



# Energy Absolute

Smart Energy for the Future



**A LEADER  
IN ASIA'S  
GREEN  
ENERGY  
BUSINESS**

Energy Absolute is leading the way in Thailand's fast growing alternative energy industry, maximizing the best knowledge and in-house technology to really make a difference.



***“A leader in alternative energy business,  
by using the modern technology and environmentally friendly”***

## **ERA: I**

*From 2006 -2009*

*Started with small business*

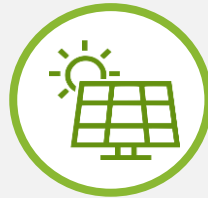


**Biodiesel  
B100 Glycerin**

## **ERA: II**

*From 2011 - 2015*

*Renewable Power Plant  
Total capacity **664 MW***



**Solar Power**



**Wind Power**

## **ERA: III**

*From 2016 - Present*

**Patent development**



**ESS**



**EV  
Charging**



**EV Car**



**Green  
Diesel  
& PCM**

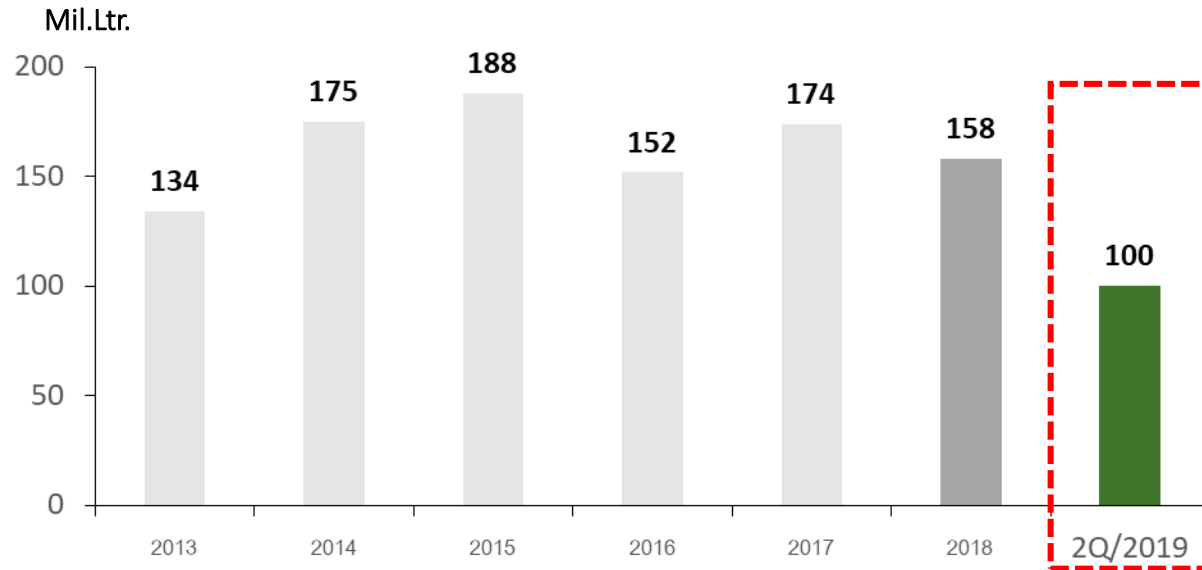


**Electric  
Ferry**



**Energy  
Trading**

# Biodiesel Production



Location

Kabinburi Industrial Estate, Prachinburi under BOI promotion & privileges

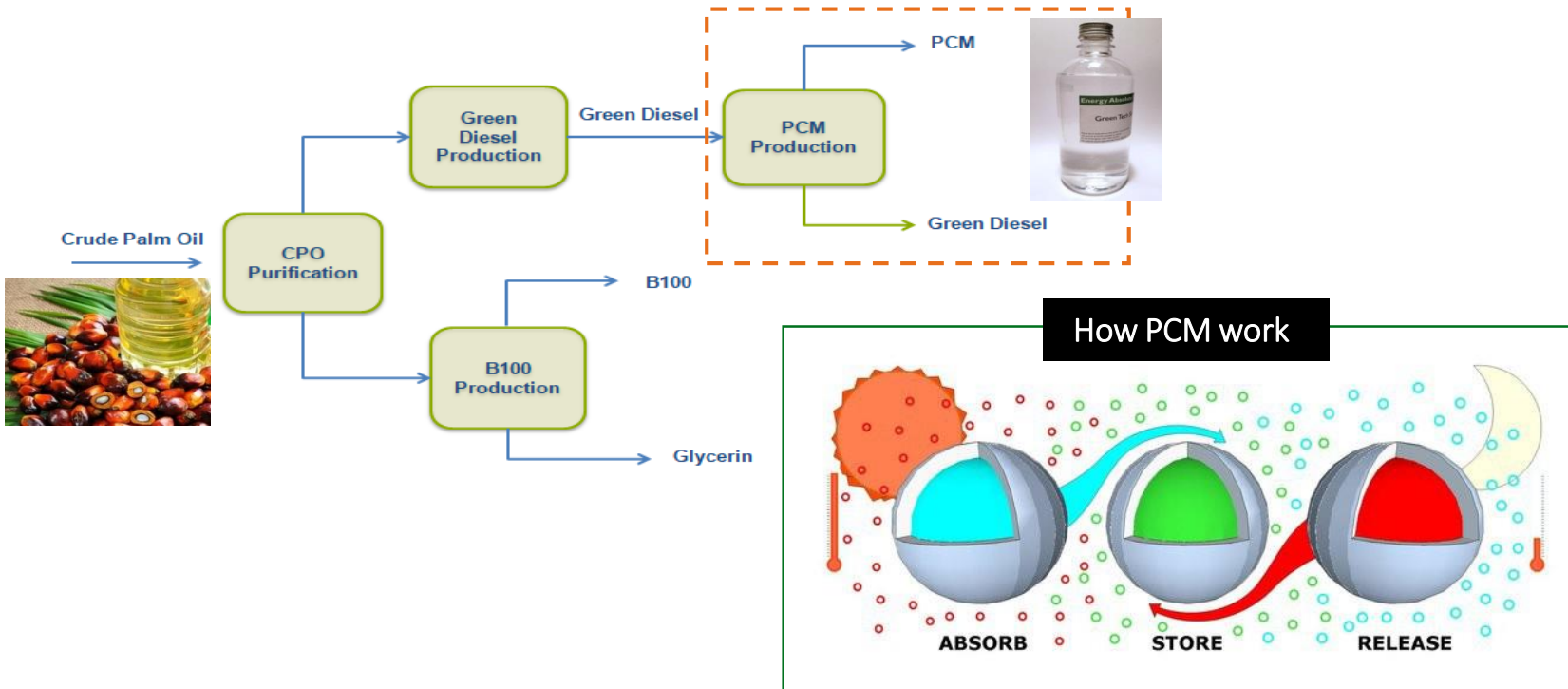
Plant Capacity

- Biodiesel 800,000 Liters per day
- Pilot production of green diesel/PCM 1 Ton per day
- Refined Glycerin 80 Tons per day (by product)



# Oleochemicals : Green Diesel and PCM

- Started pilot plant in Q2/2018 : GD at 1 liter/hour and PCM at 1 ton/day
- Phase I : Capacity = 65 tons (feed)/day is during construction, to be completed within 2019
- Phase II : To be completed within 2020

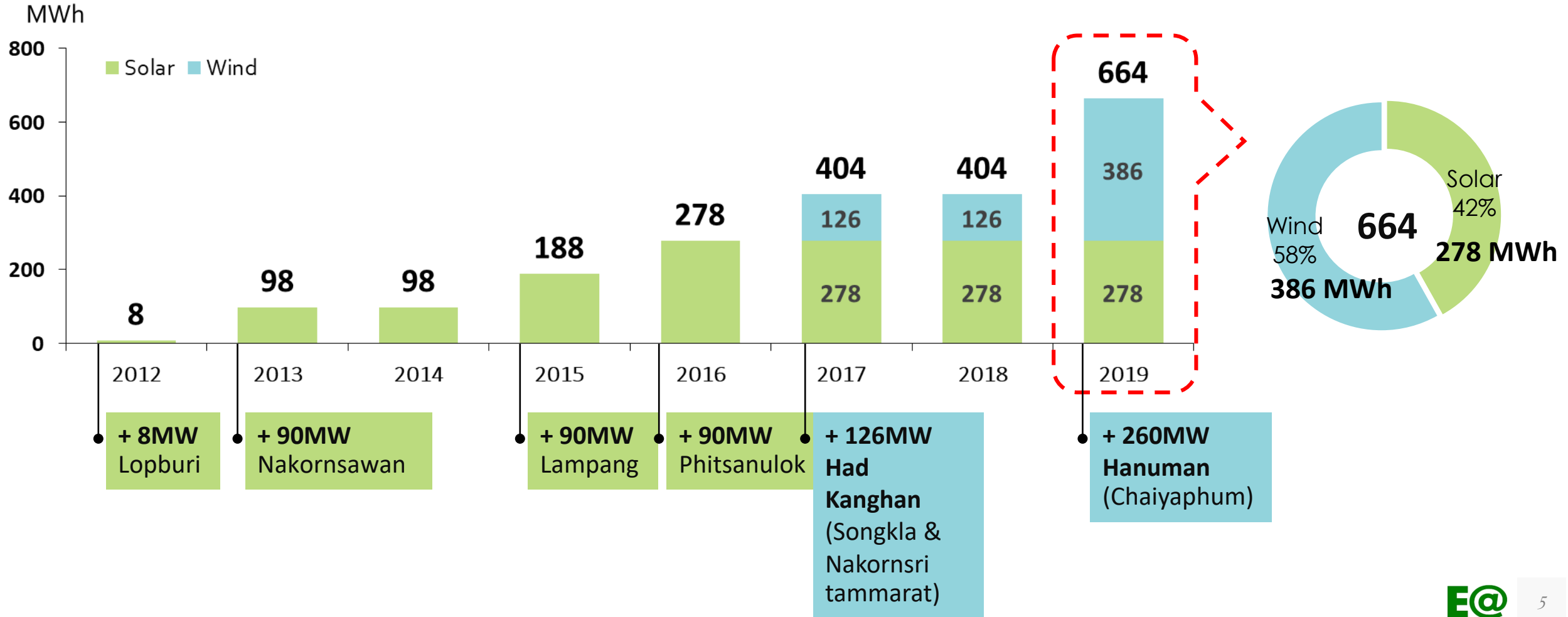


While making free energy from the sun using PV solar; we can turn on and off a reverse cycle air conditioner to push and pull the BioPCM, delivering performance independent of outside air temperatures. **BioPCM works as a thermal storage battery and is pre-frozen or warmed for a particularly hot or cold evening.** Mat Q24 can deliver the maximum comfort and zero net running costs.

Source : <http://phasechange.com.au>

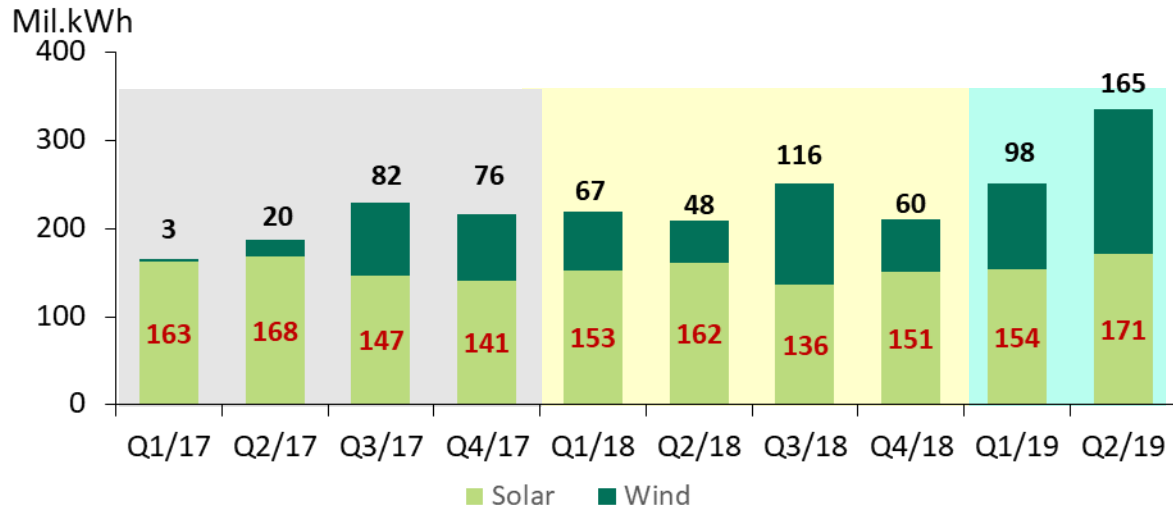
# Renewable Power Business

Started from a small 8-MW solar power plant then gain knowledge to develop higher technology.

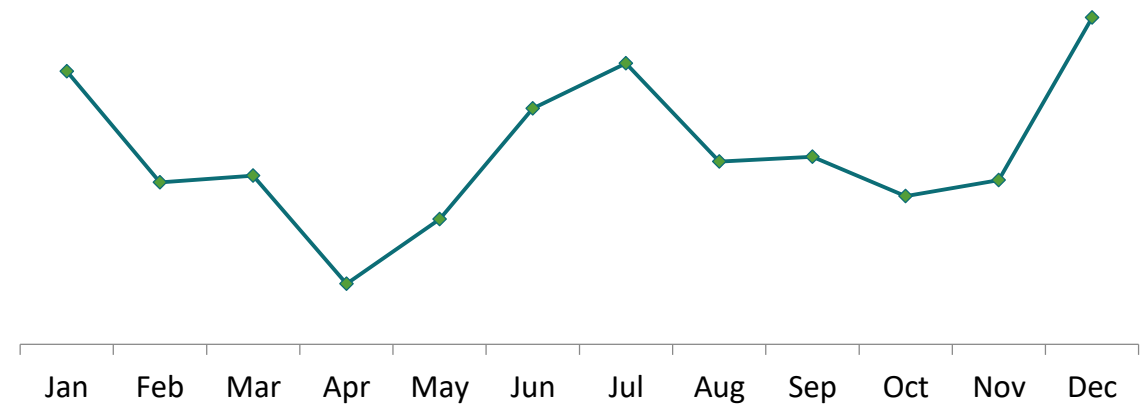


# Instability of power generation from Solar and Wind

Total Production output : QOQ



Seasonal of Wind in Thailand



# Paradigm Shift Required

~~Inside → Out~~



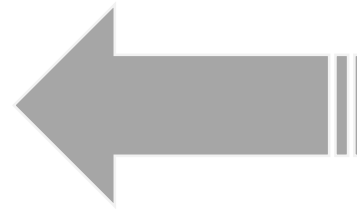
Outside → In

Competitive RE



ESS

Smart Grid



Unpredictable  
Electricity Demand

EV &  
EV Charger



Solar Homes &  
Smart City

# 50 GWh Lithium Battery

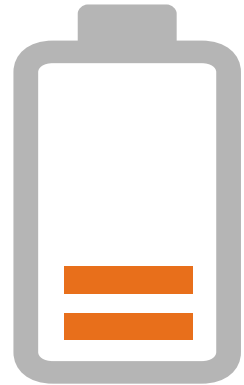


STOBA™



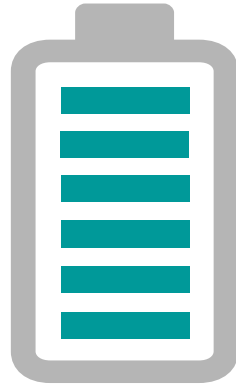
ITRI

Industrial Technology  
Research Institute



2017-2019

1 GWh



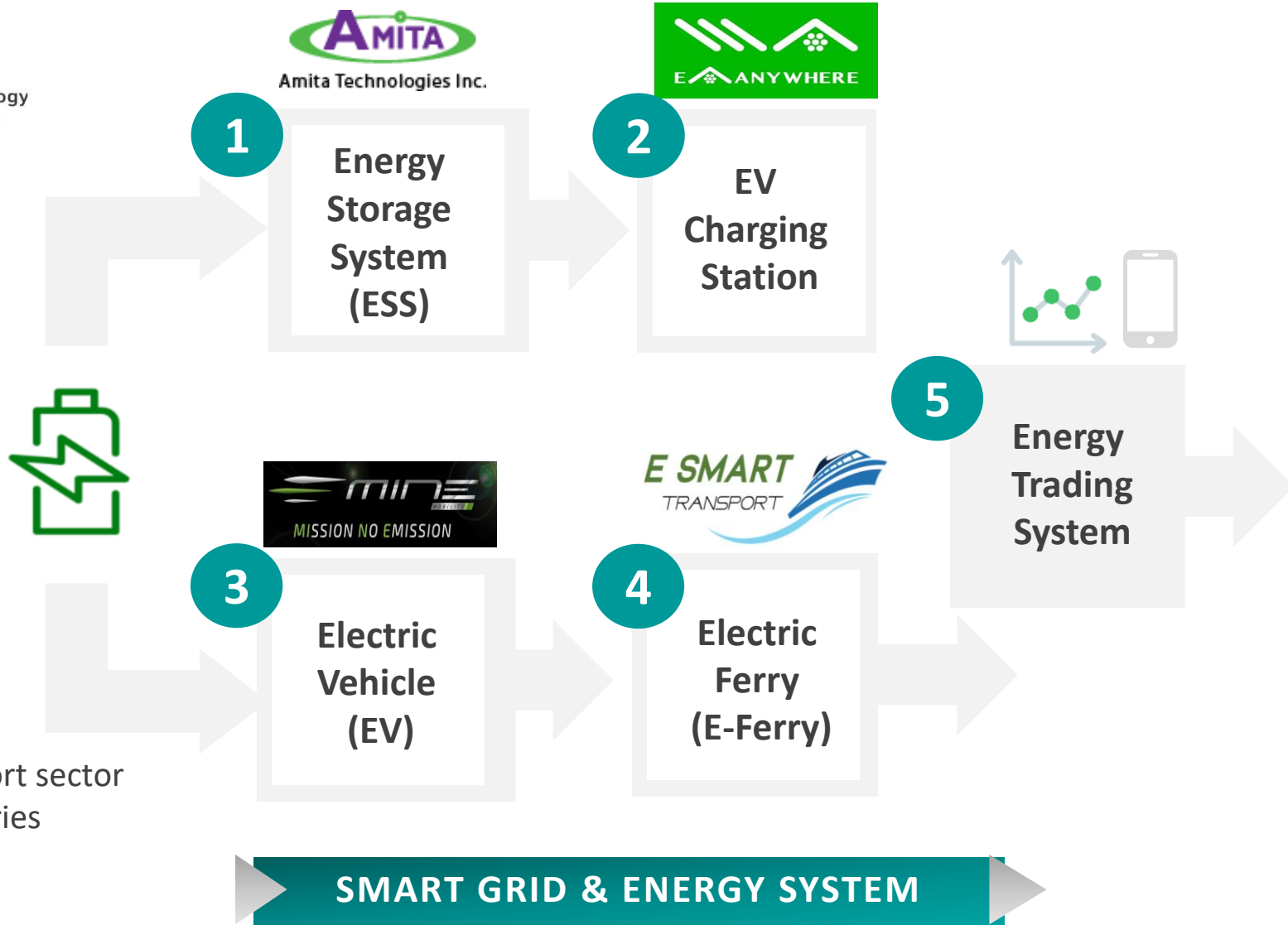
2021

50 GWh

■ Grid and Power plants

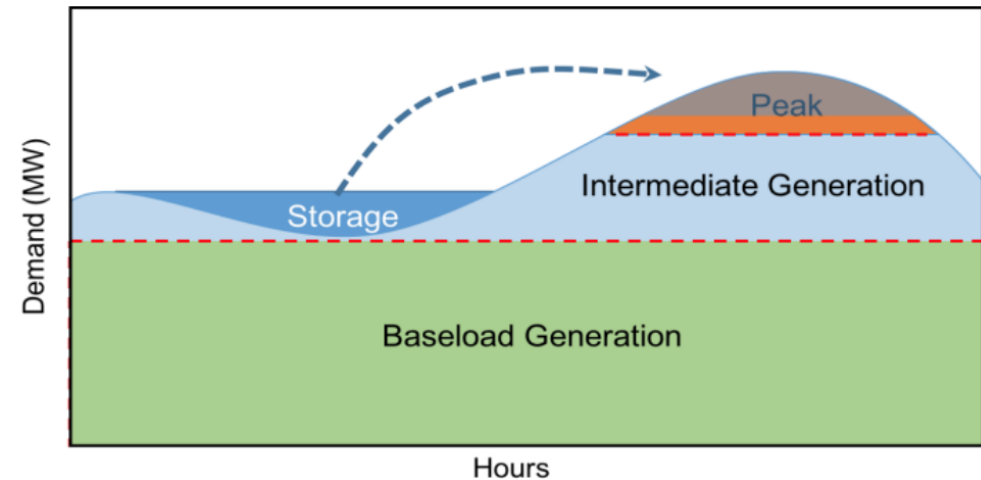
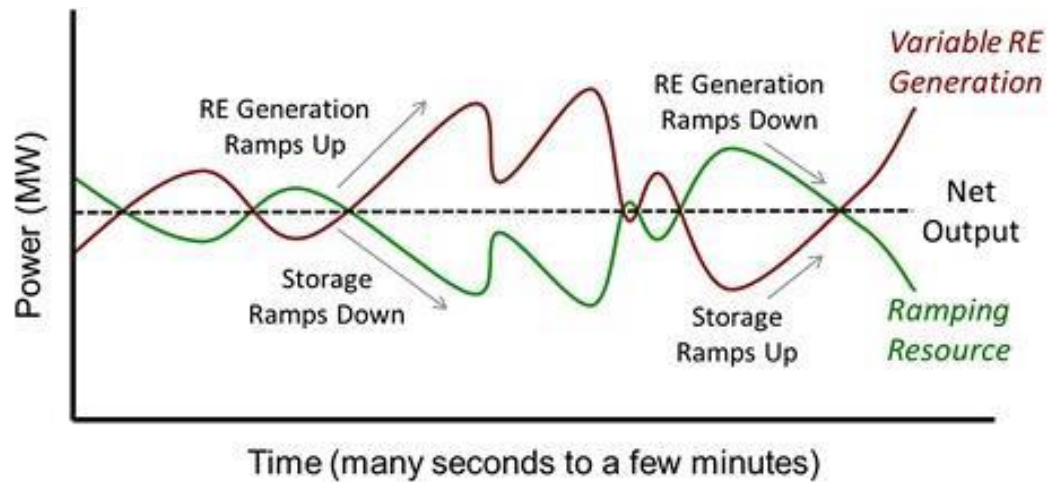
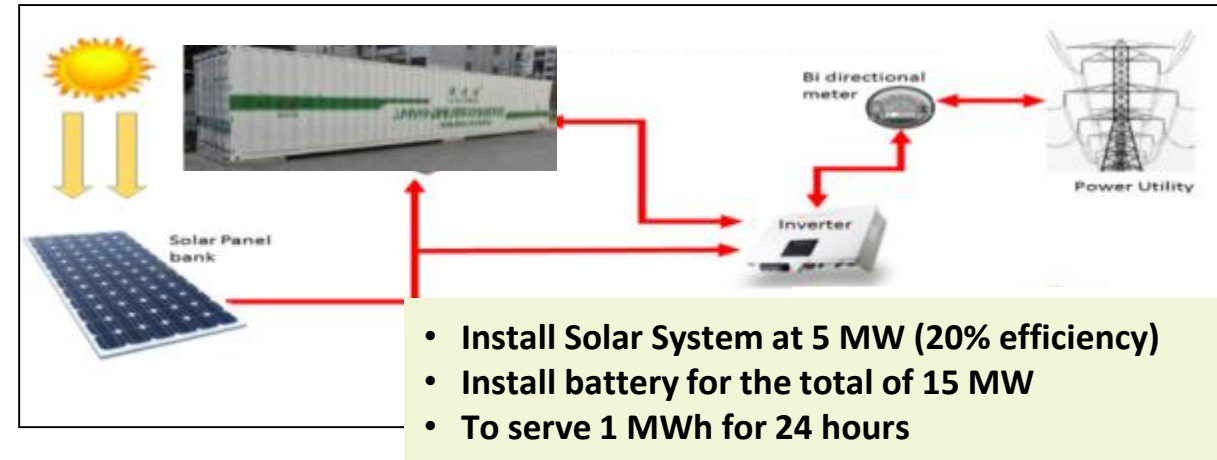
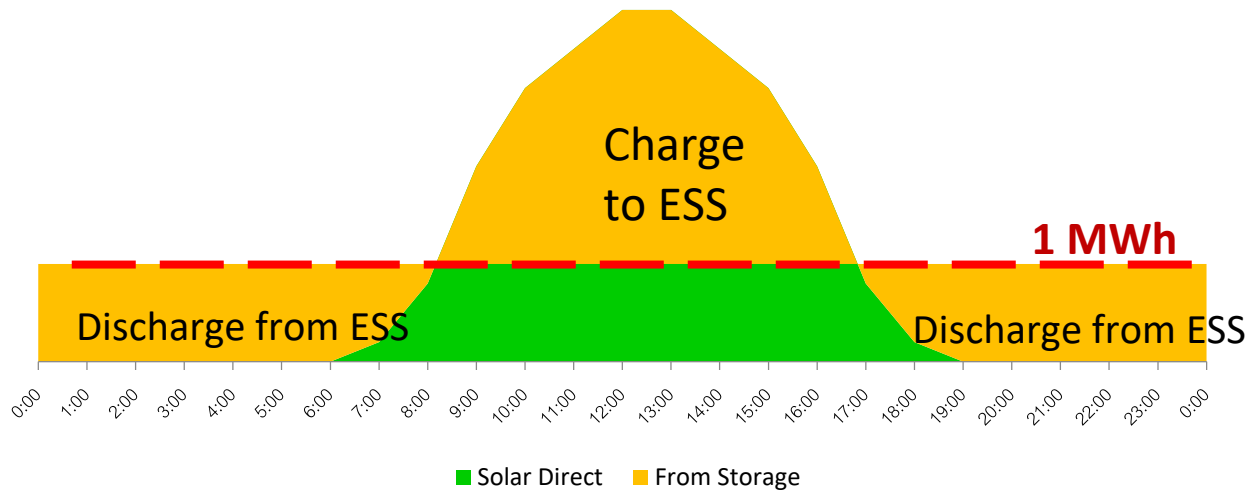
■ Power, EV in Transport sector  
and the other industries

Domestic and International





# Application of ESS in Power Industry

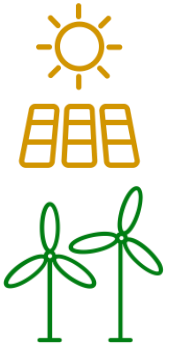




# RE + ESS replacing Coal & Gas

## COLORADO

Solar + Wind + 15% ESS



**707 MW**

**1,131 MW**



**275 MW**  
(ESS 15%)

RE Price/kWh
USD 2 – 3.6 Cent
<b>THB 0.7 -1.2</b>

## HAWAII

Solar + 4-hr ESS



**262 MW**

**1,048 MWh**  
(4-hour storage)

RE Price/ kWh
USD 8 – 12 Cent
<b>THB 2.6 - 4</b>

## CALIFORNIA

ESS 1,930 MWh



**300 MW**

**1,200 MWh**

**182 MW**

**730 MWh**  
(4-hour storage)

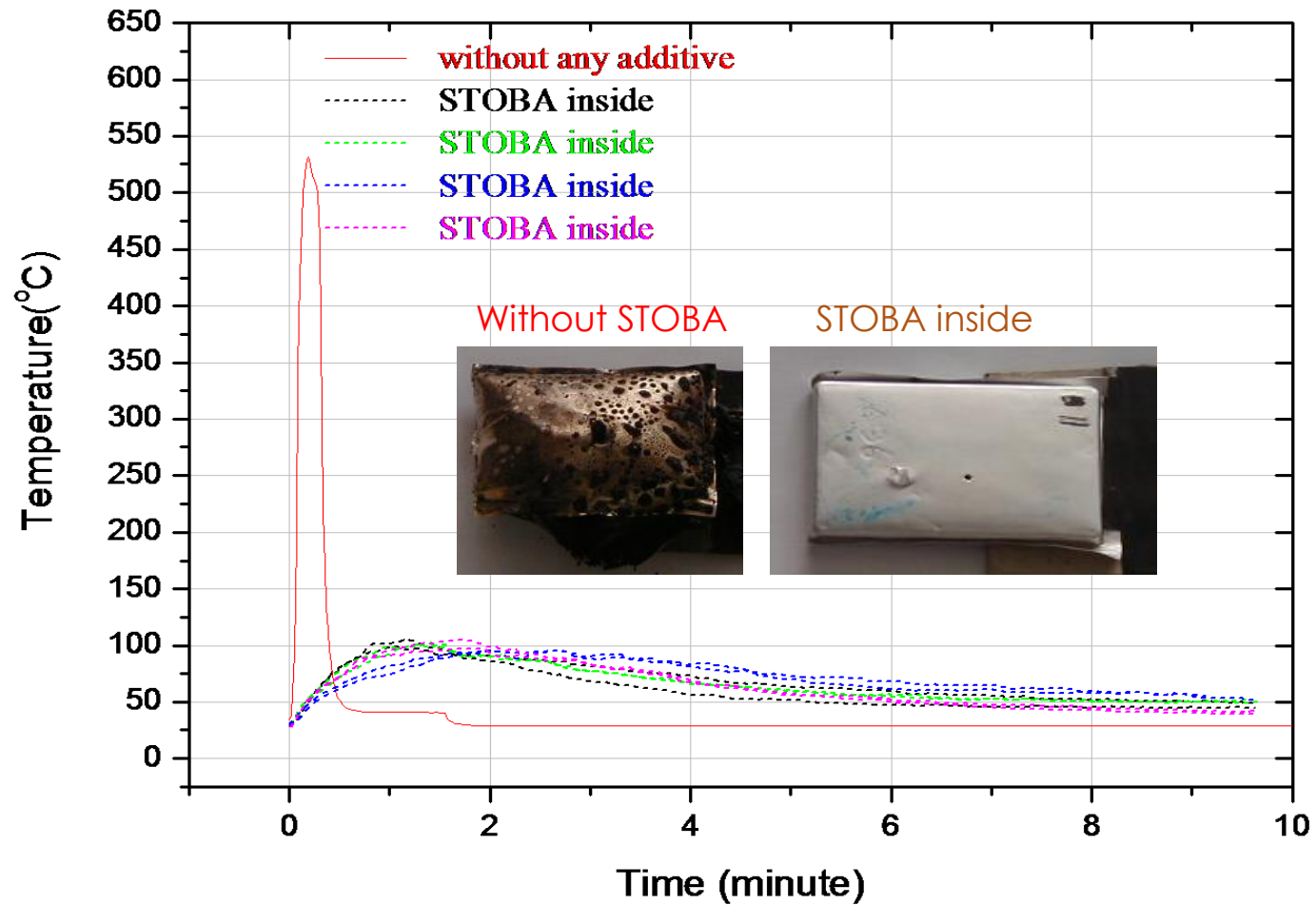
Xcel Energy  
to replace  
Coal 660 MW



PG&E  
use ESS  
to replace  
Gas Peaker

# Safety Mechanism of STOBA

Test Conditions: Nail Diameter 1mm, Speed 5mm/sec (Standard Test is 120mm/sec)



# EV Charging station : EA Anywhere



# ***EV Charging Station***



# MINE SPA1

WWW.MINEMOBILITY.COM

**95** KW  
(127 Hp)  
Max Power

**140** KM/H  
Max Speed

**30** KWH  
Battery\*

**200** KM  
Range (NEDC)\*\*

\*Charging network by EA Anywhere

\*\*New European Driving Cycle



Solar  
Yellow



Chaophraya  
Blue



Bio Black



ESS Grey



PCM  
Brown



Turbine  
Silver

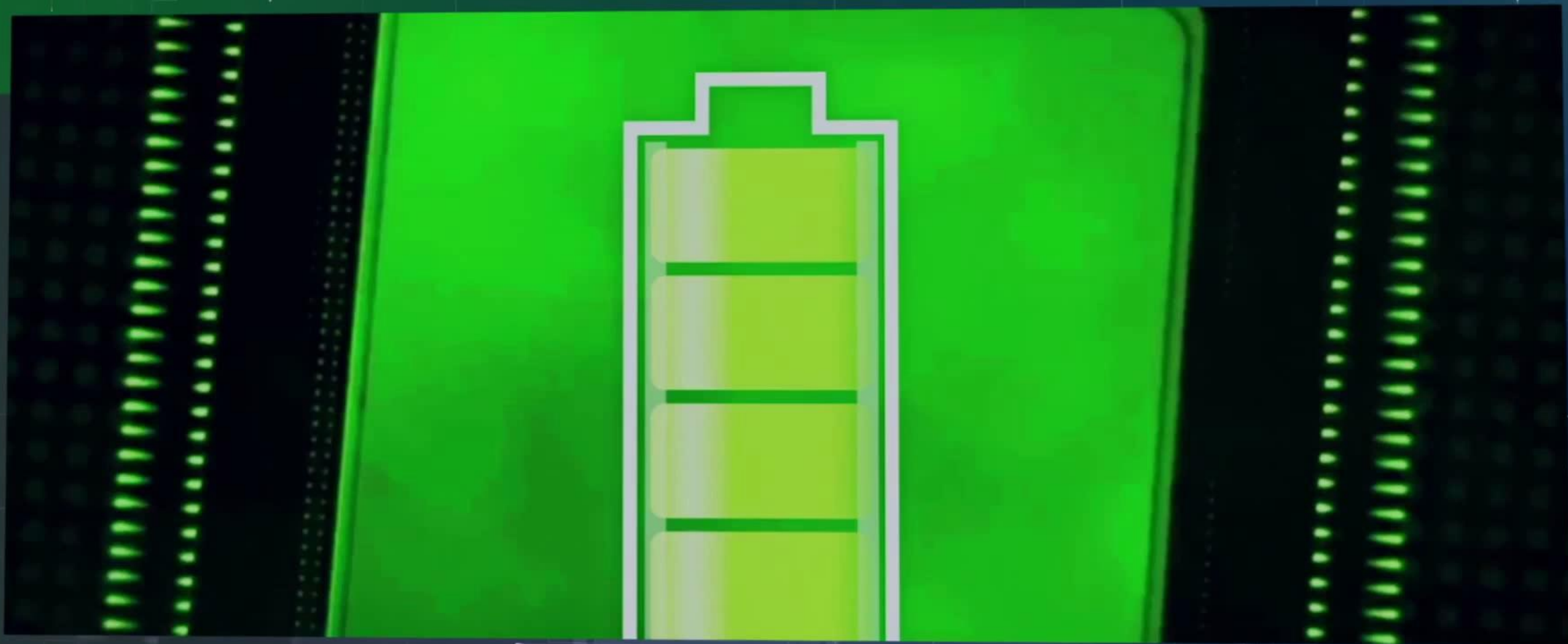


Mahanakhon  
White

น้ำหนักรถ	1,400 กก.
มิติตัวถัง (กว้างxยาวxสูง)	1,730x4,530x1730 มม.
ระยะฐานล้อ	2,750 มม.
ระยะต่ำสุดจากพื้น	150 มม.
รัศมีวงเลี้ยว	5.9 ม.
ความจุห้องสัมภาระด้านหลัง	650 ลิตร

MORE DETAIL



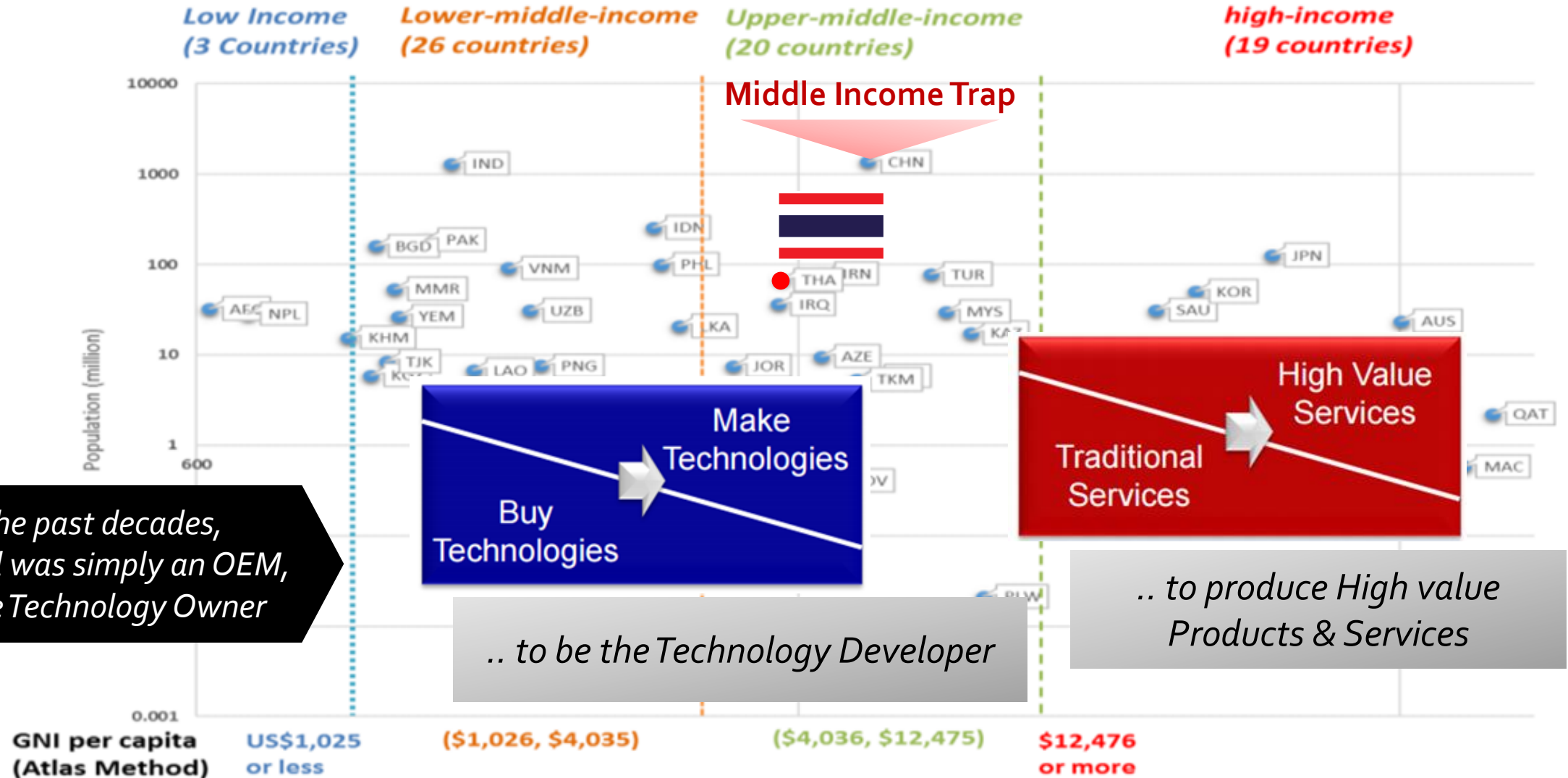


# *Electric Ferry*





# Transformative Shift Required for Thailand



*In the past decades, Thailand was simply an OEM, not the Technology Owner*

Note: include 68 countries; data of the remaining 7 Oceania countries are not available  
Source: WB Database



# Energy Absolute

Energy for the Future