

SAND2017-9816PE



Distributed wind energy has so far failed...

distributed = used where produced

at best



it is charming...

when operational



it is loud and unreliable...

at worst



it is dangerous

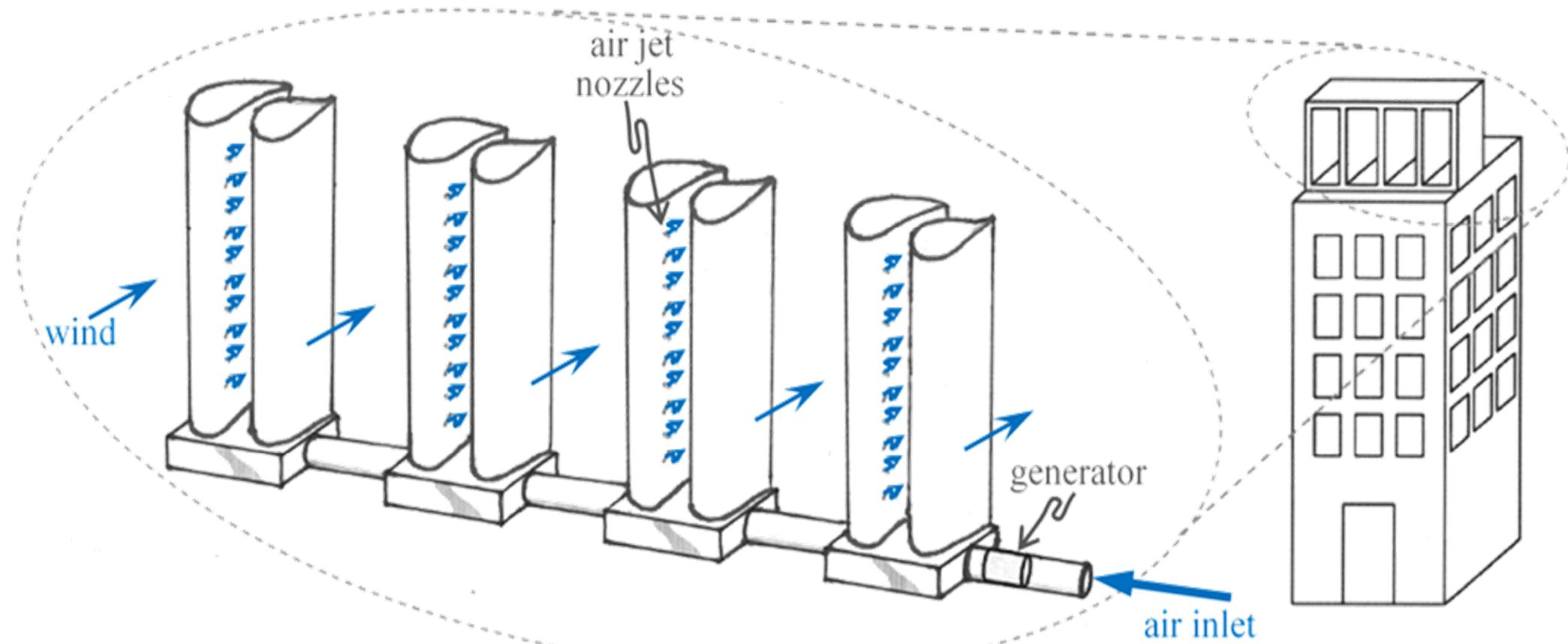
Aero-MINE (Motionless, INtegrated Energy)

no external moving parts!

safe.

reliable.

quiet.

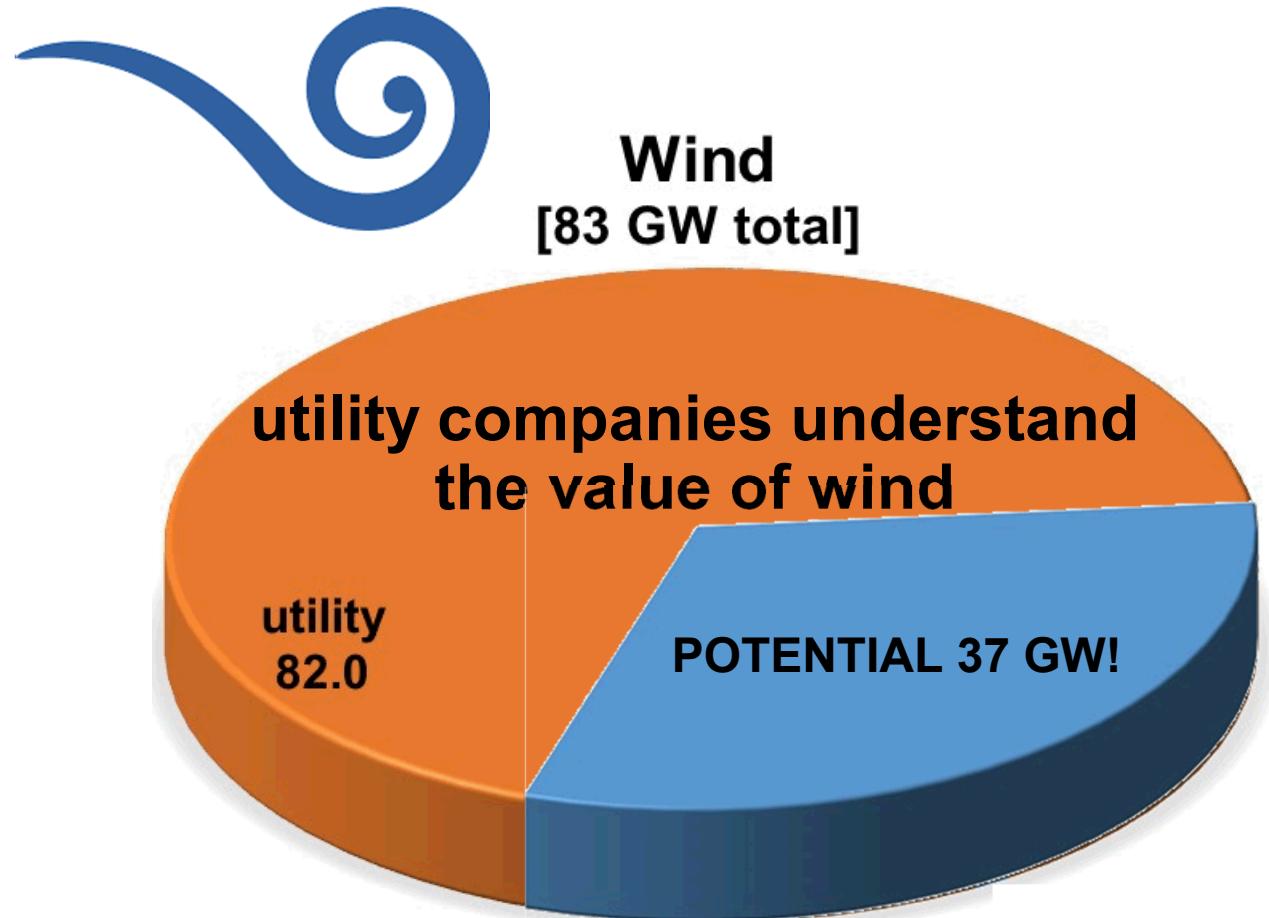
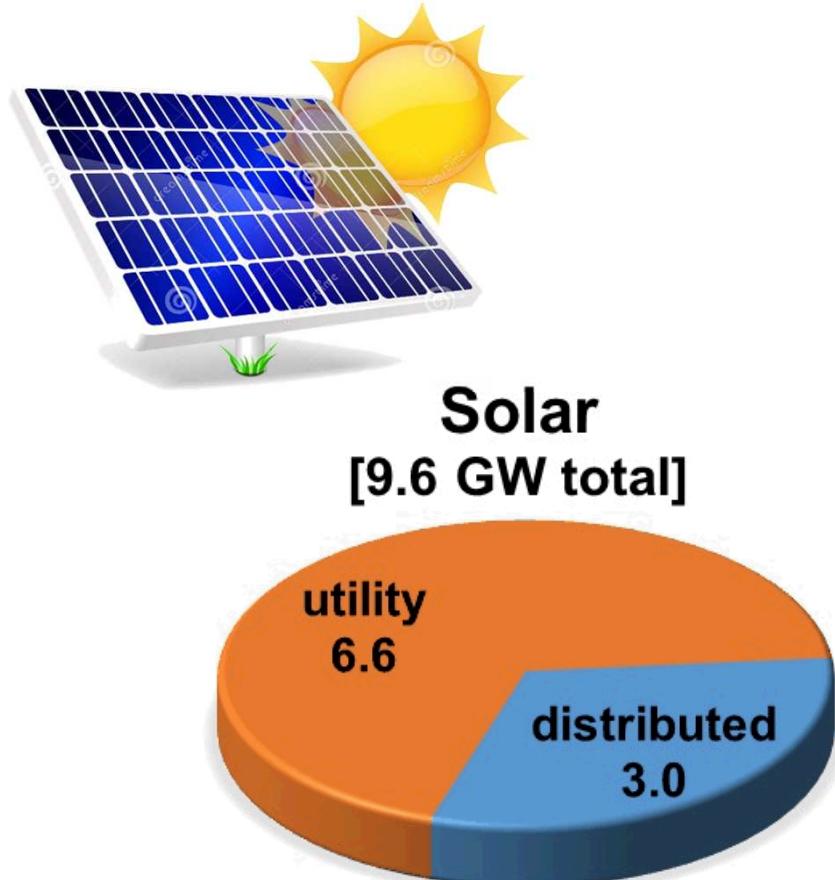


distributed.

scalable.

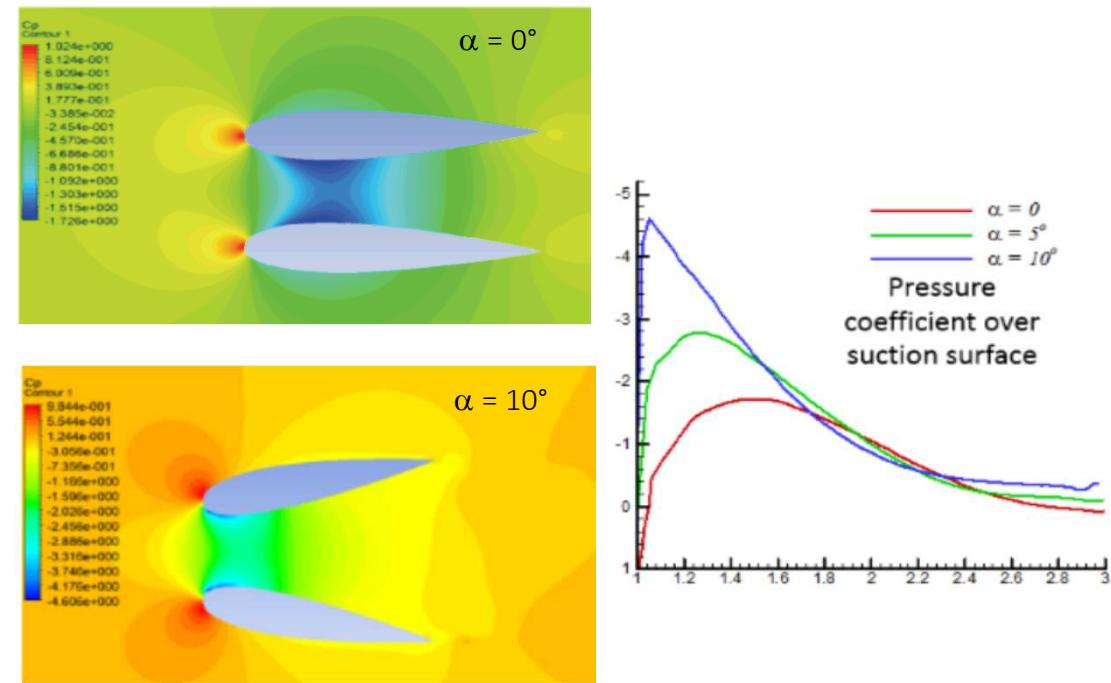
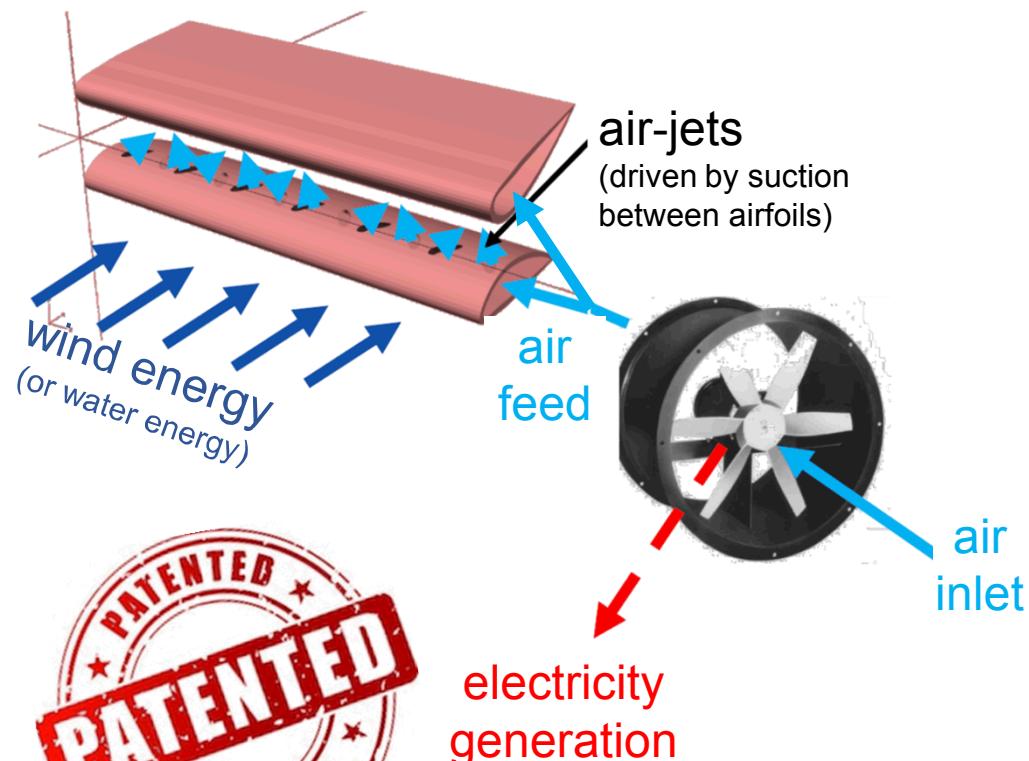
green.

Untapped distributed wind energy market



Technology and initial modeling

- produces day and night
- cheaper than solar PV to manufacture



initial models results showing significant suction

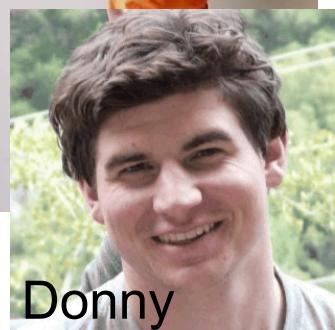
Early partnerships already underway...

in conversations with:

potential battery partners



TESLA



[e] **enphase**
ENERGY

potential early adopters



Google



Travis

 Sandia
National
Laboratories

Additional segments: retailers and data centers



easily integrates into
buildings/infrastructure

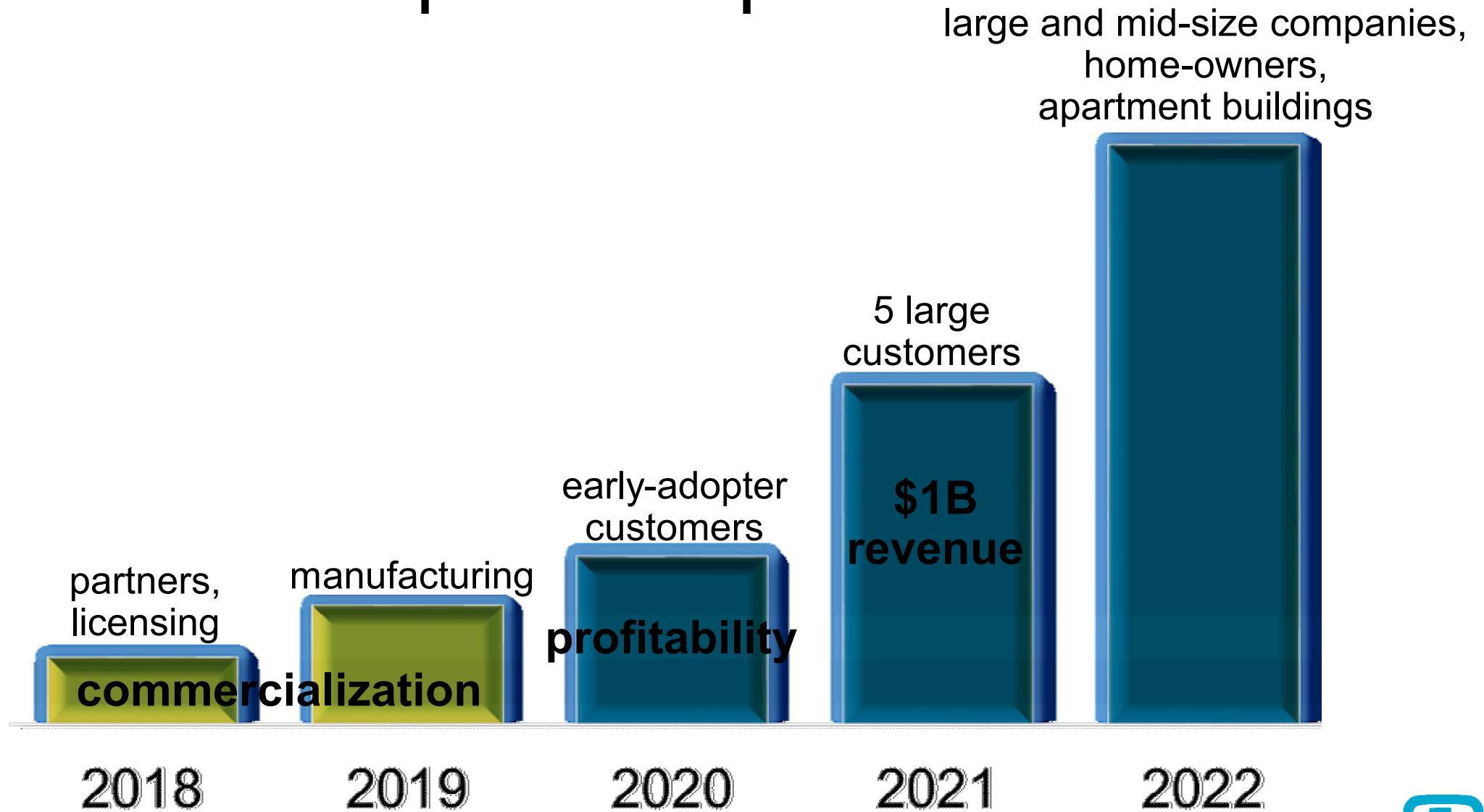


top 10 companies
investing in
distributed electricity:

\$2B market



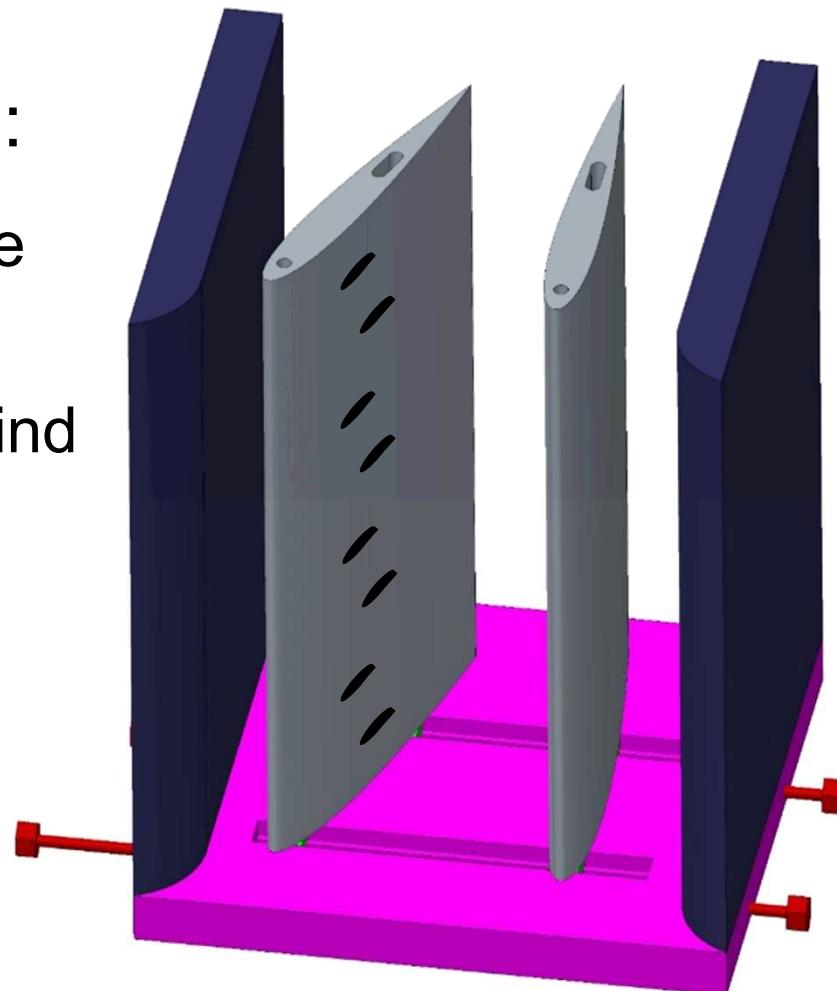
Growth and expansion plan



Next steps...

funds will allow us to:

- manufacture prototype test stand
- optimize design via wind tunnel tests



sample Aero-MINE airfoil-pair on test stand
(with representative sidewalls)

Energy I-Corps:

- refine market strategy
- build online presence
- identify / license to manufacturing partners
- go into production

We have the expertise and experience



Carsten

inventor, researcher, 25 years wind industry experience



Myra

PhD wind energy technology, CFD expert



David

PhD aerodynamics, wind energy researcher



Dave

product designer, additive manufacturing expert

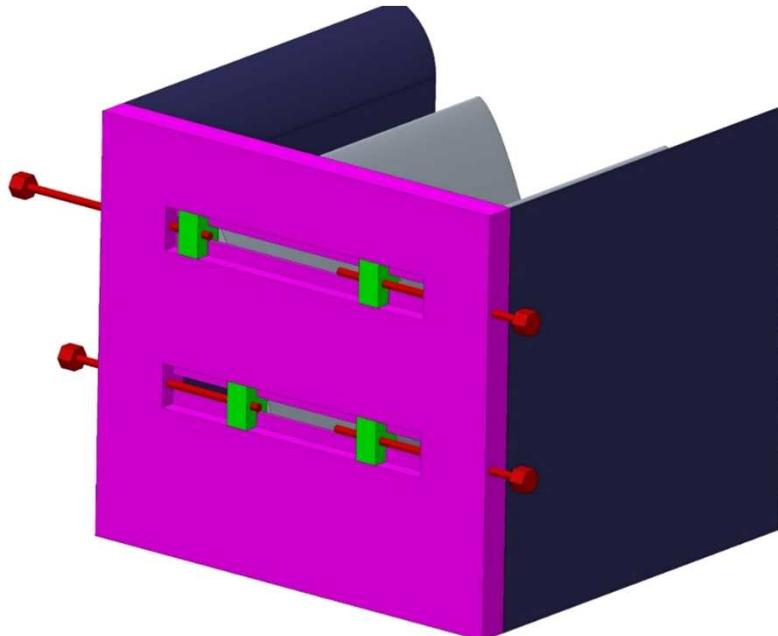


Brent

PhD fluid mechanics, 10 years of project management experience

Backup slides

concept extends to water
Hydro-MINE for waves and rivers



bottom view of test stand
(allowing adjustment of separation and angle-of-attack)

Finalist for CEC? – another demonstration of
our traction

file additional patents

license Aero-MINE technology

already have SPARK funds

develop Hydro-MINE