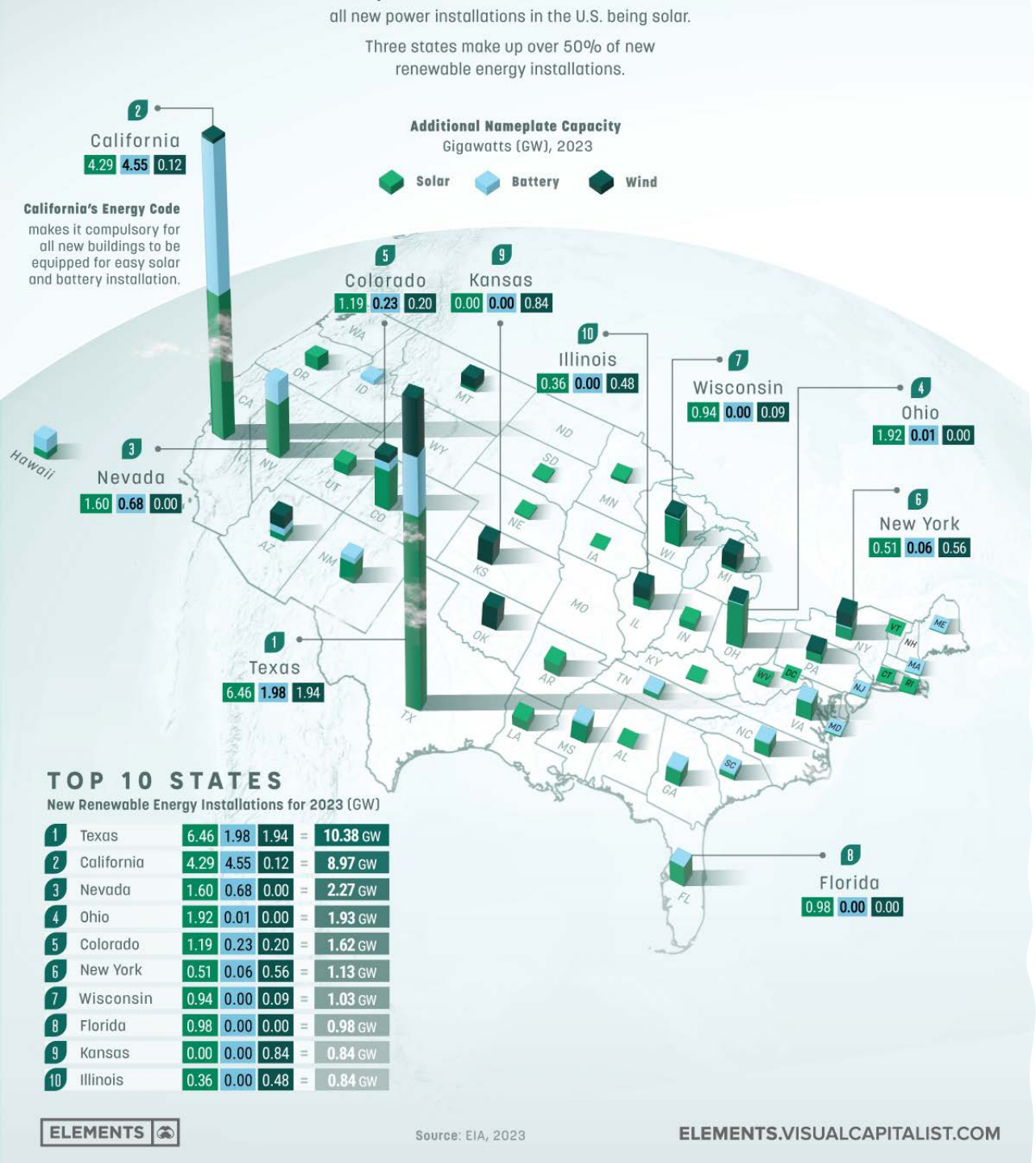
Agenda

- The Big Picture
- The role of BESS in the energy Transition
- California vs Texas
- Energy Storage Technologies
- BESS potential in Oman

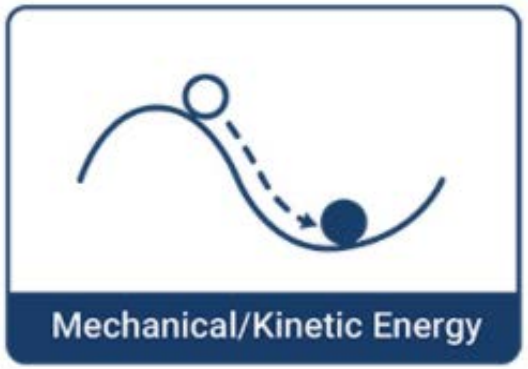
Surah Jathiyah Ayat 13

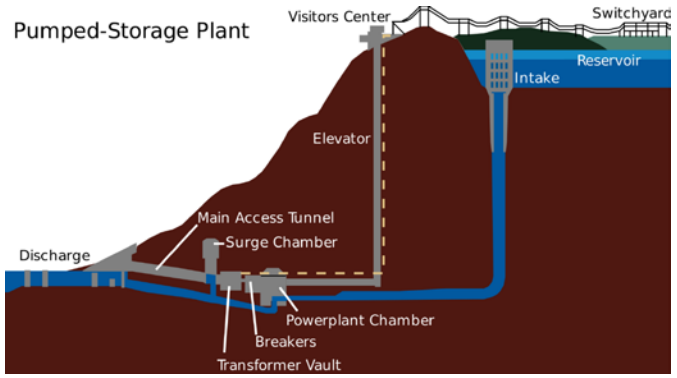
All sources are needed!

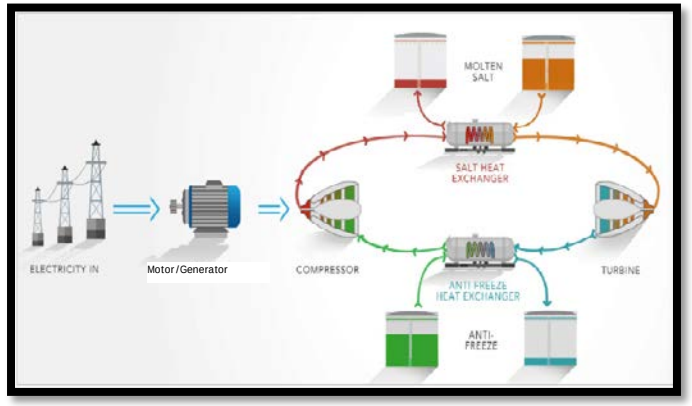


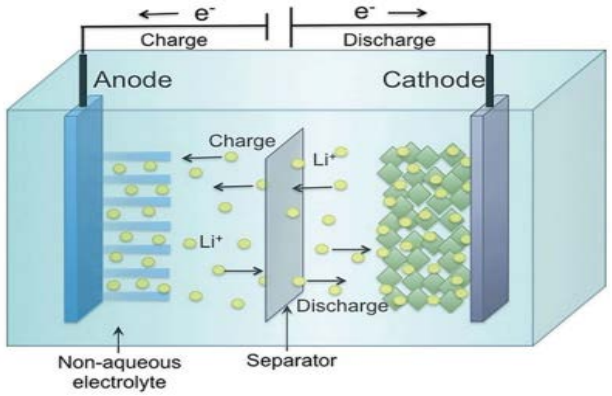
California Vs Texas

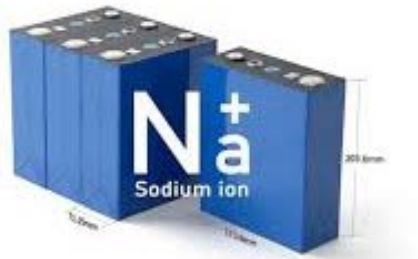
ESS Technologies

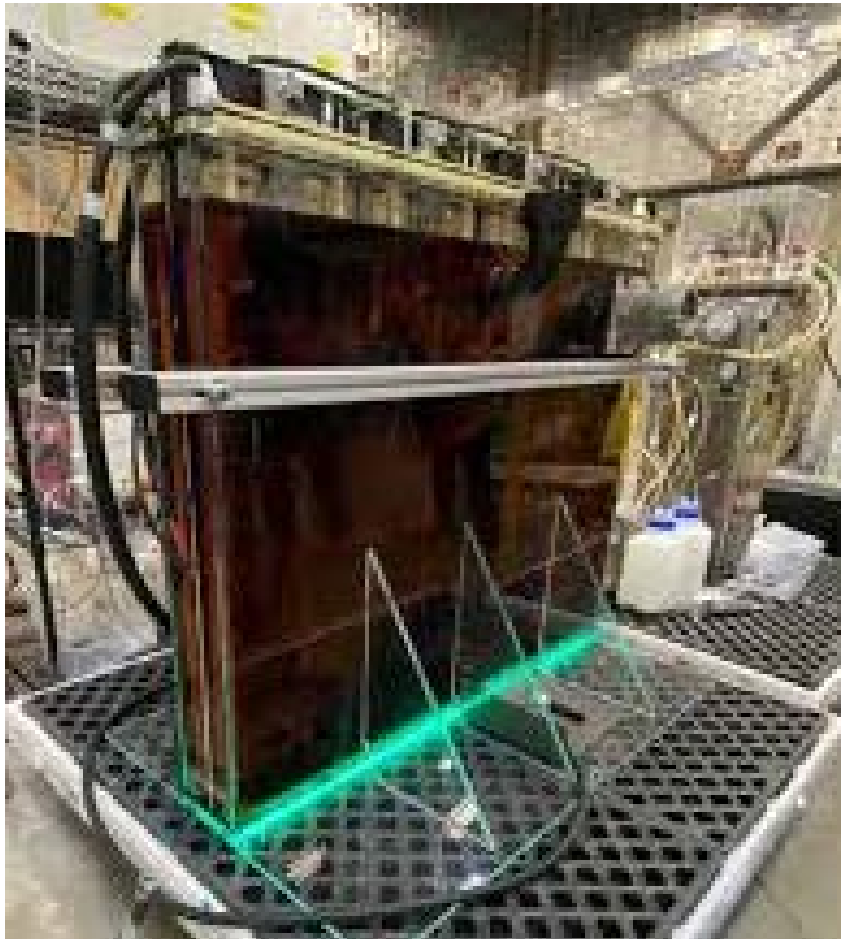












Electrochemical Technologies

- Li-ion
- Sodium-ion
- Solid-State
- Flow (iron, vanadium, zinc, etc.)
- Iron-air
- Nickel hydrogen
- others

BESS Potential in Oman

- Energy Shifting

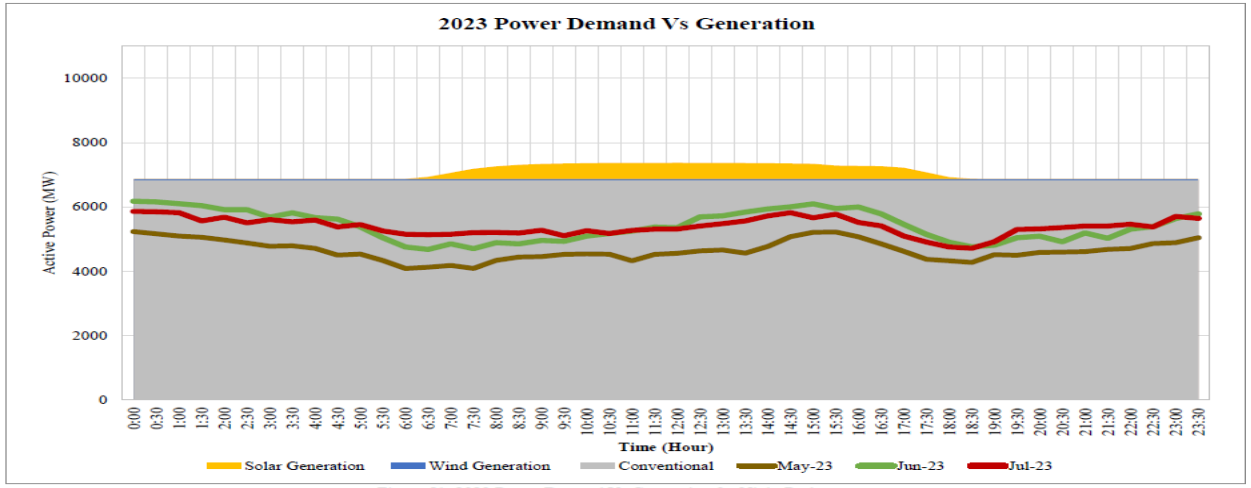


Figure 51: 2023 Power Demand Vs Generation for Night Peak

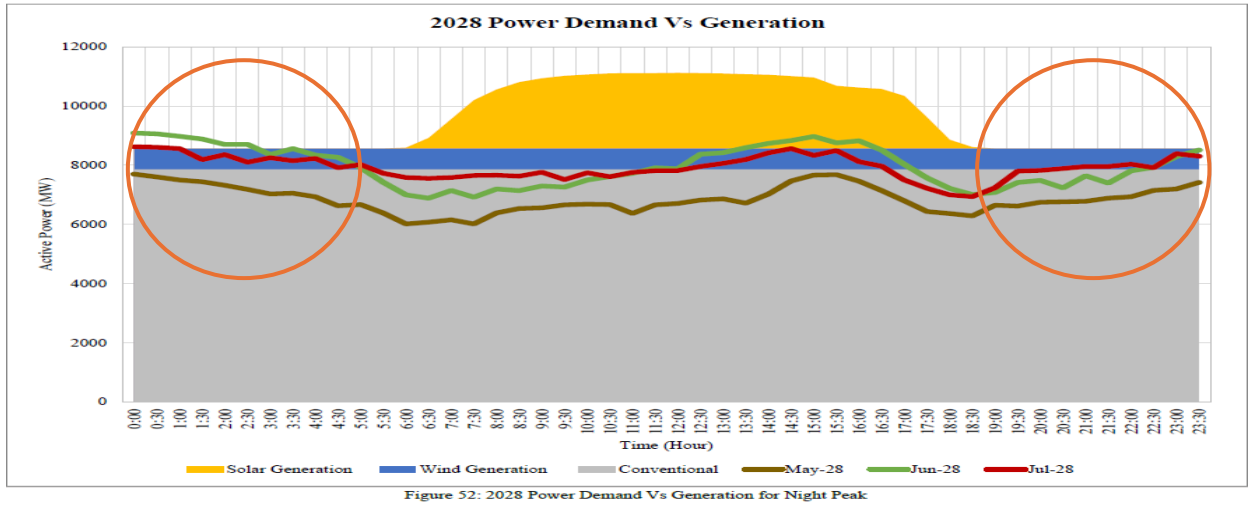
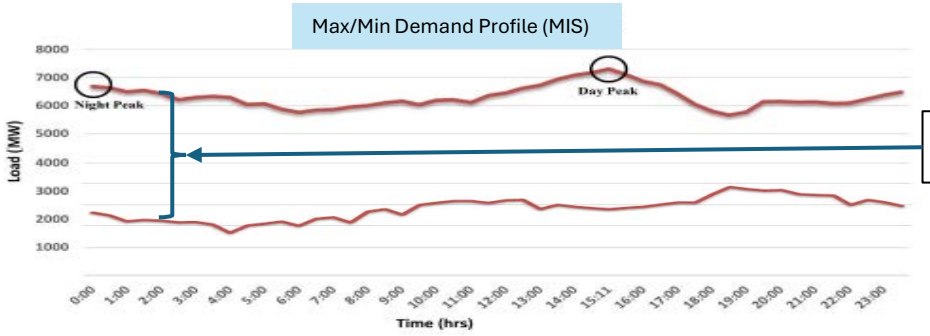


Figure 52: 2028 Power Demand Vs Generation for Night Peak

- Seasonal Storage



- Ancillary Service
  - Typical need with higher renewable penetration
  - Regional generation swing
    - Wind concentration in the South
    - Solar concentration in the North
  - Load-Generation geographical mis-match

BESS Potential in Oman

- Resiliency:

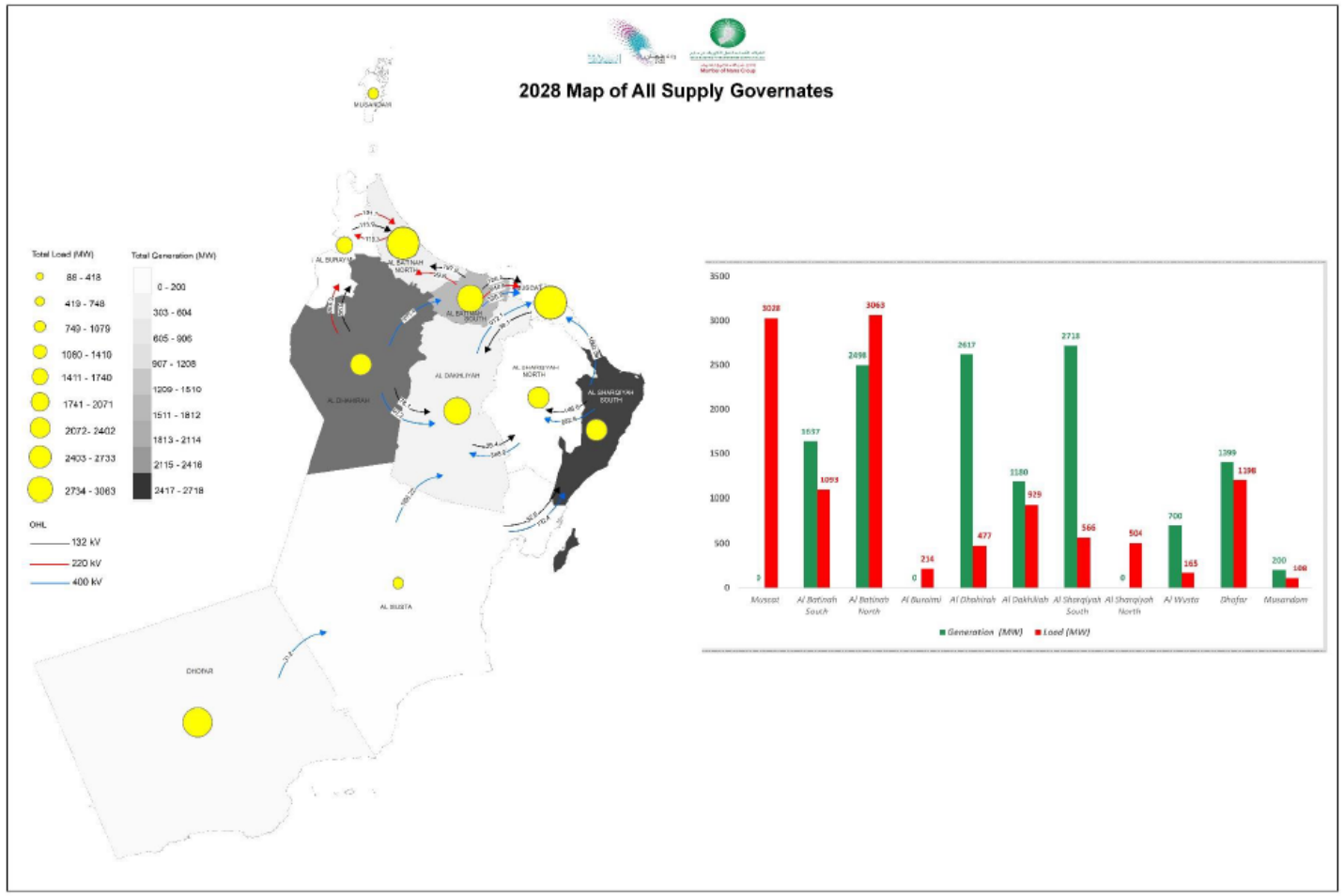


Figure 38:Map of All Supply Governates

- In addition to the load-generation geographical mis-match. The concentration of generation sources to few large CCGT plants is another major resiliency risk.

- Storage can bring the energy closer to the load and provide resiliency to the system by adding buffer points throughout the grid.