

[EXTERNAL]                      gi g l ke levels L ke Powell - E ergy Issues

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To: CRB-Info, BOR <bor-sha-LCB-Info@usbr.gov>

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I saw a vid o and not d you ar looking for input on managing lak l v ls in th Colorado Riv r Dam syst m. On of th main consid rations is maintaining th lak l v l to cr at pow r in th dam syst m. R c nt low lak l v ls in th riv r and dam syst ms hav caus d polici s to b invok d bas d on xtr m conditions.

My company has a solution that appar ntly is unknown in th n rgy industry in spit of y ars of promotion. My pat nt d trad mark d JMCC WING G n rator is a n xt g n ration wind n rgy syst m that has 24 major improv m nts ov r th 3 blad wind turbin s and solar pan ls commonly s n in "alt rnativ n rgy" circl s. Simply put th 3 blad turbin s do not work as 95% of th wind blows through th m without v r touching th humongous skinny blad s. Solar pan ls tak up hug ar as of land and r quir massiv batt ry banks making th m unt nabl for larg scal n rgy production. My WING G n rator is highly ffici nt (s attach d pdf pitch d ck us d for inv stors and oth r int r st d parti s such as yours lv s).

Th infrastrucur is pr s nt at th dams to incorporat this n w t chnology to augm nt th n rgy production using wind. Th r ar also many locations in th Am rican southw st with high l v ls of wind. If you look at th l v l of mat rials in th dams for th amount of n rgy th y produc compar d to full siz WING G n rators th r is no comparison. Th WING G n rators can b built to provid 100 M ga Watts of pow r in a singl unit taking up l ss e than a half acr of land and with minimal mat rials wh n compar d to wat r dams and oth r typ s of "alt rnativ n rgy".

For mor information pl as contact m .

Jam s McCann y - Own r





## Comparison - 100 MW JMCC WING Generator vs Solar vs 3 Blade Turbines

We were asked recently to compare the 100 MegaWatt JMCC WING Generator (assuming a cost of \$50 million USD) to solar panels with a cost \$3 million per MegaWatt of installed base (2500 400 Watt solar panels). Since this solar price is not in the USA, I will also include the comparison for the current USA commercial utility price of about \$1.2 million for the same MegaWatt of installed solar panels.

The following is the reply which also includes a comparison of both to the 3 blade wind turbines.

The WING and solar are an apples to oranges comparison but here is the reality. The true cost of “energy” is what has to be compared. In other words, at the end of the day, month or year, you have to compare the amount of energy produced and calculate the cost = cost per unit energy. These costs should include equipment, installation, land procurement, interface electronics to connect to the grid, lifetime of service, maintenance, down time, removal after lifetime and many other factors. A simple “cost of energy produced per day” using the price tag of the equipment is a good starting point.

Solar only works for a certain number of hours per day (when the sun is shining) according to industry standards for what are known as solar hours. A “solar hour” is a solar panel or array working at 100% capacity for one hour. In a good location there is an industry standard of 4 solar hours per day on average. This includes variation of the sun’s angle, seasonal variations, clouds, and other factors. First look at a daily production of energy using the solar cost numbers above of \$3 million USD per MegaWatt of solar “capacity”. Multiply that times 4 hours (solar hours per day) and then average this over a 24 hour period. You are getting 4 MegaWatt hours of energy per day for \$3 million up front cost. Now look at the WING production given a well chosen windy location at 40% production also for 24 hours (the variation in wind is accounted for in the 40% factor). This single WING produces 40 MegaWatt hours times 24 hours in the day = 960 MegaWatt hours of energy per day. For a solar panel field to produce this much energy in a single day you would need  $960/4 = 240$  fields of panels of the MegaWatt size. You will need 240 MegaWatts installed base of solar panels ( $2500 \times 240 = 600,000$  solar panels) to produce the same amount of energy as a single 100 MegaWatt WING Generator. The 24 hour energy production for the solar panel array would cost  $240 \times \$3 \text{ million} = \$720 \text{ million}$ . Compare the cost of energy produced (960 MegaWatts) for the two systems per day. The WING \$50 million vs the solar \$720 million (14.4 times the cost of the single WING system). This is a true comparison due to the fact that the solar only can produce about 4 solar hours per day. Also if you figure that a 400 watt solar panel rating is only giving about 70% of that (because of the way they test rate the solar panels) this makes the true comparison actually WING @ \$50 million vs solar over \$1 billion to produce the same amount of energy. The USA price for utility grade solar installations is currently about \$1.2 million per MegaWatt so this would give a final price of \$288 million with an adjustment for the 70% solar panel rating gives a final cost of \$411 million (which is still about 8 times the cost of the single WING system).

Regarding “footprint”. How much land area does the facility take? This is both a cost and environmental issue. The WING takes up less than a single acre if installed on land, but typically the large WINGs would be offshore mounted on barges that can be towed to location and towed back for ease of maintenance at a port facility. The solar panels take up the following area. For solar panel area this is the industry standard ... "For a typical solar installation, the general rule of thumb is that for every 1kW of solar panels needed, the area required is approximately 100 square feet. This means, that, for a 1MW solar PV power plant, the area required is about 2.5 acres or 100,000 square feet." So you have

240 MW x 2.5 acres = 600 acres for the 600,000 solar panel array to produce the same energy as the one acre for the land based single WING Generator.

Also look at the following factors. The solar installation of this size kills many birds whereas the WING does not because the birds can see the WING and fly around it. The environmental impact of manufacturing the solar panels is rarely noted, not to mention the issue of what to do with them after their estimated 10 year commercial life cycle. The WING produces high voltage A/C output ready for transport on the grid system whereas solar has to be converted from D/C to A/C for transmission.

The other issue with solar is that without batteries to store the energy you are limited to only a few hours of the day when the sun is shining. Producing excess energy does no good unless there is a way to store and recover the energy. This creates what is known in the industry as “unmanageable fluctuations” which creates brown outs (low power) and surges (over power) in the electric grid. The issue can be solved with batteries and inverters causing a huge increase in cost (over the costs already listed above). The issue of loss due to charging and discharging batteries and conversion from A/C to D/C must be considered in the cost analysis. China as a nation recently cancelled all future installations of solar panels sending the world wide supply of solar panels into a nose dive since China was the largest installer of solar in the world. They realized that the more solar they installed the worse the situation became because you cannot power up and down large commercial power plants based on the whims of the sun and clouds.

The JMCC WING Generator solves this issue with “Distributed Energy” in which the overall wind over a national area is a constant (discovered by atmospheric studies). By distributing the large WING systems, it will provide constant energy production 24/7/365. This was first outlined in my Book published in 2009 “McCanney WING Generator – World Energy Project” with addendum “The Myth of Alternative Energy”.

Relative to 3 blade wind turbines, the comparison found that a single 100 MegaWatt JMCC WING Generator can produce the same amount of energy as 125 3 blade wind turbines (industry standard 1.5 MegaWatt 3 blade turbines operating at industry standard 21%). At \$3 million each for the 3 blade wind turbines, the cost would be \$3 million x 125 = \$375 million compared to the \$50 million for the single WING system (the WING does not require government subsidies to be profitable).

Relative to land usage, the 3 blade turbines based on the industry standard “In the United States, the direct land use for wind turbines comes in at one acre per megawatt of rated capacity. That is, a 1.5 MegaWatt wind turbine would require 1.5 acres of land. So, 125 of the 3 blade turbines would require 1.5 acres x 125 units = 375 acres of land whereas the single 100 MegaWatt WING system would use a single acre of land to produce the same amount of power.

Regarding off shore congestion for WING vs the 3 blade wind turbines, using the larger 3 MegaWatt 3 blade turbines, a single 100 MegaWatt WING will replace about 62 of the 3 blade units. The WING does not use a cement base but floats on a barge. Compare the cost of 62 ocean cement bases with the cost of a single off shore barge that is staged and maintained at a shore port. The WING architecture will eventually grow to 500 MegaWatts which would give significant increase in all the numbers on this page. Another factor is that the 40% efficiency of the WING is a very conservative number and will be closer to 80% based on the fact that the WING is very efficient from very low to very high wind speeds. **See also the PDF file “Comparison - JMCC WING Generator vs 3 Blade Wind Turbines”.**





**ENERGY & WATER SOLUTIONS**

**Water Abundance XPRIZE – Finalist**

**2018 XPRIZE - Technology Innovation Achievement Award**



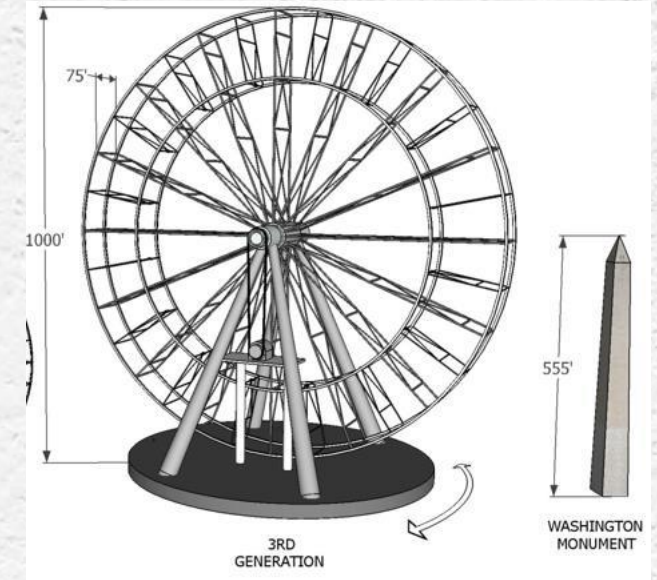
# 250 kW JMCC WING Gen – eV Car Charging Franchise



Strategic Alliances  
with Car Charging  
Manufacturers

day & night - 95% energy from wind

# JMCC WING, LLC has 3 Investment Opportunities - based on size range



X

SMALL

**2 TO 250 KW**

Direct sales (Farm and Ranch,  
eV Charging, Recreation, MIL)  
On/Off Grid

MEDIUM

**10 TO 25MW**

Sale Electricity – Grid only

LARGE

**100 TO 250 MW**

Sale Electricity – Grid Only



# James McCanney



- MS Nuclear & Solid State Physics – Tulane University
- 25 Years Electronics Industry
- 10 Years University Level Teaching Physics / Math
  
- 20 Years - Owner - JMCC Water Filter Company
- 5 Years - Owner & Patent Holder – JMCC WING, LLC
- 2018 XPRIZE – Technology Innovation Achievement Award

# 5000 Years of Wind Devices



**I finally got it right**

**Patent – Trademark - SCALABLE**

Like going from a Propeller Airplane to a Jet Airliner



# 24 Improvements (page 1 of 2)



**VS**



- Captures 95% of Wind Energy
- Aero Dynamic Lift in rotary directions
- High Torque outer edge of WINGS
- Shroud Maintains wind in tunnel
- Principle of Jet Engine
- Self Starting Low Wind
- 50 to 80% efficient
- Ultra light weight Carbon Fiber
- Recyclable

- 95% of Wind blows through blades
- Aero Dynamic Lift Perpendicular
- Lowest torque outer edge
- Wind slides off edge of blades
- Principle of Propeller
- Requires internal motor to start
- 20% efficient
- Blades weigh 65 tons each
- Not recyclable

# 24 Improvements (Page 2 of 2) JMCC WING Gen vs 3 Blade Turbine

- Scalable to 250MW
- Small Footprint
- Design Grows in 3 Dimensions
- Birds and Bats see it – Eco Friendly
- Low RPM – No EMF radiation
- Heavy Equipment on the ground
- Off shore on moveable barges
- Off Shore Maintenance – barge to port
- Construction from fixed ground platform
- Maintenance from fixed ground platform
- 15% of materials are in support structure
- Available in Small Medium & Large
- Works at low to very high wind speeds
- Aligns with wind
- 50 year life cycle

- Scalable to 6 MW (max 10 MW)
- Large footprint
- Design grows in 2 Dimensions
- Kills birds and bats
- High RPM – High EMF Radiation
- Heavy Equipment at top of tower
- Off Shore massive base – destroys fishing
- Off Shore maintenance – difficult in sitio
- Construction using massive crane
- Maintenance from massive crane
- 90% of materials are in support structure
- Abandoned Small Market – No Large Market
- Very narrow range of Wind Speeds
- Very Complex system for Wind Conditions
- 15 year life cycle (20% fail within 2 years)

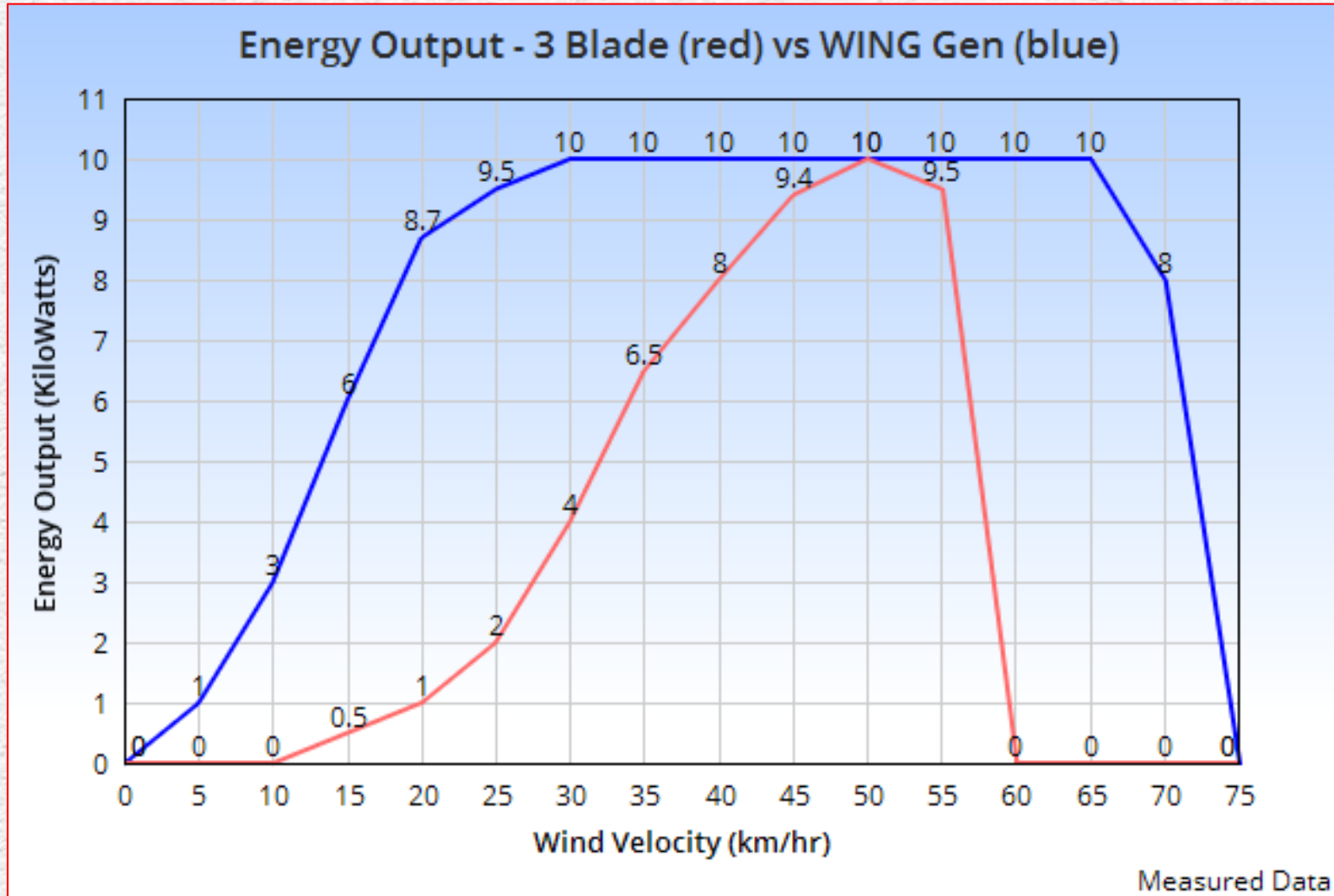
Solve World Energy Problem ?

YES

NO



# WING Generator vs 3 Blade Turbine



WING (blue line)  
operates low to high wind speeds

3 Blade Turbine (red Line)  
Narrow operating range

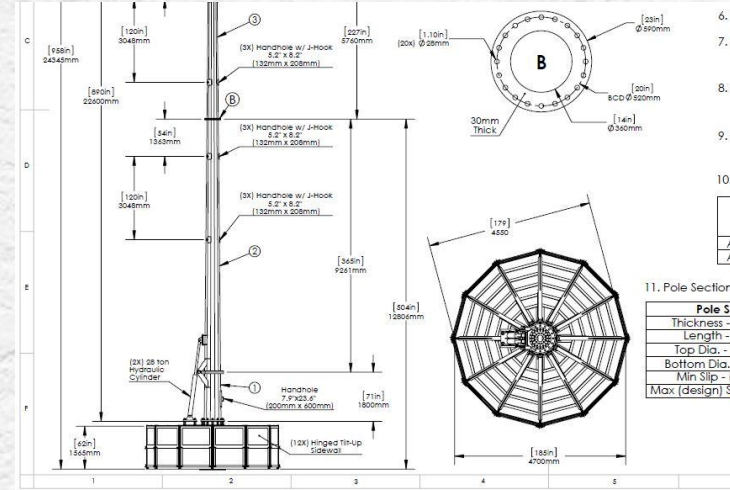
WING Produces More Energy

# WING Gen vs 3 Blade Turbine vs Solar – Large Scale

COMPARISON	WING Gen	3 Blade Turbine	Solar
Footprint 100 MW	2 acres	375 acres	600 acres
Cost	\$75 Million	\$375 Million	\$720 Million
<b>Batteries</b>	<b>No Batteries</b>	<b>\$200 Million</b>	<b>\$400 Million</b>
Lifetime (to 50%)	50 years	15 years	10 years
Efficiency	50 to 80%	20%	20%



# Professionally Manufactured, Certified & Tested Mass Production Ready





# JMCC WING, LLC TEAM

- **James McCanney, M.S. Nuclear and Solid State Physics - Electrical Engineer – CEO - Owner, Inventor.**
- **James Lienemann, MBA Finance and Accounting University of Nebraska also BA Chemistry – Product Management & Investor.**
- **Kent Mabee - Consultant, Received and Degree in Electronics from the US Air Force (1992) with a BS in Electronics Management (1994) from Illinois Southern University.**
- **Fish and Richardson, Law Firm Minneapolis/Boston - F & R is the Legal Firm that has performed all legal work for JMCC WING, LLC from its inception including Patents Trademark Registrations Contracts.**
- **AIG Insurance Group & Berkley Group - AIG international insurance company for manufacturing and sales. Berkley Group is our domestic insurance company for manufacturing and sales both A++ rated.**
- **Manufacturing Sub-Contractors - JMCC WING, LLC - strategic alliances in the USA, China.**
- **Engineering Sub-Contractors - We subcontract certain engineering work to assure compliance with international ISO standards.**
- **Gary Kaawa - Gary is a Native Born Hawaiian - staging and logistics large machinery.**
- **Thomas McFadden - Market Research and Loss Prevention Analyst.**



# MARKET SHARE & OPPORTUNITIES

## Electricity Water Solutions – ON / OFF Grid

- Farm & Ranch
- **Electric Trucks & Tractors**
  - Islands
  - Eco-Villages
- **eV car charging stations**
  - Hydrogen
  - Recreation – Cabins
- **MIL – conversion of fleets to eV**
  - Disaster Relief
  - Heating - Refrigeration
  - Humanitarian Aid



**JMCC WING**

— The Jet Age of Wind Energy —

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