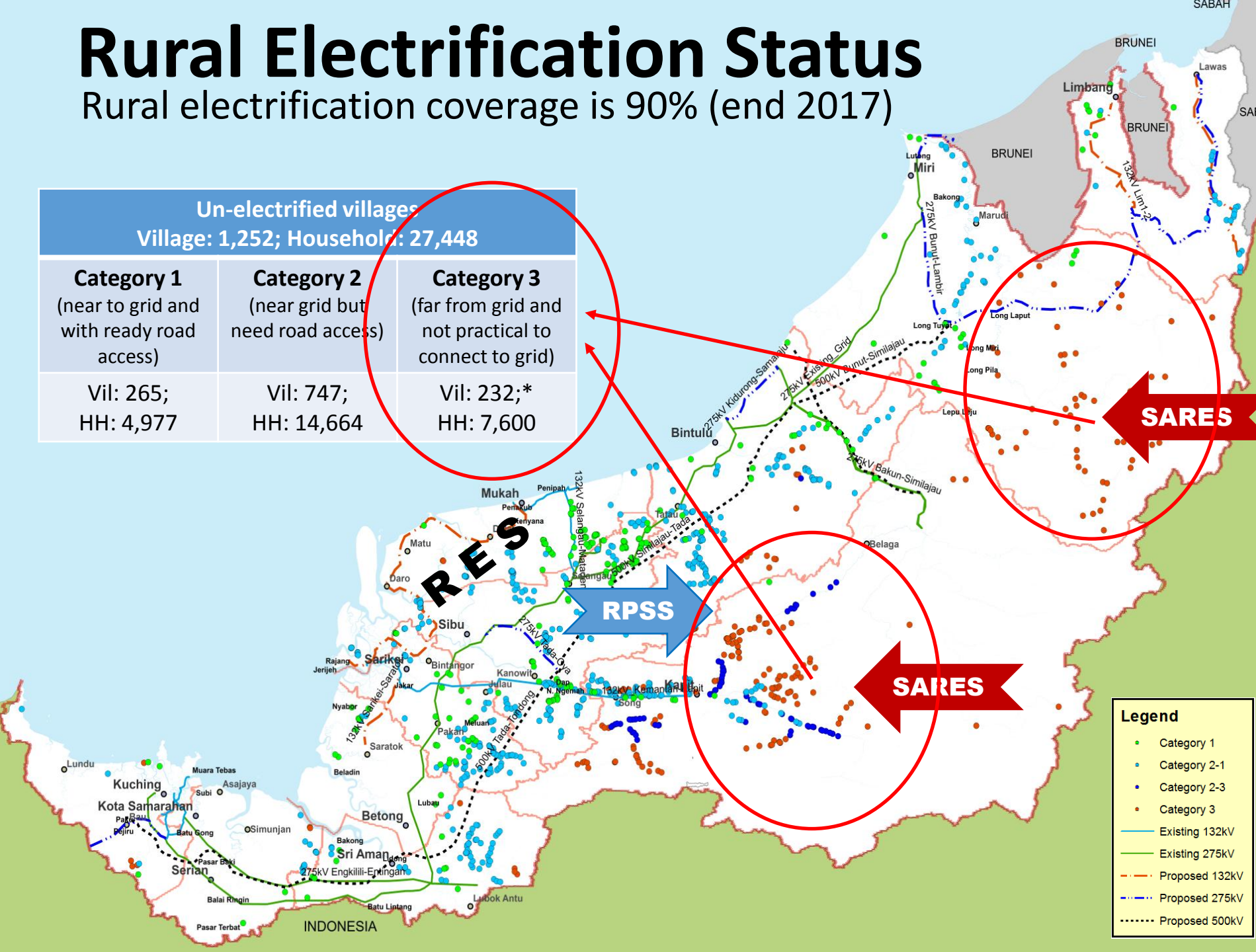
(near grid but
need road access)

Vil: 747;
HH: 14,664

Category 3

(far from grid and
not practical to
connect to grid)

Vil: 232,*
HH: 7,600



Existing Electricity Supply for Off-grid Communities



Solution for Off-grid Electrification: Solar Power System



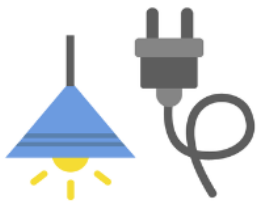
Solar Power System Sizing

Service level is sufficient for a typical rural household

- a. Capacity at 1000W / household
- b. Usage of 2 kWh / household per day
- c. Electricity provided free of charge



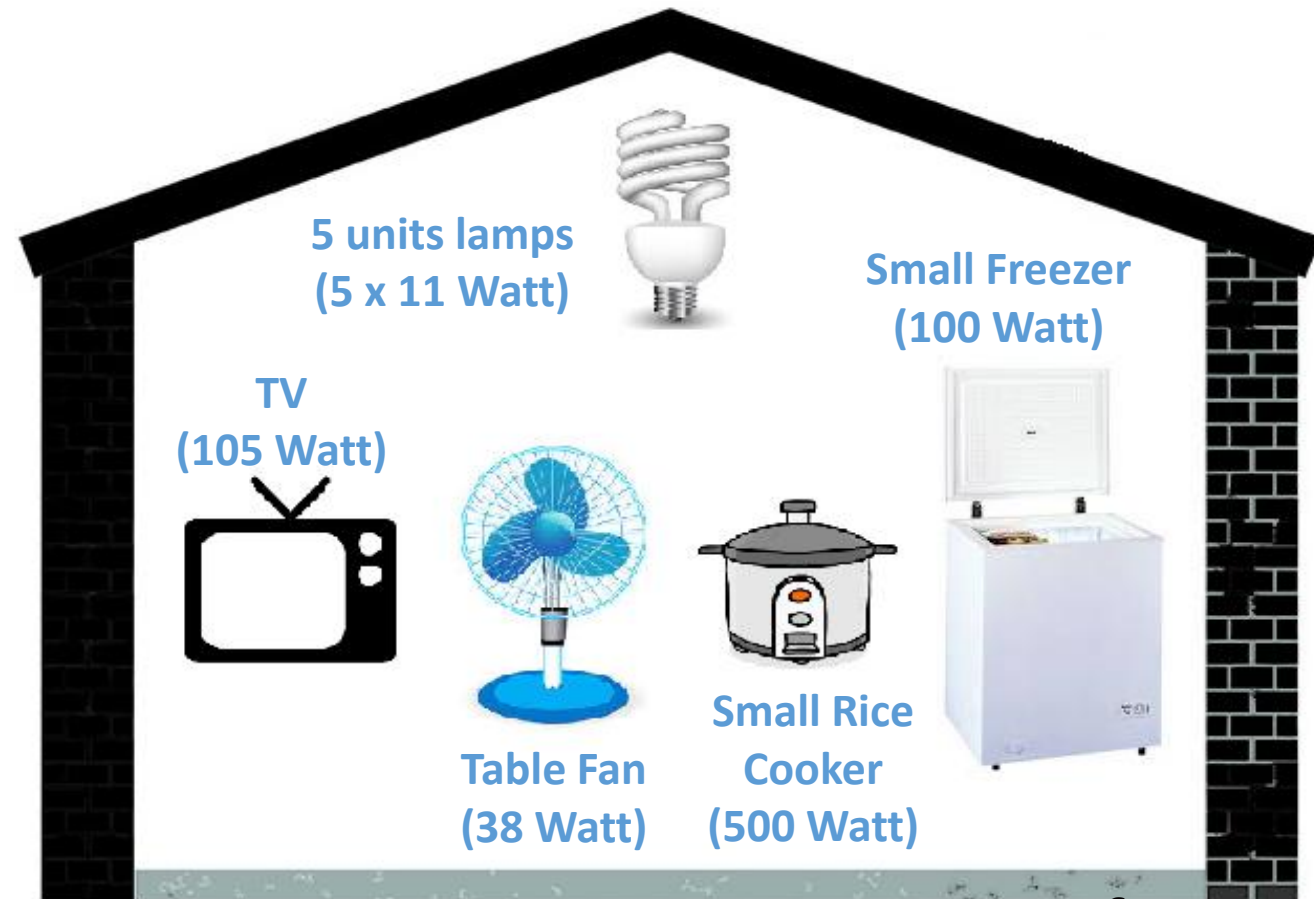
1 kW



2 kWh



3 Days



SARES: Sarawak Alternative Rural Electrification Scheme

SARES Modus Operandi:

- I. Government-community partnership projects
- II. Sarawak Energy to implement SARES
- III. Community are trained to operate and do simple maintenance.
- IV. Sarawak Energy to provide support.



SARES: Sarawak Alternative Rural Electrification Scheme

SARES Implementation

1. Timely project delivery and maintain the overall cost within budget in order to reach out as many villages as possible
2. Develop local competency and capability in solar that are required to ensure sustainability of the programme
3. Involve local communities in project implementation so that they can draw some benefits from project execution



Social Engagement



Transportation to Remote Locations



Electrical And Civil Works



Solar Panel, Inverter And Battery



Aerial Photos Of Completed SARES Projects



Community Training



SARES Sustainability

- Sarawak Energy Commitment
 - Provide sustainable solution to rural electrification
 - Technical experience with solar technologies
 - Capacity in rural project execution
- Providing O&M supports to communities.
 - Empowering local community through training
 - Technical support structure in place to handle faults and maintenance



SARES Progress & Planning

Completed Villages

• 106

Households

• 2,601

Population

• 12,650

A map of Sarawak, Malaysia, showing the locations of SARES project villages. Red pins mark 106 completed villages. Green dots represent other villages, and blue dots represent households. The map includes major roads, rivers, and dams (Bakun Dam, Murut Dam, Batang Aji Dam). A scale bar (0 to 120 miles) and a compass rose are in the bottom right corner.

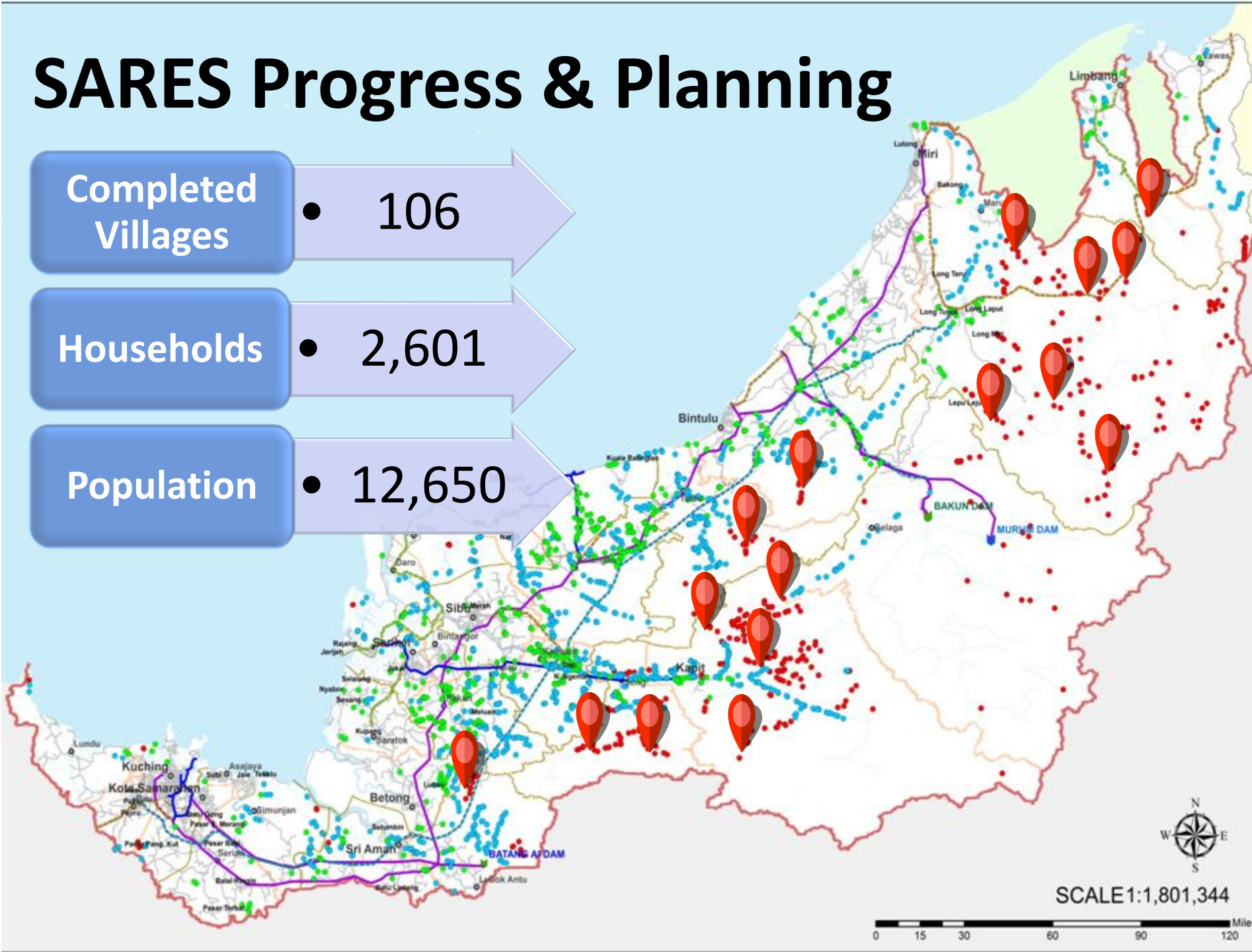
SCALE 1:1,801,344

- 106

- 2,601

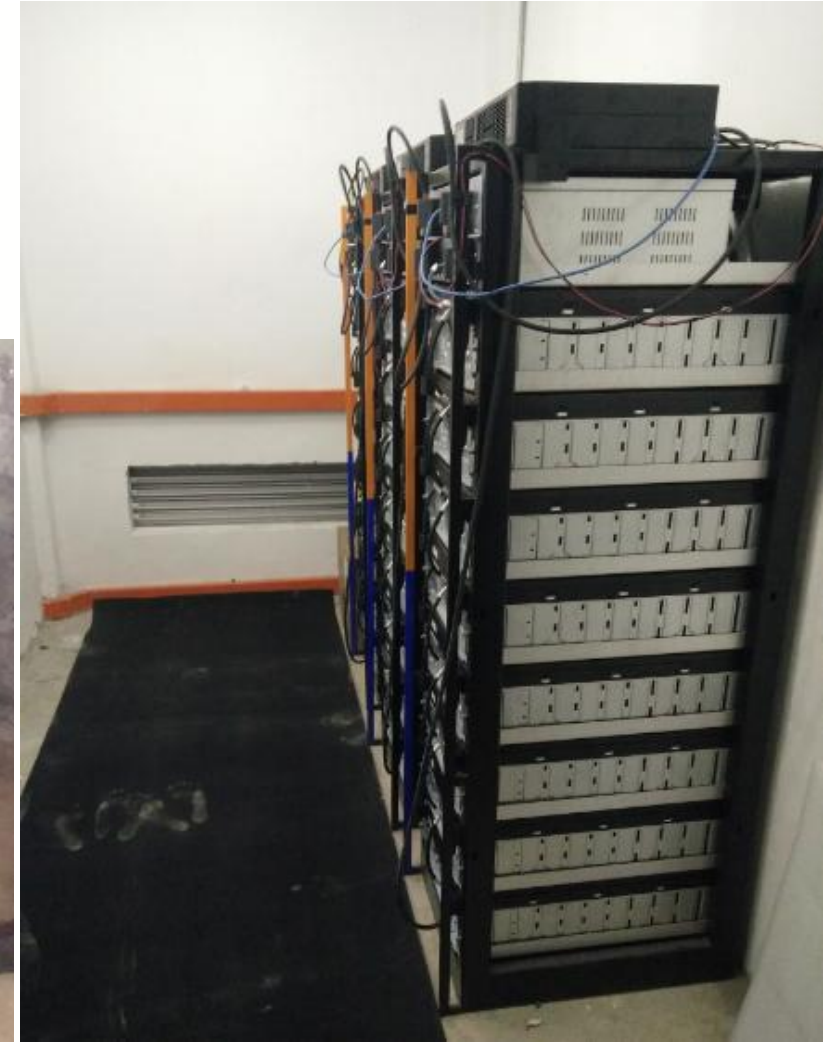
- 12,650

Year	Villages	Households
2016	58	1,369
2017	59	1,600
2018	75	1,962
2019	73	2,101
2020	75	1,907
TOTAL	340	8939



SARES Moving Forwards

- Improving SARES system
 - System performance analytic
 - Energy Storage System: Lithium Ion Batteries
- Microhydro Technologies
 - Run of river microhydro
 - Hydro Kinetics



SARES Achievement

ARE Award 2018 for Best Government project in Africa, Asia and Latin America
(Sicily, Italy on 13-March-2018)



SARES Team





Thank you!

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Challenges



Cost Breakdown

