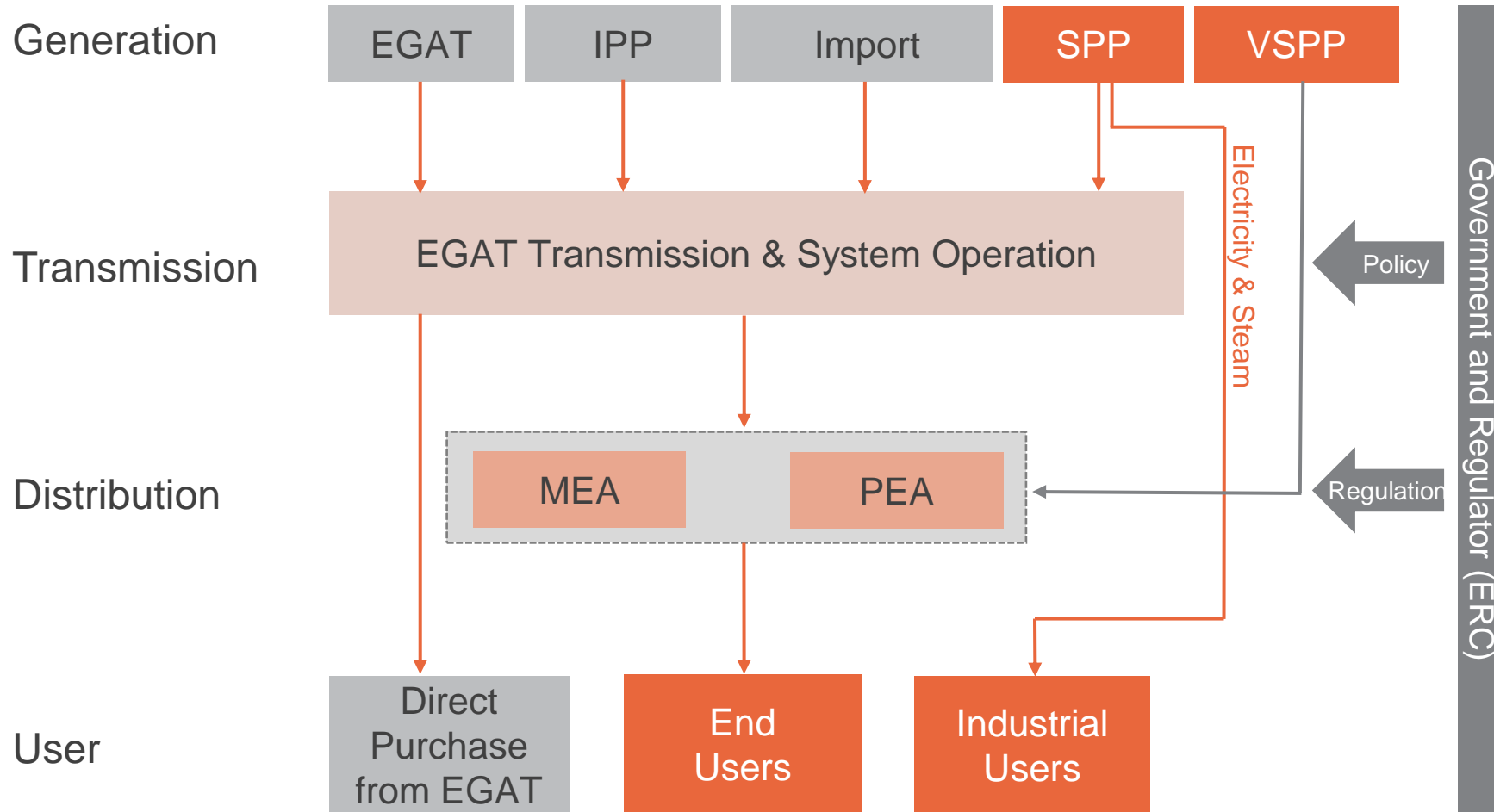


Business Opportunity for Electricity Sector With VPP and Digital Transformation

Thailand Power Industry

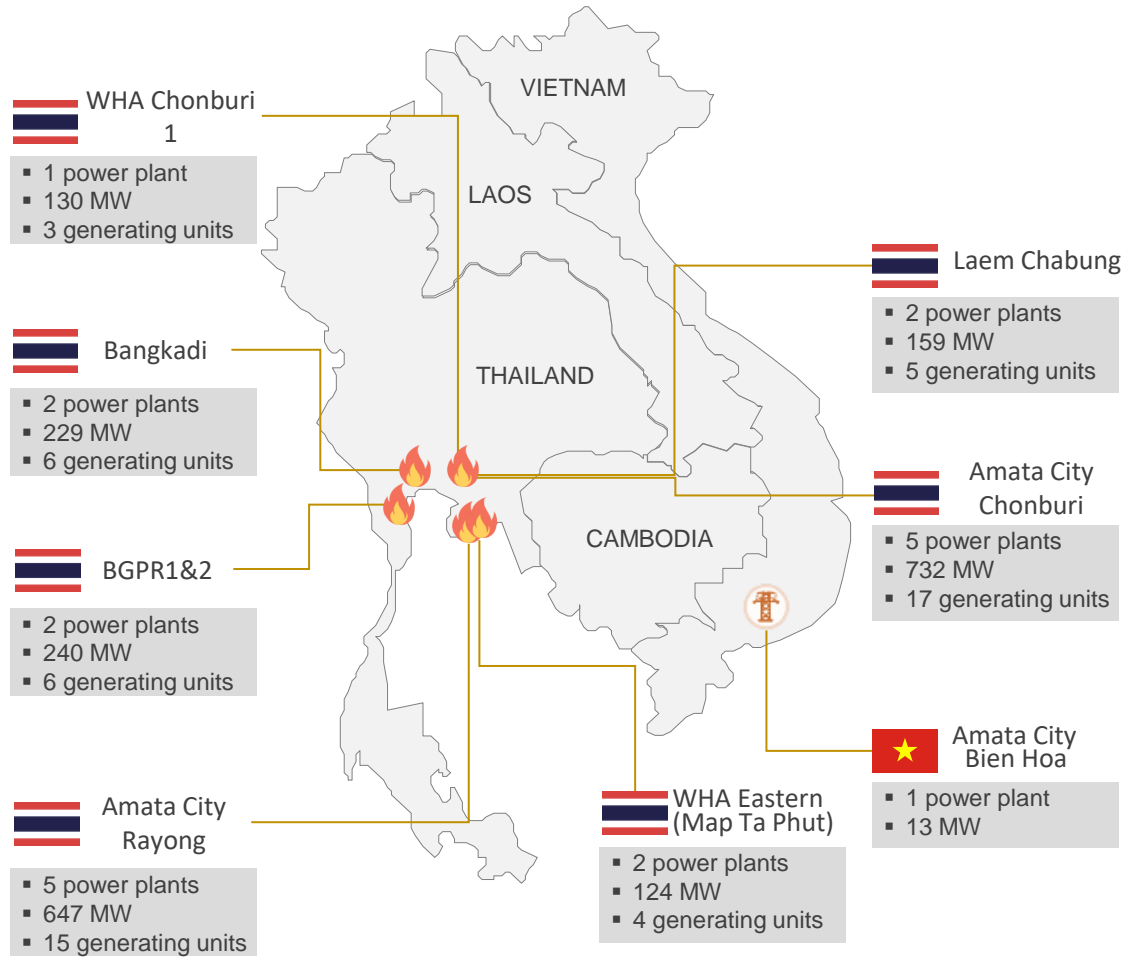


IPP : Independence Power Producer
 SPP: Small Power Producer
 VSPP : Very Small Power Producer

Source: EGAT

BGP Overview

Conventional Power Plants 2,035 MW

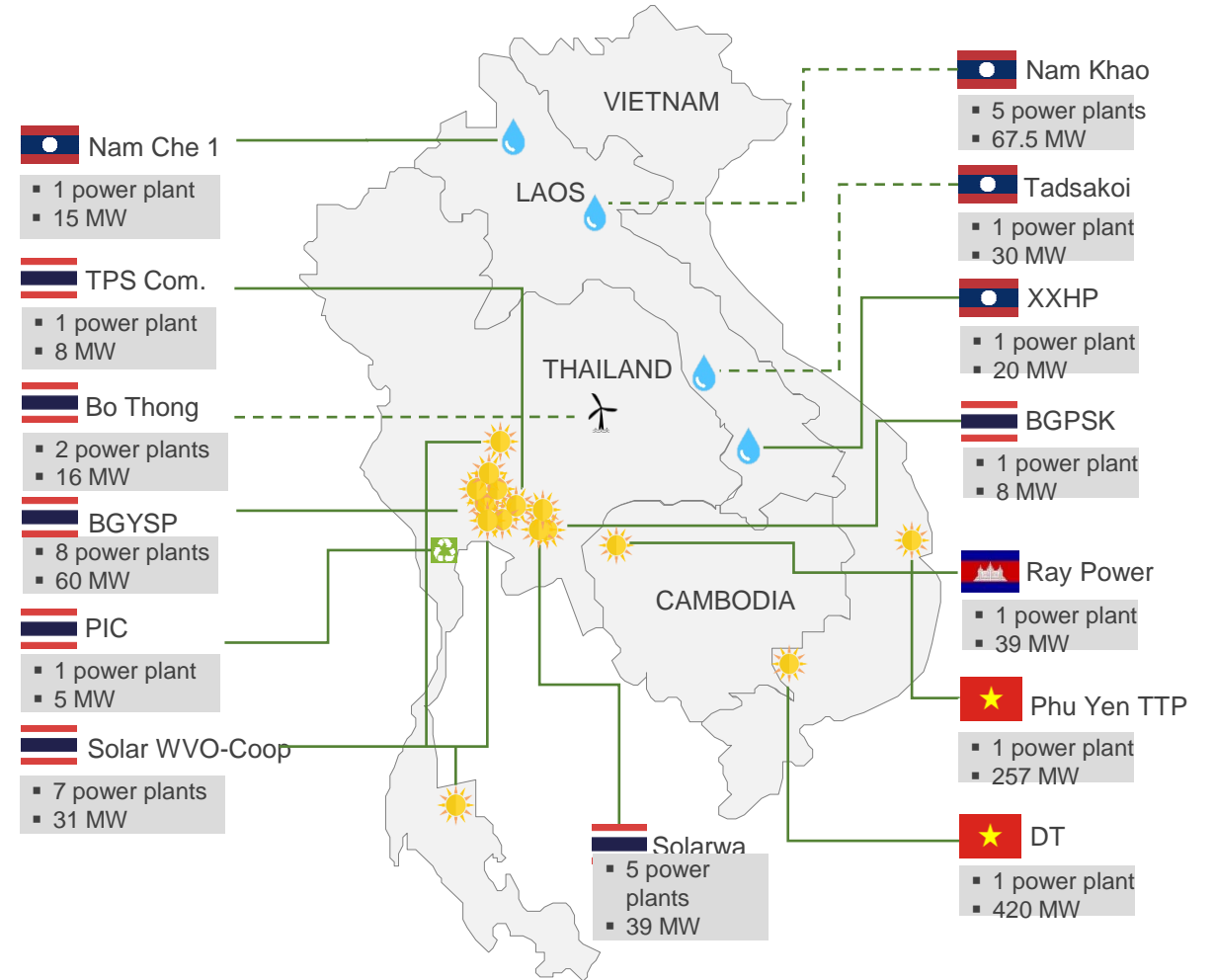


Gas-fired cogeneration power plants



Transmission and Distribution

Renewable Power Plants 850 MW

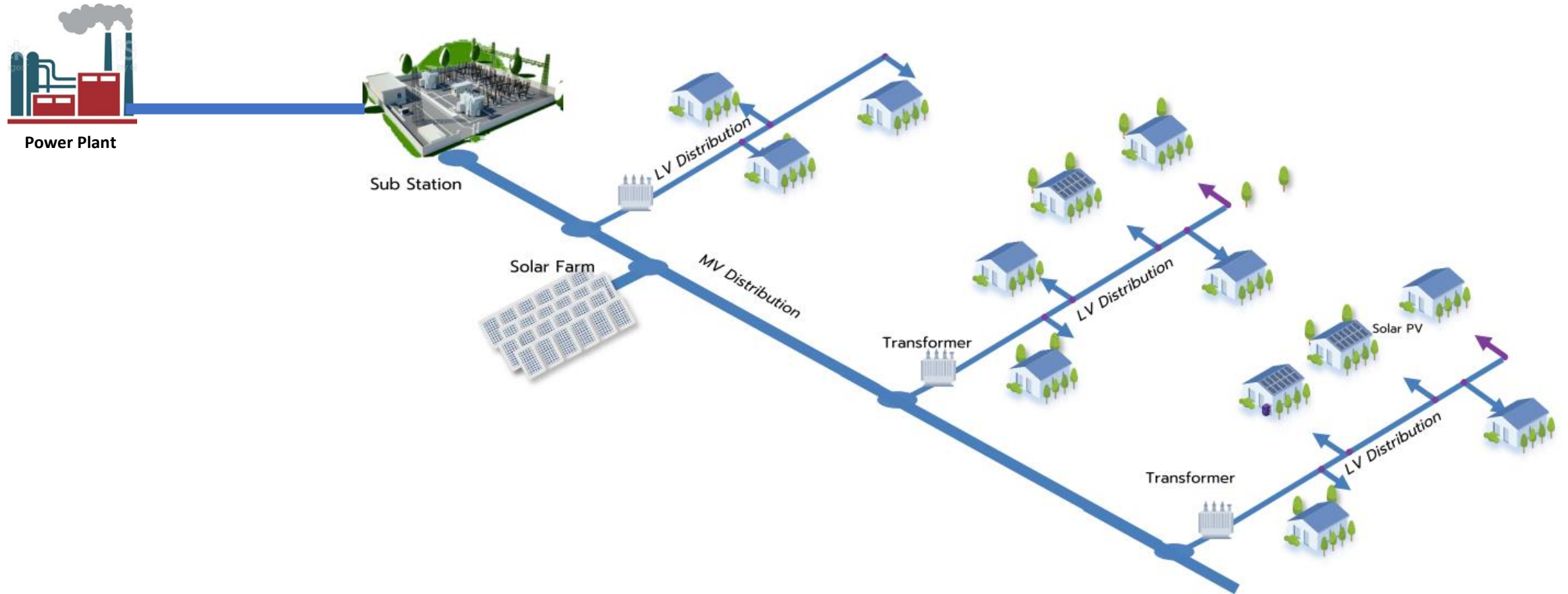


Hydro power plants



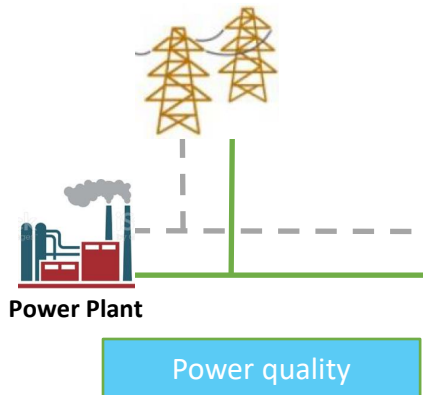
Solar power plants

Present Grid

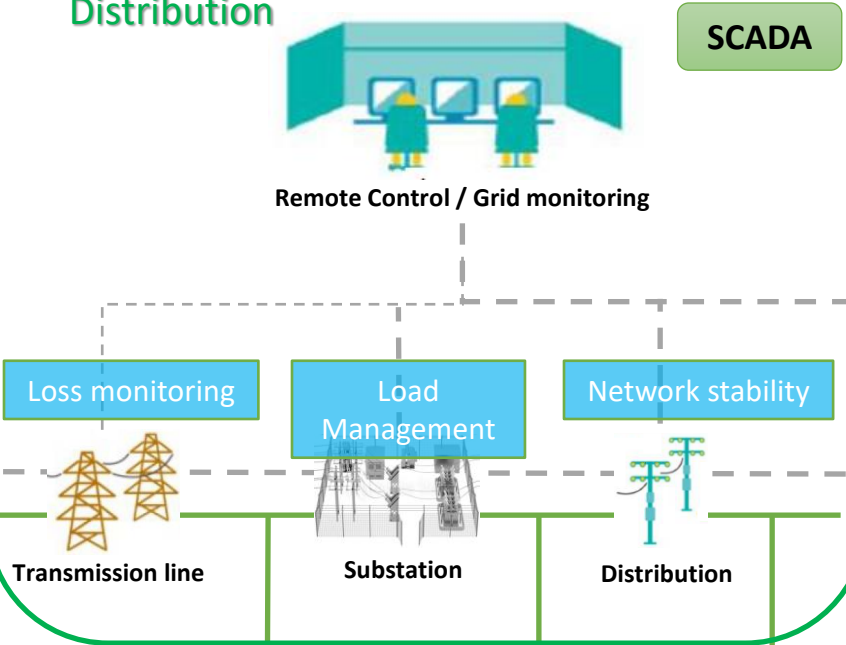


Smart Grid components

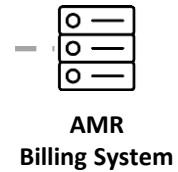
Generations



Transmission & Distribution



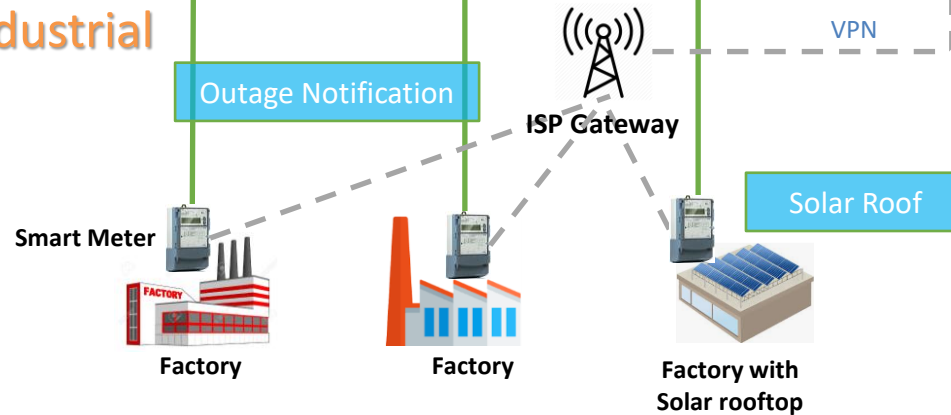
Business Cases



Stabilizing

- Maintain grid reliability and efficiency .
- Update all devices to be IED (Intelligent Electronic Devices) and digitalisation.

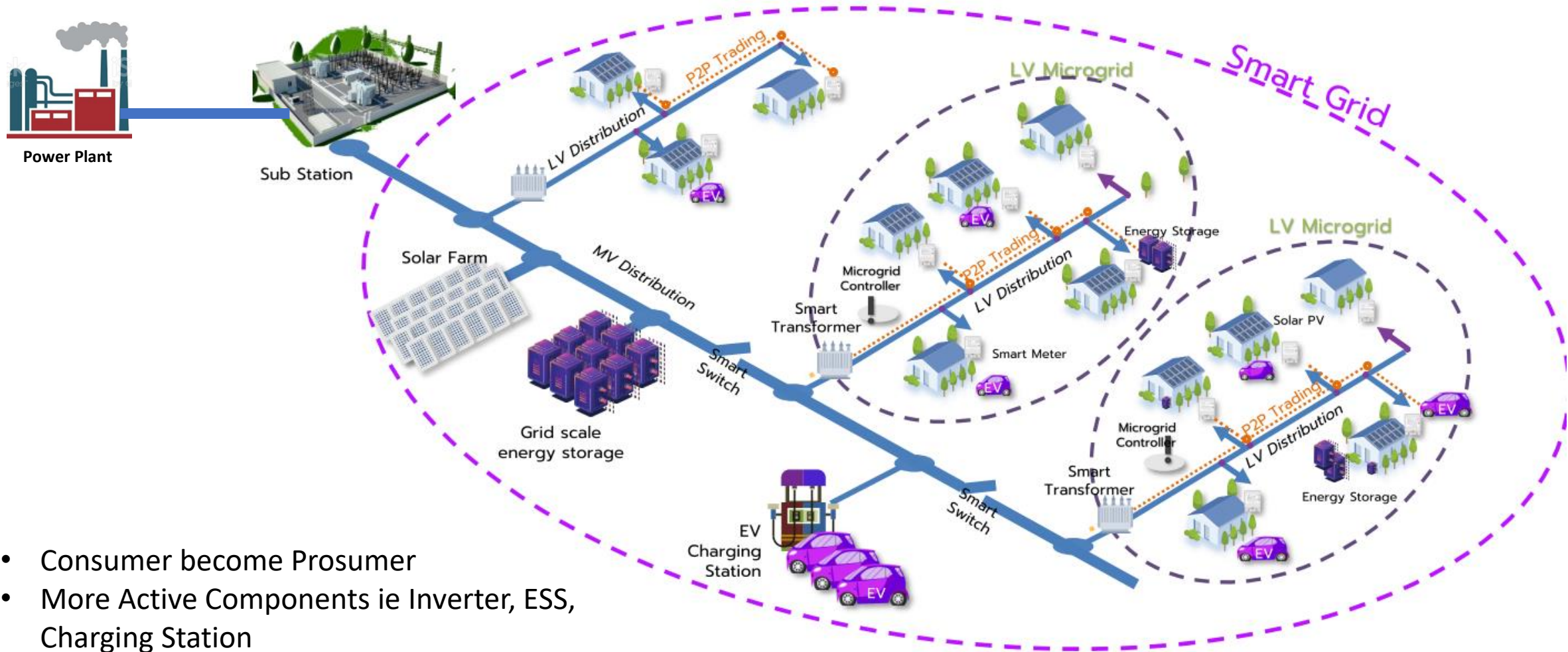
Industrial



Communication - - - - -

Power Network —————

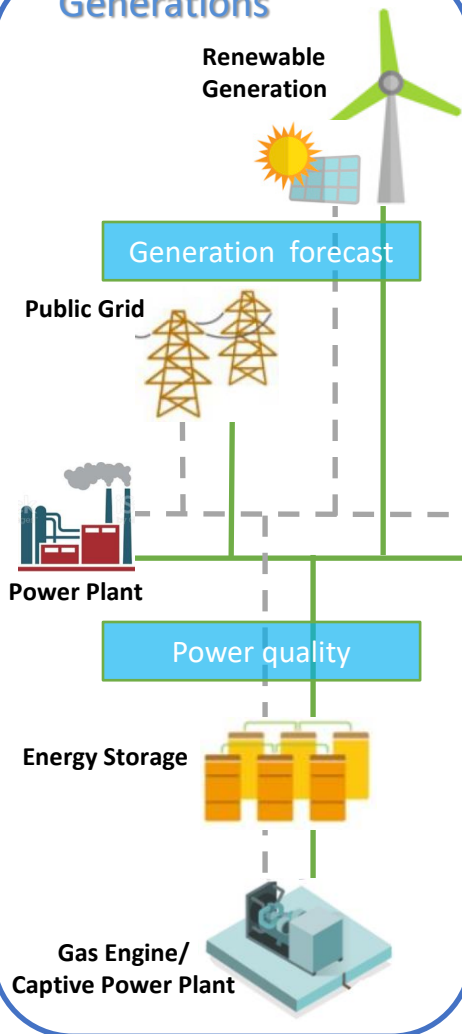
Future Grid



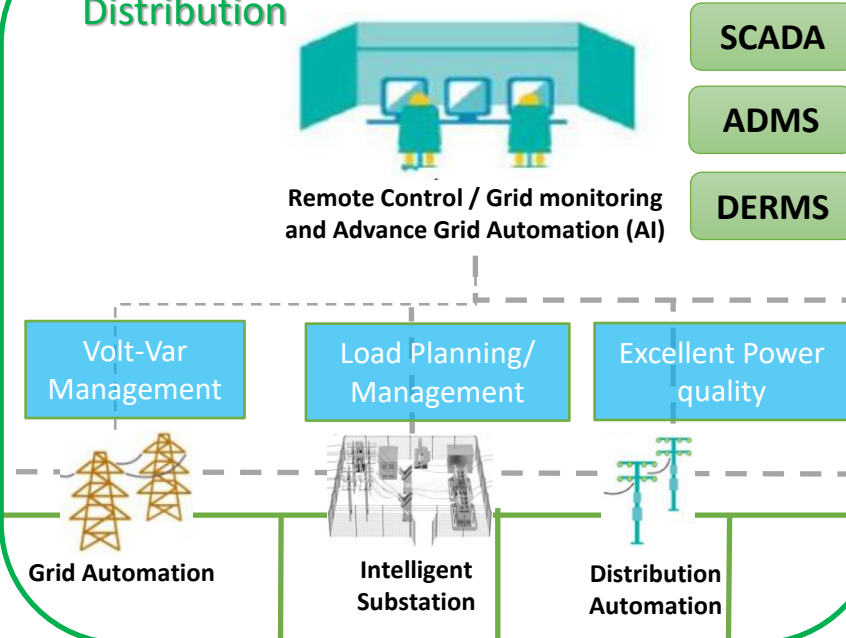
- Consumer become Prosumer
- More Active Components ie Inverter, ESS, Charging Station
- DG and Microgrid

Smart Grid Systems

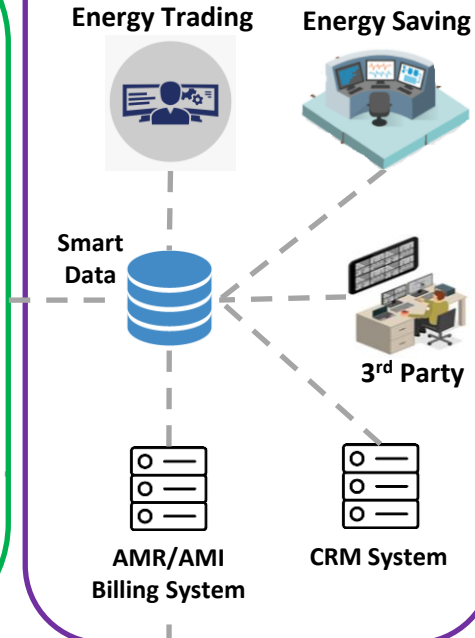
Generations



Transmission & Distribution



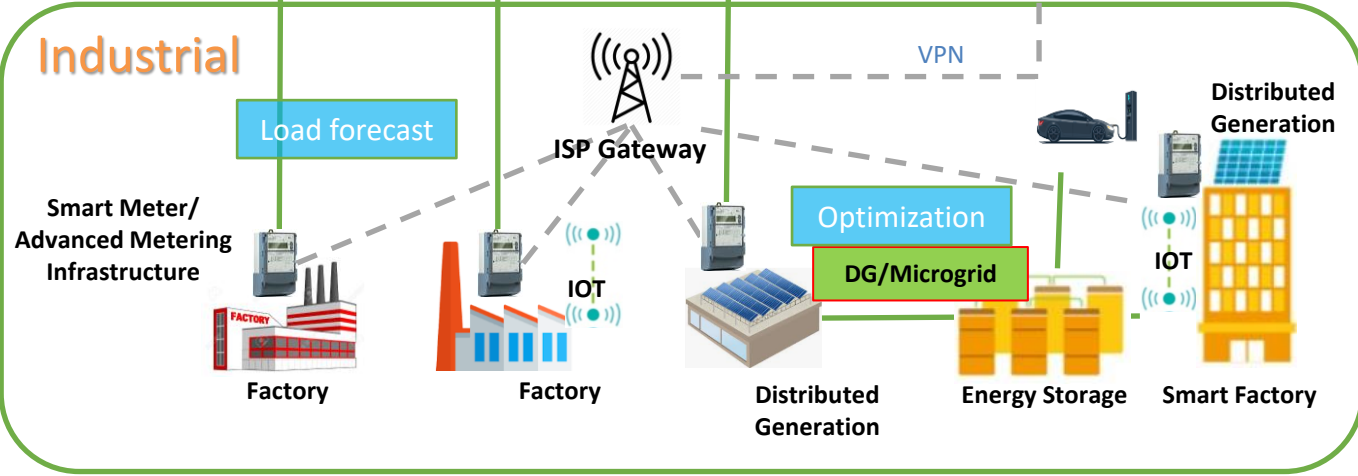
Business Cases



Managing distributed energy sources and Energy Trading

1. Enabling more active control of all resources with DR and moving toward a single, scalable platform for aggregation of load
2. Intelligence control center and at grid edge to manage intermittency of renewables.
3. Manage Generation and prepare for Energy Trading, VPP with other grids

Industrial



Asset management

- Using data management / analytics techniques to effectively leverage asset data to manage asset health & grid performance.

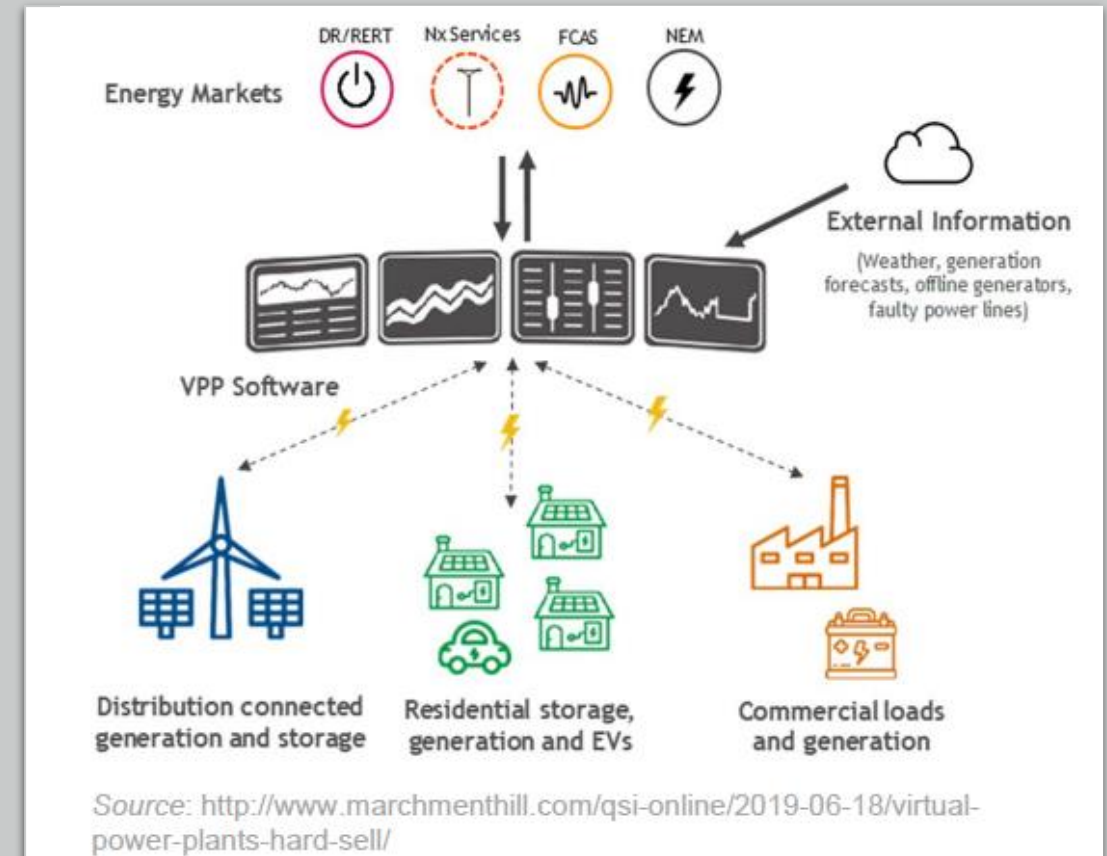
Communication - - - - -

Power Network - - - - -

Business Opportunity for Electricity Sector : Customer Satisfaction (Revenue and Power Stability)

Business Model

- System Operator giving service for P2P trading of our own distribution line.
- Energy trading B2G , SPP as Load Aggregator selling power to utilities.
- Energy trading B2G , SPP as generator for ASEAN GRID.
- Energy Solution Provider B2B , SPP as generator and operator for factory, commercial Building.
- Etc.



- Technology ready
- Regulation? Wheeling Charge by2022? /Backup Charge/Ancillary Service charge ,etc?
- Feasibility Study? Investment cost, ESS price?
- High country Reserve Margin !!