

Smart Grid in Israel

Initial study

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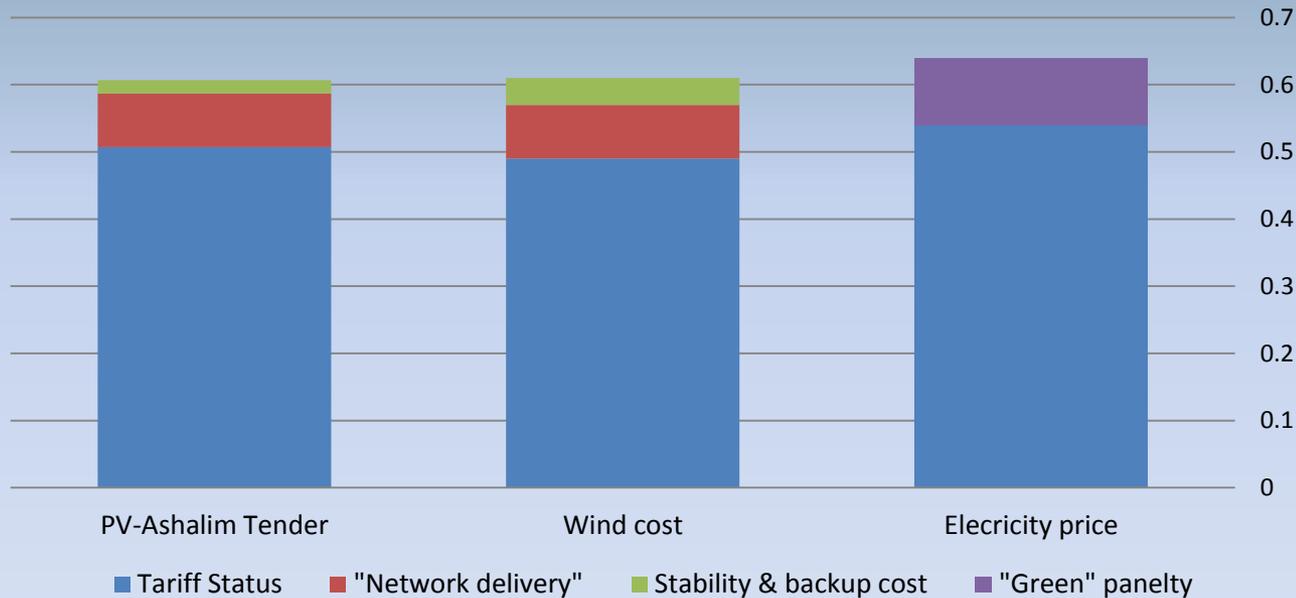
Outline

- Why Smart Grid is needed in Israel?
- Peak shift and smart meters
- The justification of Smart meters
 - Global national view
 - Consumer Economic consideration
- Alternatives options
- Summary

Price status PV and wind

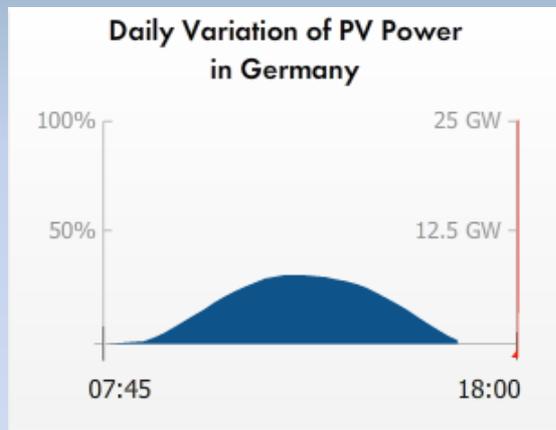
low penetration levels – no special stability and backup compensation needs

Comparison Cost of KW-h /shekels
low penetration of RNE

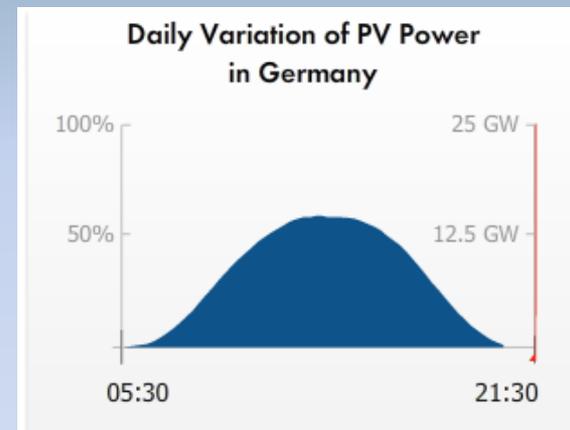


Do we need for compensation of wind and PV?

Winter cloudy day



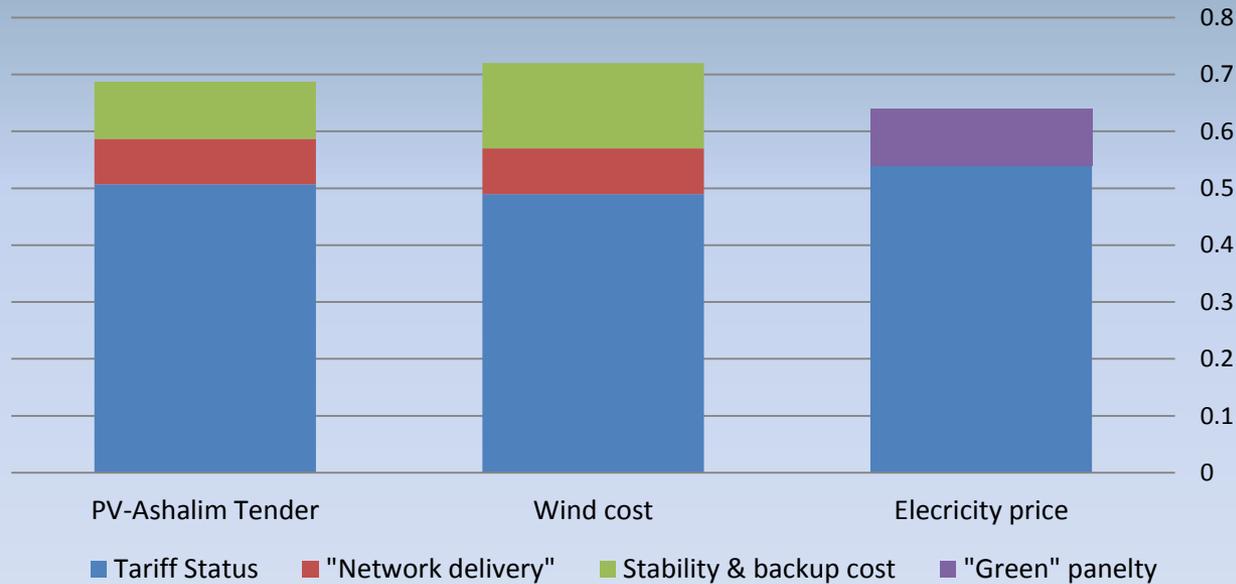
Sunny day



- The energy generation function is smooth in all cases
- The size is large
- The geographical spread is wide

Price status PV and wind

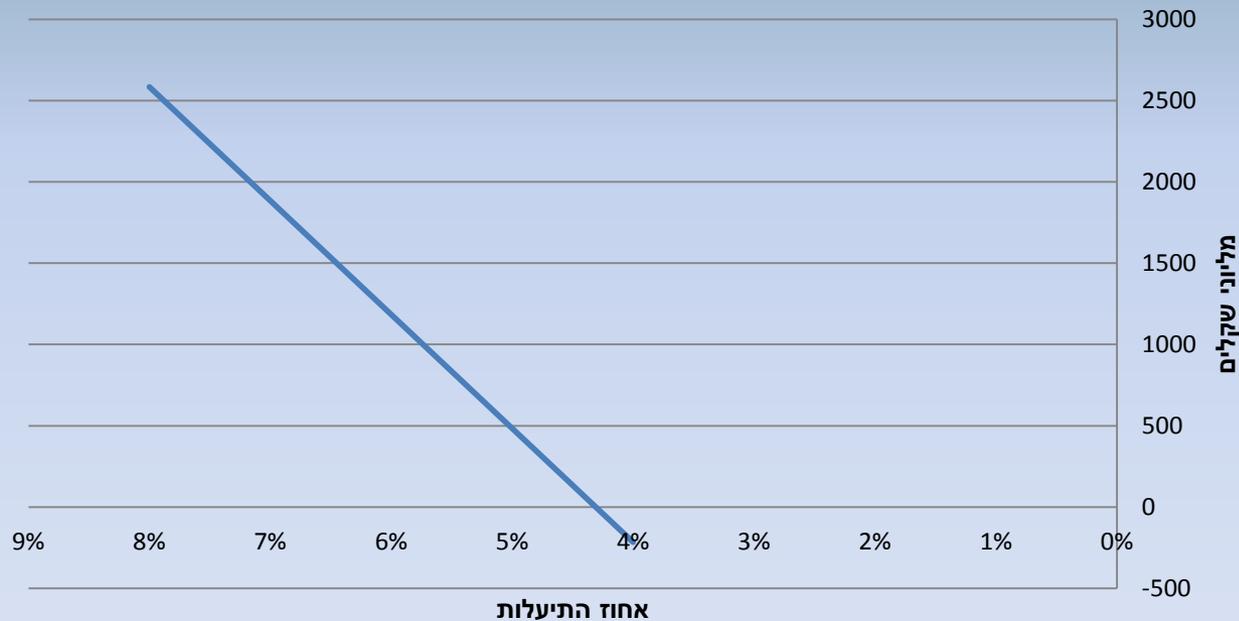
Comparison Cost of KW-h /shekels
high penetration of RNE



Does the Smart Grid beneficial?

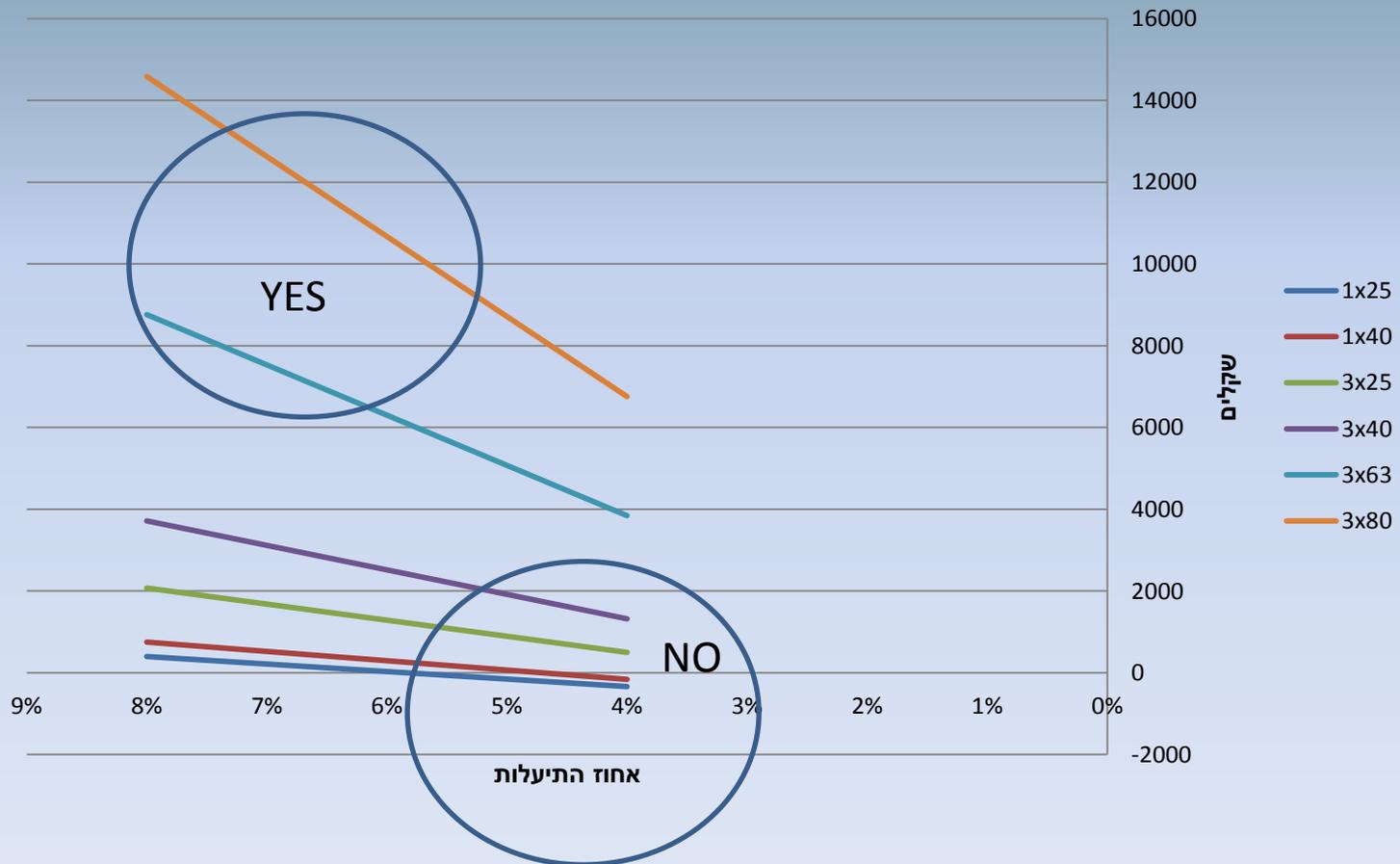
Answer- depends on efficiency of saving

חסכון עפנ"י 10 שנים



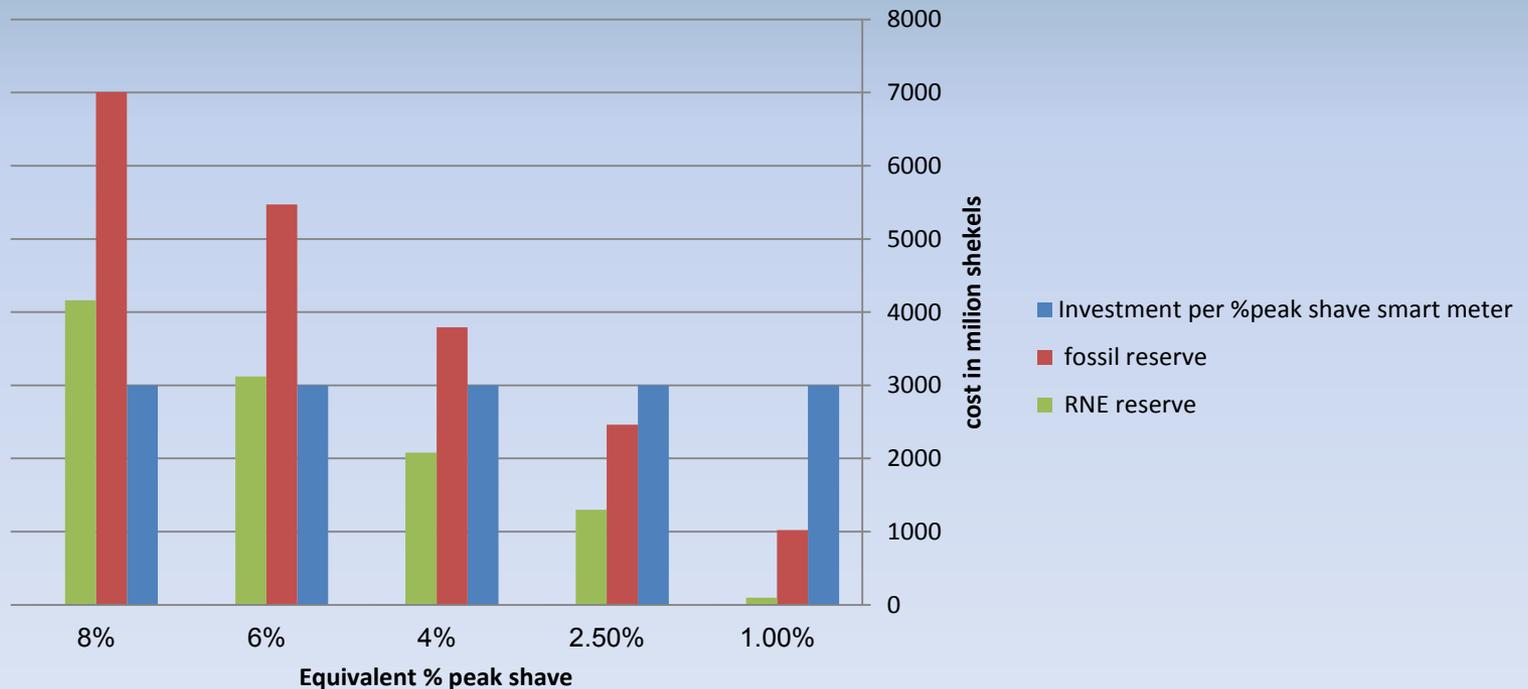
Is it beneficial for the the consumer?

חסכון עפנ"י 10 שנים



Use the smart meters as alternative for reserves

Estimation of alternative cost smart metering vs. reserves over 10 years operation



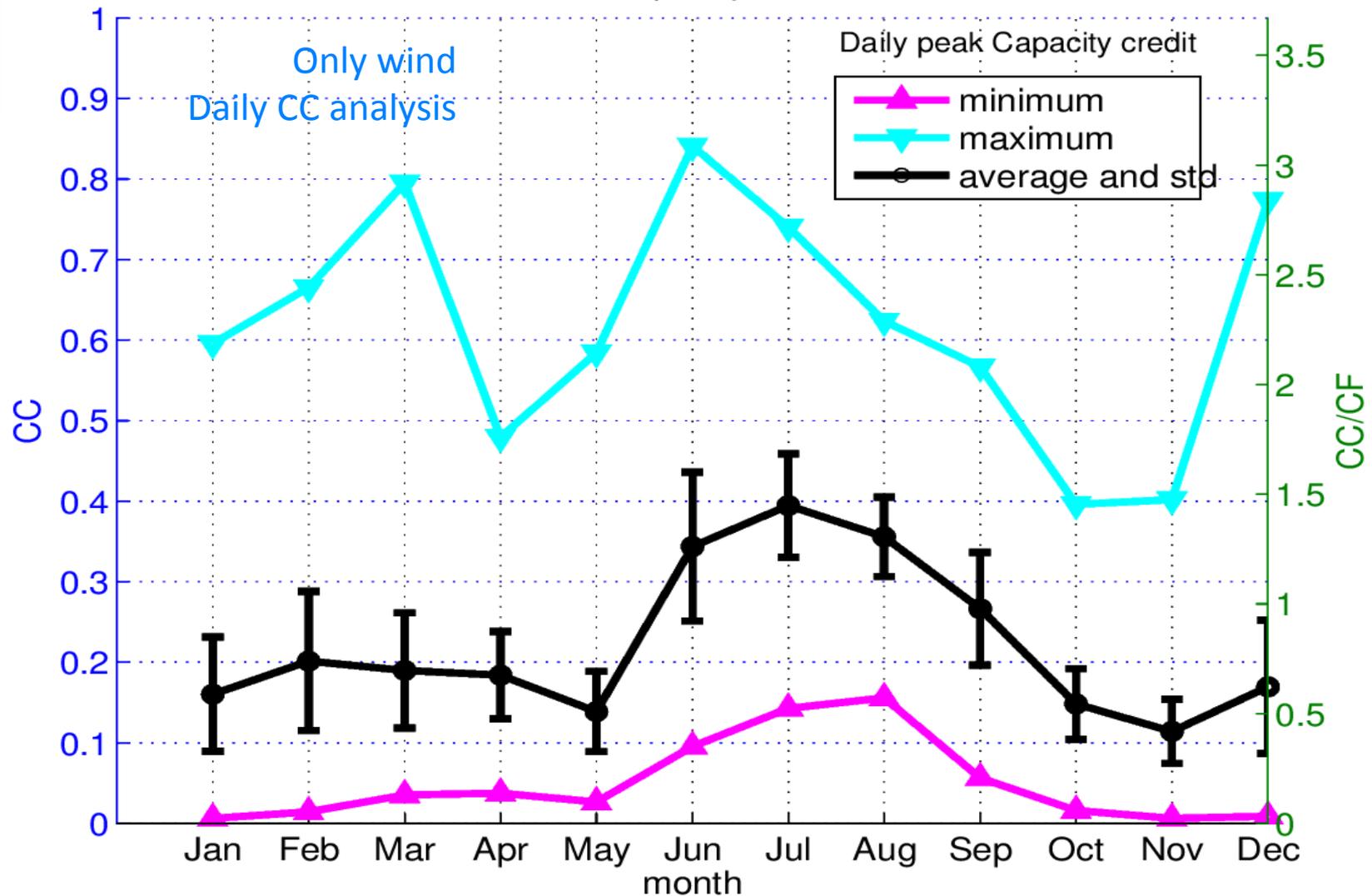
Alternative for smart meters

- Less expensive options:
 - Control via RF
 - Control via the communication network
- Better control of current generation plants
 - Weather forecast
 - Use of flexible fossil generation
 - PV power control via inverters
- Build a CHP option in Israel to ensure gap between winter to summer peak of demand



Monthly variation of daily peak CC

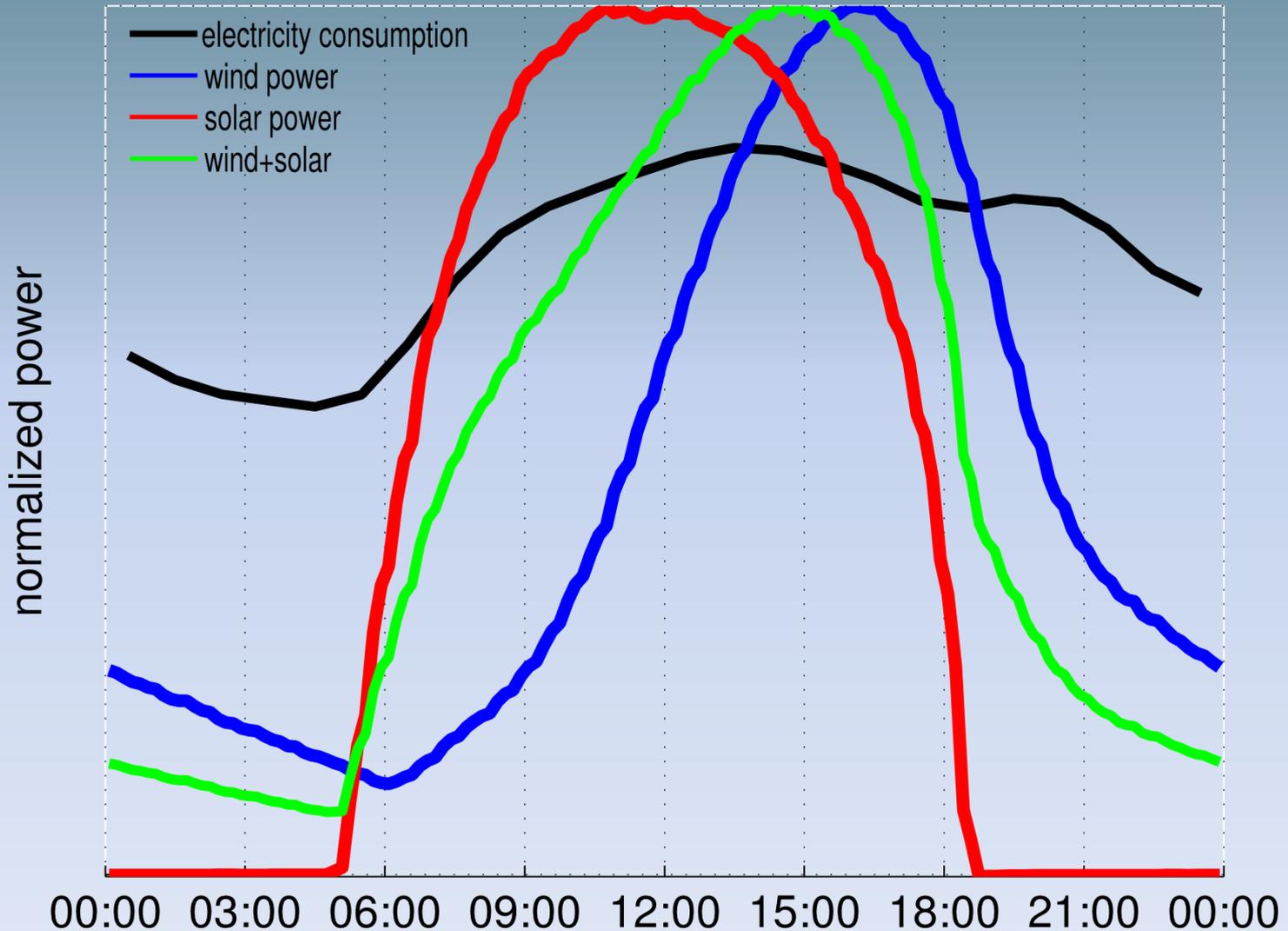
Israel wind, interannual monthly-average, of daily peak capacity credit
Interannual capacity factor = 27%



Other infrastructure solutions

- Energy Mix plan 
- Network topology
 - Semi Autonomic mini grids 
- Connection to Europe
 - On peak emergency
 - East from West

The synergy between Solar and Wind



New topology



Conclusions

- Implementation for small consumers should find different economic alternative than smart meters
- We must ensure efficiency benefit which is better than 6% in any solution that we will implement
- We should implement simple solutions like weather forecast, and energy mix planning
- Long term should consider topology changes to the network