

STASA



SOLAR THERMAL ASSOCIATION OF SOUTHERN AFRICA

Terence Govender, Chairman
November 2018

STASA- Who We Are and Our Members?

- Established to promote CSP Technology in the Southern African Energy Market.
- Represents all CSP technologies.
- The advancement of CSP technology and its inclusion into the generation mix in South Africa IRP.
- To ensure the sustainability of the CSP industry in the RE development landscape and its technology benefits.

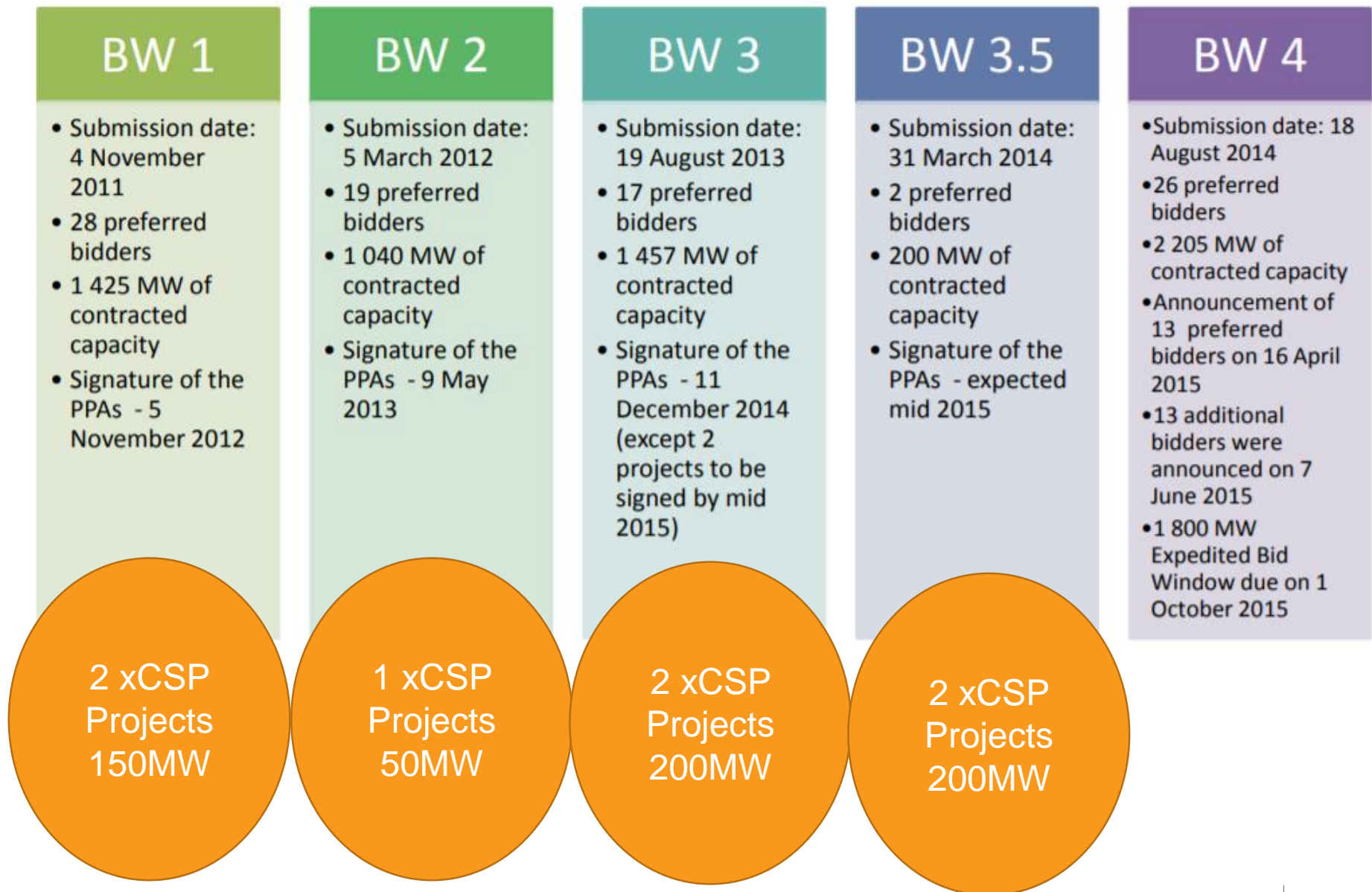


ABENGOA



SOLAR THERMAL
ASSOCIATION OF
SOUTHERN AFRICA

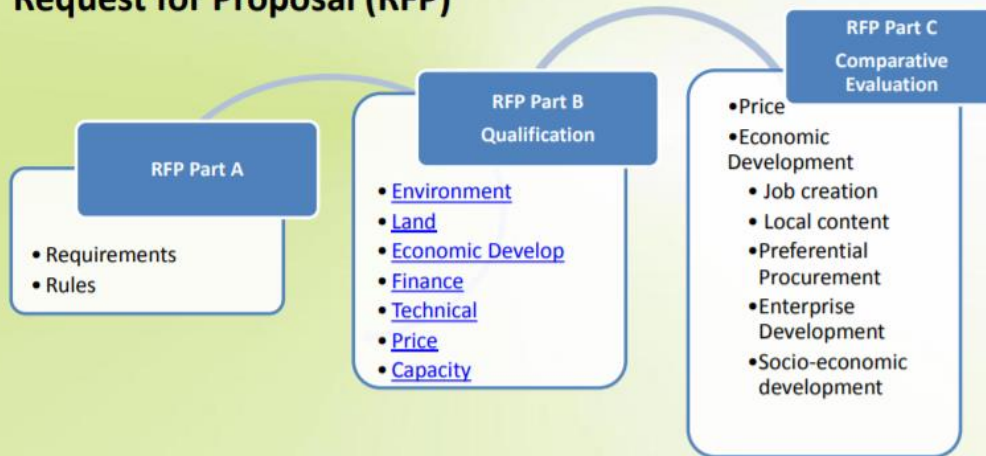
Various REIPPP: Bid Windows



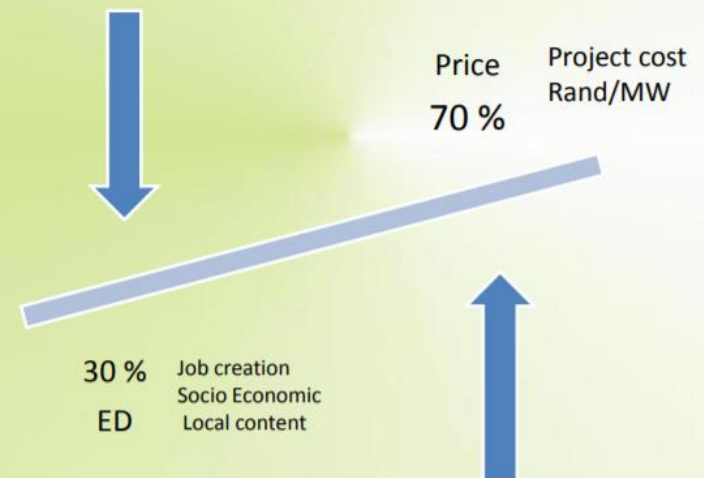
DOE's Procurement Criteria

Procurement Process Background

Request for Proposal (RFP)





PART C EVALUATION

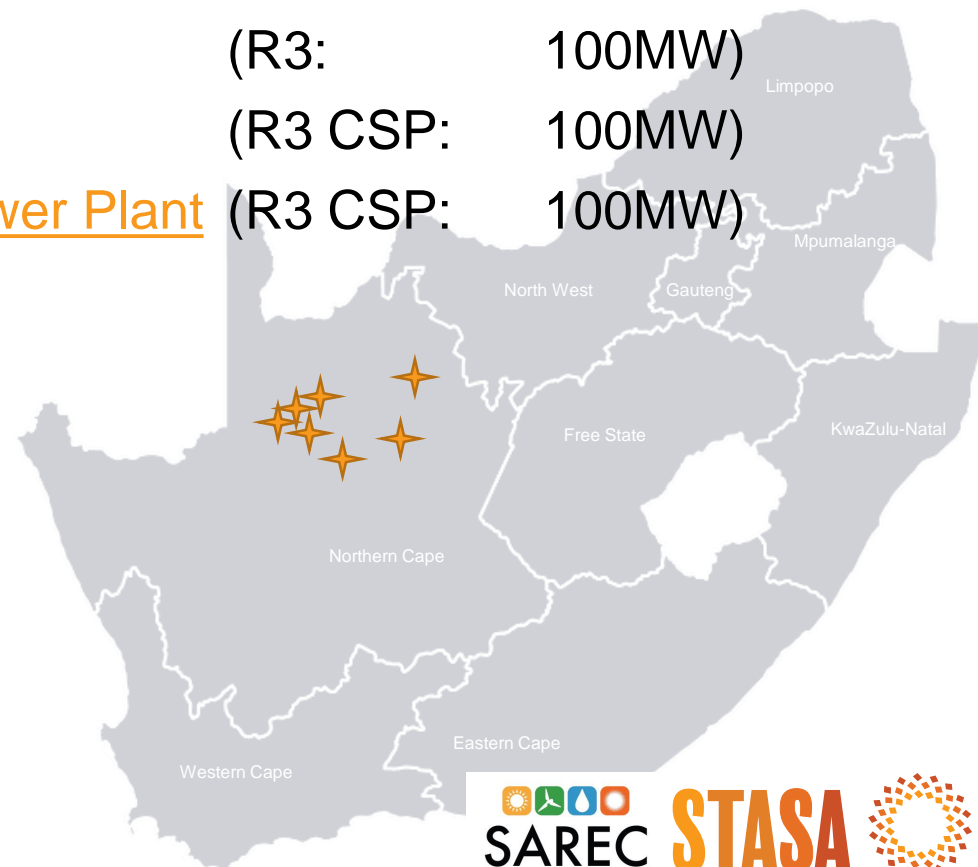


CSP - A Success Story in the South African Context

CSP projects in operation, construction and late stage development in South Africa are listed below.

- [KaXu Solar One](#) (R1: 100MW)
- [Khi Solar One](#) (R1: 50MW)
- [Bokpoort](#) (R2: 50MW)
- [Kathu Solar Park](#) (R3: 100MW)
- [Xina Solar One](#) (R3: 100MW)
- [Ilanga I](#) (R3 CSP: 100MW)
- [Redstone Solar Thermal Power Plant](#) (R3 CSP: 100MW)

-  Operational
-  Construction/ Late Stage FC



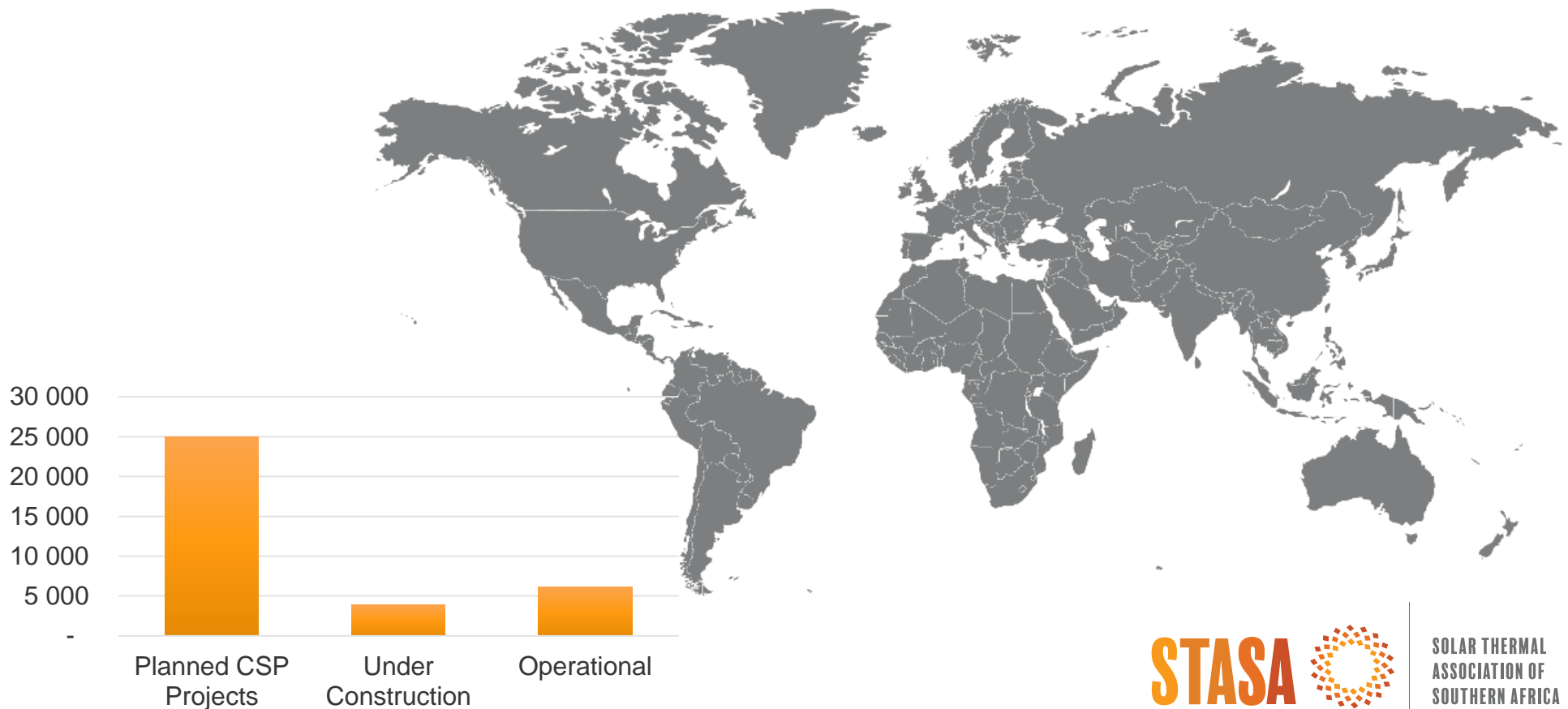
CSP Projects in SA

Project name	Technology	Capacity (MW)	Storage	REIPPPP Window	Nearest town	Status
Kaxu solar 1	Parabolic trough	100	2.5 hours	1	Pofadder	Operational
Khi solar 1	Tower	50	2 hours	1	Upington	Operational
Bokpoort CSP	Parabolic trough	50	9.3 hours	2	Groblershoop	Operational
Kathu Solar Park	Parabolic trough	100	4.5 hours	3	Kuruman	Operational
Xina CSP	Parabolic trough	100	5.5 hours	3	Pofadder	Operational
Ilanga CSP 1	Parabolic trough	100		3	Kimberley	Construction
Redstone CSP	Tower	100	12 hours	3	Postmasburg	Late Stage FC

CSP - Across the Globe

- CSP technology implemented in 23 countries across the globe
- Over 6,000MW in operation
- Over 3,500MW in construction
- Almost 25,000MW planned or in development stages

CSP is expected to record the highest growth amongst renewable technologies globally



Current Constraints in Procuring CSP

Procurement in South Africa- REIPPP	Procurement in other
Procured projects are Capped at 100 MW	World wide trends show CSP procurement in the 700 MW range. Allows for hybrid- mix of technologies
Zero compensation for the generation period between 10pm to 5pm	The PPA is constrained
Only one peak is allowed for in the PPA, vs the two peaks demand in reality	Inefficient use of STG power plants
Fixed short term PPA- 20 years	The plant is designed for 30 years
Limited Policy Support only 2 projects per procurement round	Limited capacity to date in terms of procurement and limited scale. 10% of RE mix to date
Procurement pipeline has limited cap on CSP 600 MW to date	DEWA procurement of 700 MW in one bid window

Output from Eskom Presentation

Date: 5 October 2018
Presenter: Bernard Magoro

CSP is the solution to provide for **other services** wind and PV cannot cater to

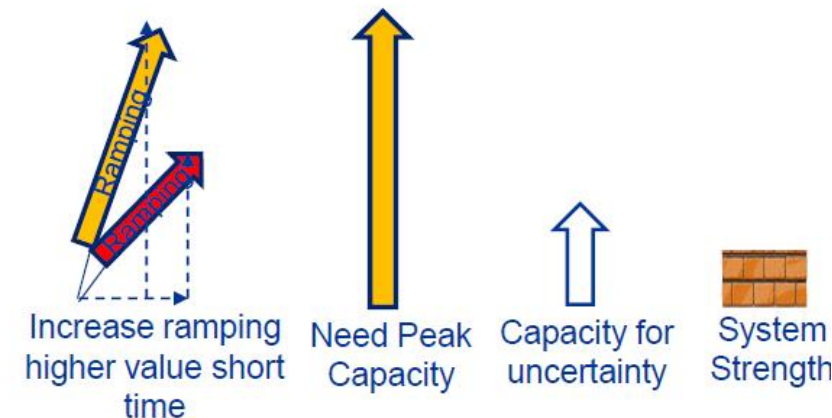
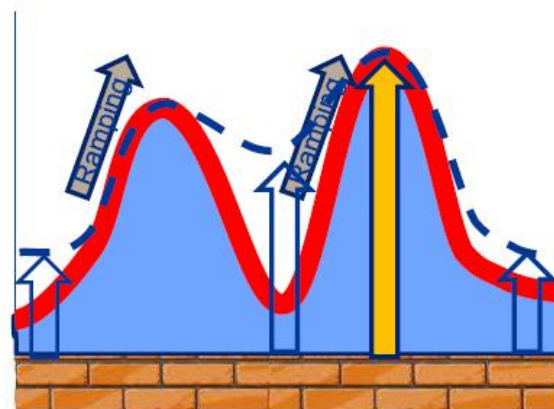
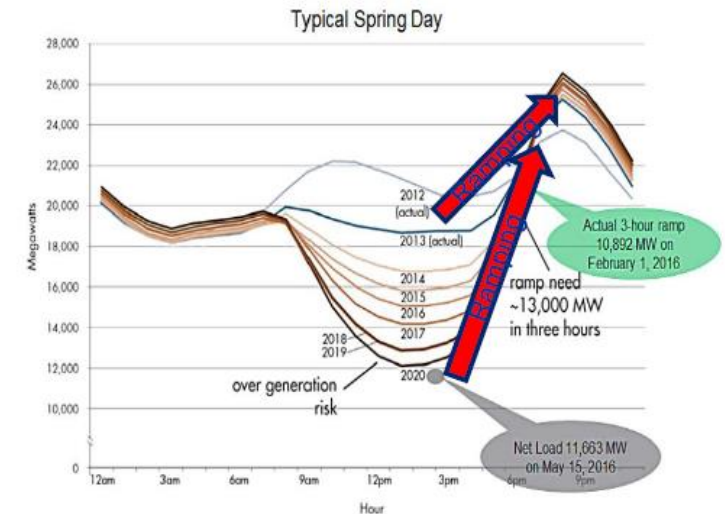
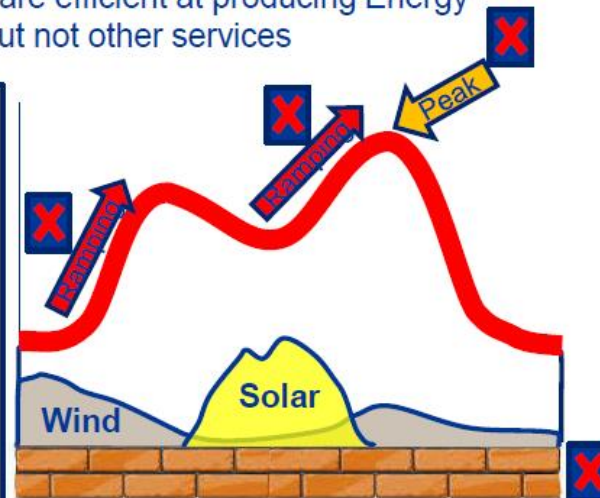
- Baseload
- Peaker
- Mid Merit
- Dispatchable
- Dry Cooled
- Constant generation profile
- Predictable output

Challenges (or Opportunities) from New Technologies



Wind & Solar are efficient at producing Energy
But not other services

✗	Peak Capacity
✗	Dispatched
✗	Ramping
✓	Energy
✗	Sync power
✗	System strength
✗	Frequency
✗	Voltage



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