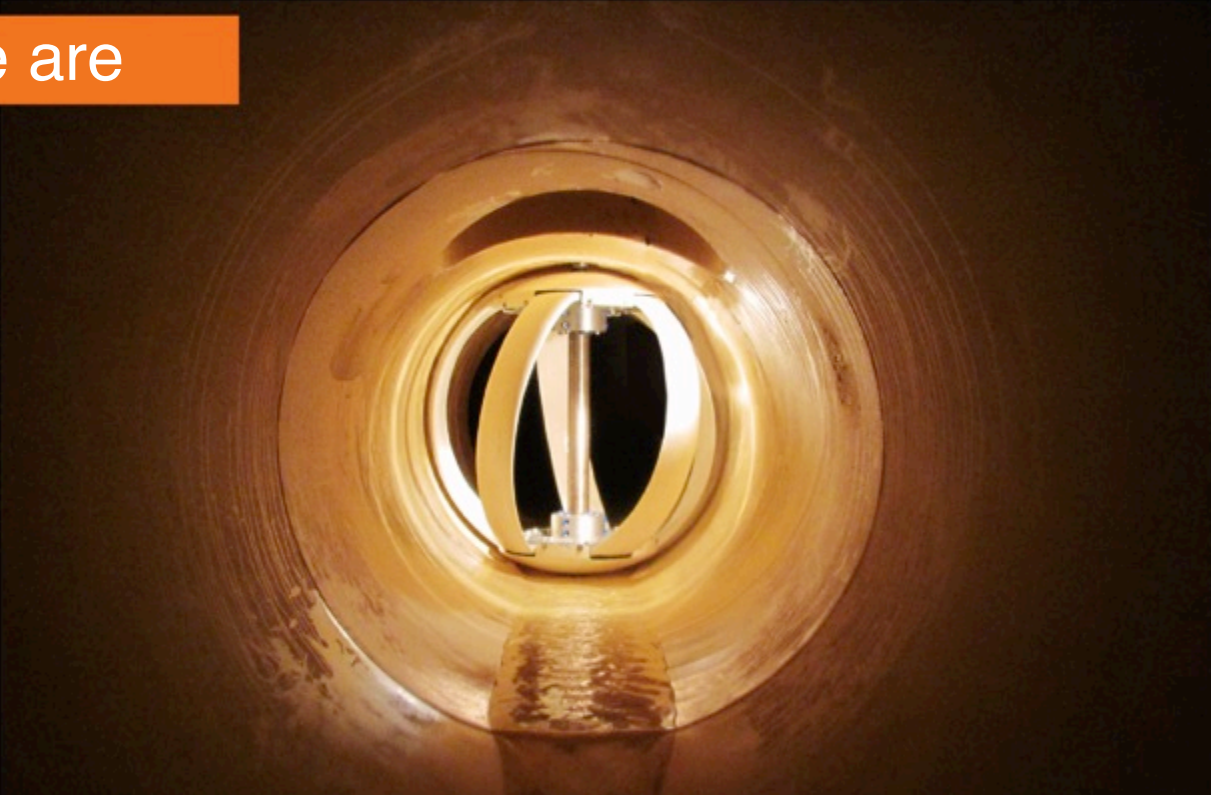


# LucidEnergy™

Harvesting renewable, low-cost electricity from gravity-fed water pipes



## Who we are



Lucid Energy is a renewable energy company that has developed an in-pipe turbine system that enables municipal, industrial and agricultural facilities to produce base load, low-cost electricity from their gravity-fed water pipelines and effluent streams.

## Company Update



- Lucid Energy Inc., hydrokinetics engineering since 2007
- SBIR grant from U.S. Department of Energy
- Energy and water are linked: aging infrastructure, rising costs and lower demand
- Teaming with leading infrastructure companies (CH2M Hill, Siemens, NW Pipe, Honeywell, Mekorot, IBM and Johnson Controls) at the nexus of smart energy and water
- First center in place at Riverside Public Utilities, Riverside, CA; next installations in Portland and San Antonio
- Patent issued in May 2011; additional US and International patents applied for

**LucidEnergy**<sup>™</sup>

# California Center of Excellence

Riverside Public Utilities  
Riverside, CA

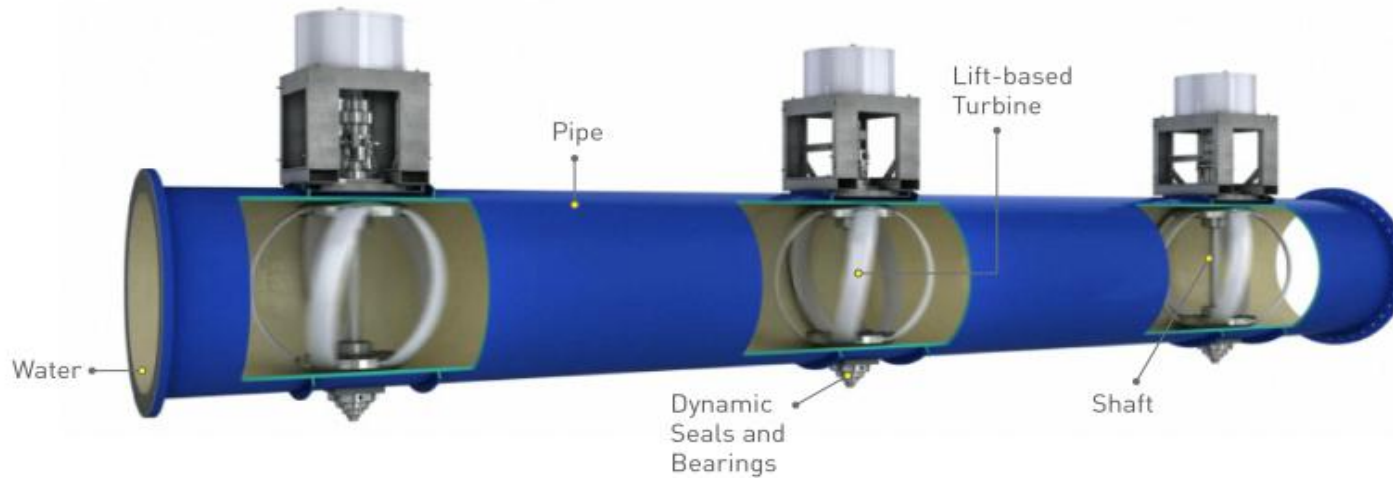
- Operating 4<sup>th</sup> Generation Product
- Very consistent over 7,500+ hours – 98.5% up time
- Generated 60+ MWH



LucidPipe Installed  
Lemona Booster Station - Riverside, CA

**LucidEnergy**<sup>™</sup>

# LucidPipe Power System



## Key Attributes:

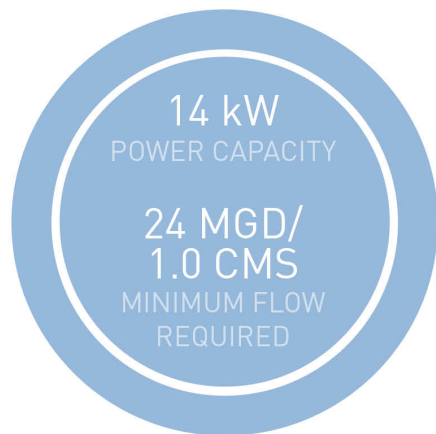
- Low cost and easy to deploy
- Generates base load, low cost electricity
- Scalable to pipe diameters 600mm to 2400mm
- Designed to include multiple turbines in series to maximize energy generation without disrupting operations

## System Economics:

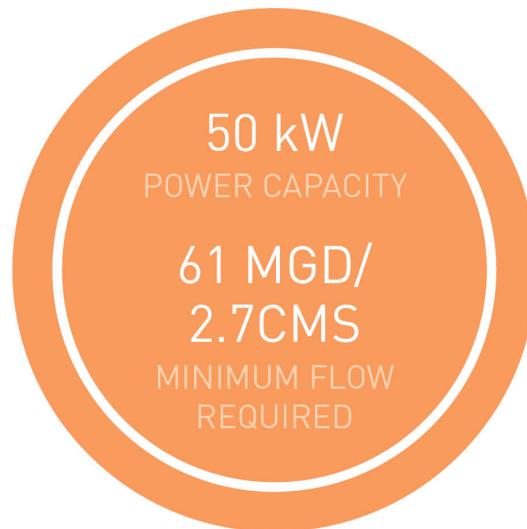
- LCOE – 4-7¢/KWH

## Power Output per turbine

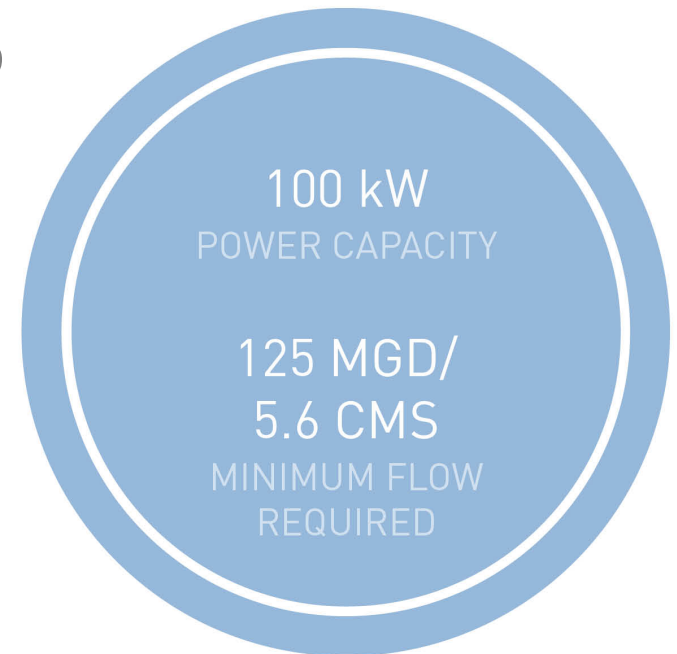
Pipe sizes range from 600mm and up



24"  
600mm



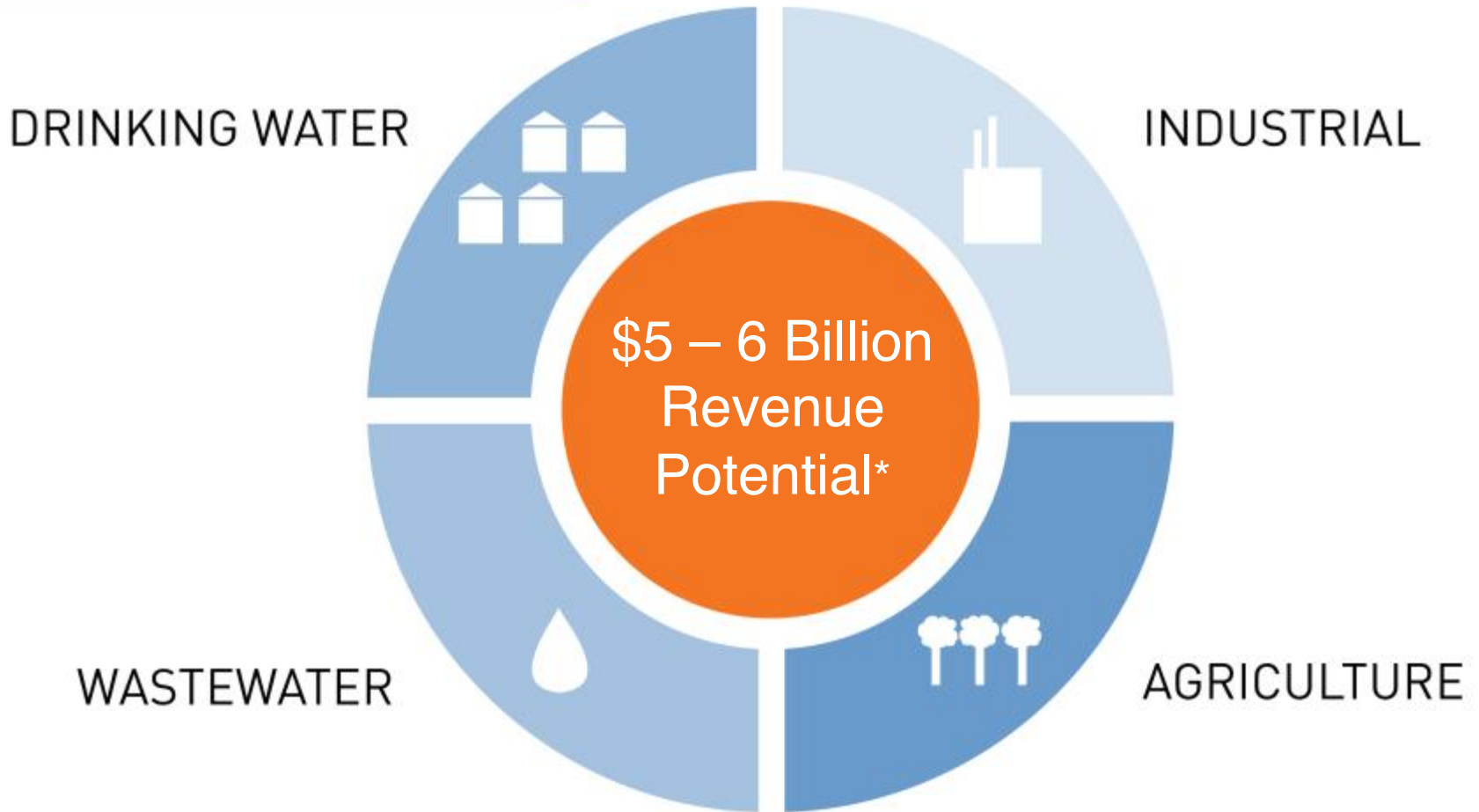
42"  
1000mm



60"  
1500mm

- LucidPipes are placed in series, 3-4 diameters apart for maximum energy potential

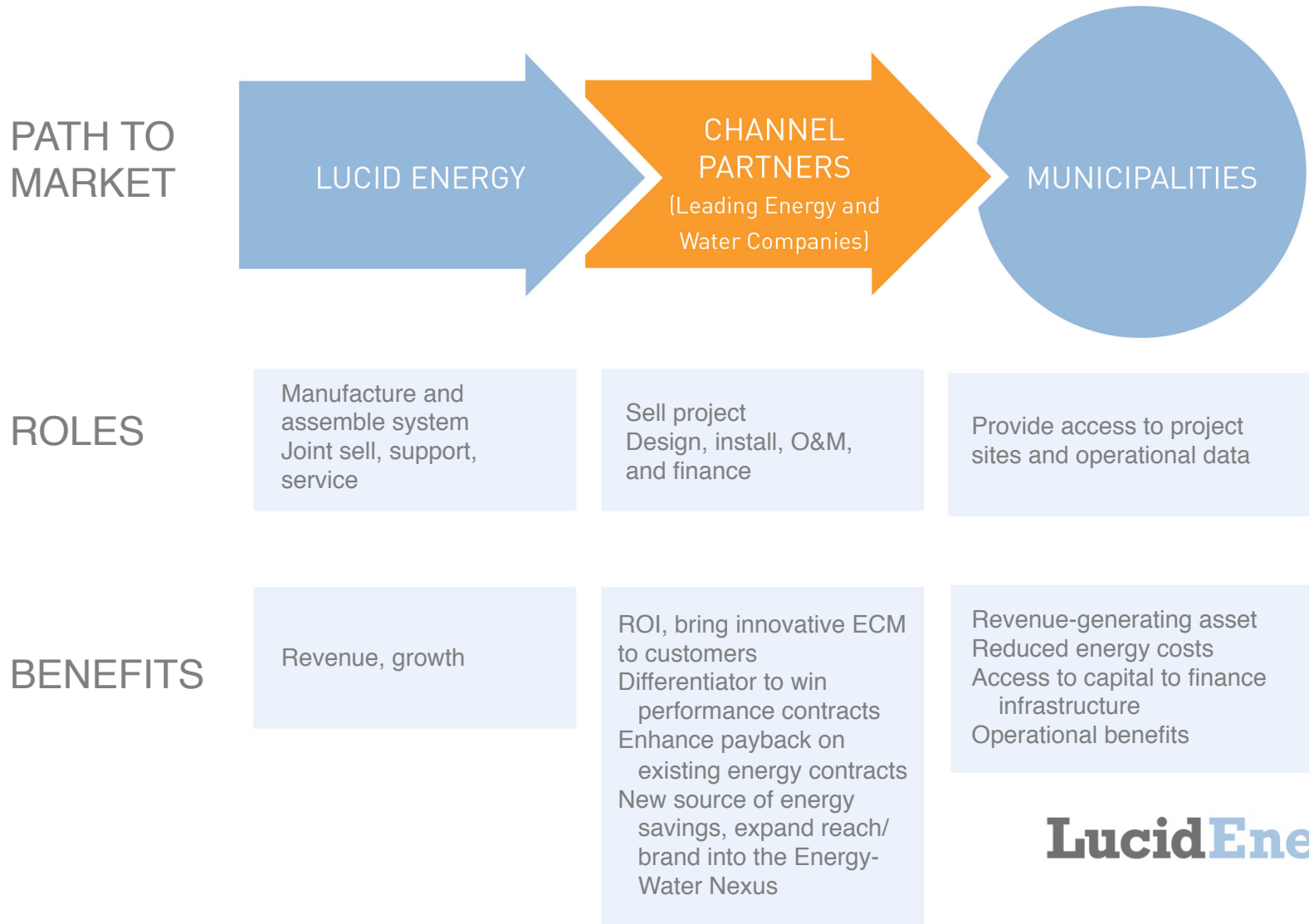
# Market Segments



\* Source: Navigant Consulting - US only estimates; Navigant projects international market 3 - 4x US

# Sales Process

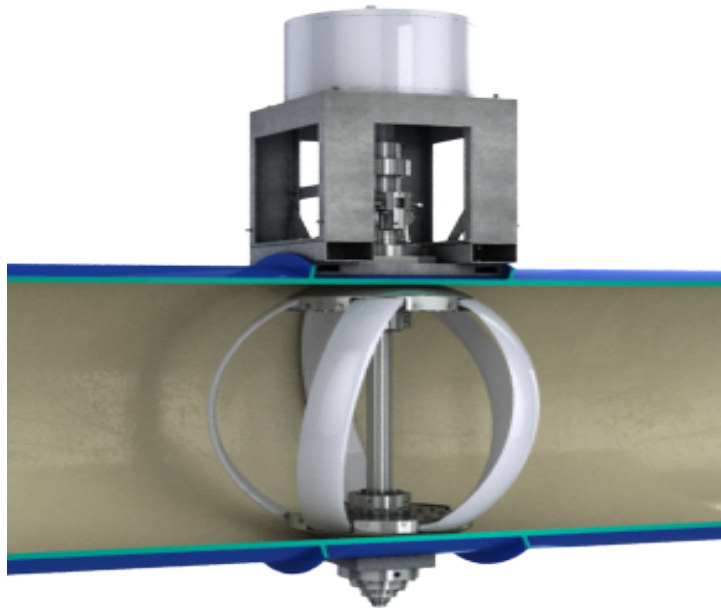
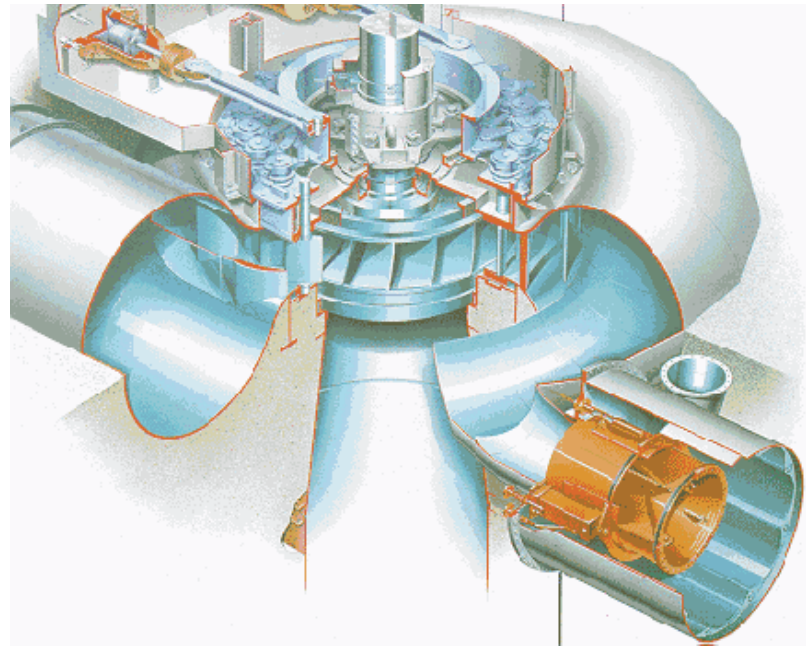
Builds opportunity in the water-energy nexus.



# Competition

## Conventional Hydropower ▶

- Very complex system infrastructure
- Depletes all pipeline pressure
- Requires pipeline bypass
- Narrow operating range



## ◀ Lucid's PowerPipe

- Simple, in-pipe technology
- Extracts excess head pressure
- Wide range of operating conditions
- Complete installation in a day, grid connected in a week

**LucidEnergy™**

# Comparison to other renewables

	LucidPipe 200kW	Small Wind 200kW	Large Wind 100MW+	Small Solar 200kW	Large Solar 100MW+
Installed cost (\$/watt)	\$3.00 - \$6.00	\$4.00 - \$5.50	\$2.00 - \$2.50	\$4.00 - \$5.50	\$1.75 - \$2.25
Efficiency/Capacity Factor	75-85%	20%	25%	18%	14%
Price required (based on cap factor)	4-7 cents/kWh	15 cents/kWh	9 cents/kWh	12 cents/kWh	9 cents/kWh
Quality	Base load	Intermittent	Intermittent	Intermittent	Intermittent
Major Environmental Issues	None	Avian, noise	Avian, noise	Avian/Migratory animals	Migratory animals

# Production

## Fab-less Mass Production

- Procure components globally
- Assemble locally
- Build all sizes and volumes



# LucidEnergy™

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