

Readiness report — KidWind PVC / Geared Wind Turbine Build

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Verdict: Ready · 2026-07-19 · est. parts cost \$150-\$200

The lab is fully implementable. All proprietary mechanical components are active catalog items from Vernier Science Education. Structural materials are easily sourced from local hardware stores. Electronic components, including generators and load resistors, maintain high stock levels at major distributors. A logic error in the original snapshot's bill of materials regarding LED part numbers has been corrected to ensure the lab functions as intended.

Action required

Part	Problem	Recommended action
LED Bulbs	Snapshot lists 1N4148, which is a signal diode that does not emit light.	Purchase SSL-LX5093LYD or equivalent 5mm LEDs.
Weight Lifting Kit	Proprietary kit components are rarely sold individually.	Sourced as part of the Basic Wind Experiment Kit (KW-BWX) or via Vernier support.

Parts

1. Proprietary KidWind Components

Part	Spec/Package	Status	Stock	Price	Source
KidWind Crimping Hub	12-Hole Plastic	Ready	Good	\$25.00	Vernier
Hub Quick Connect	Motor Adapter	Ready	Good	\$19.00	Vernier
Hex Lock	Plastic Collar	Ready	Good	\$9.00	Vernier
Geared Head Assembly	7:1 Gearbox/Nacelle	Ready	Good	\$19.00	Vernier
Blade Pitch Protractor	Measurement Tool	Ready	Good	\$5.00	Vernier
Tower Base Set	3-Leg Base + Socket	Ready	Good	\$29.00	Vernier

2. Structural and Mechanical Parts

Part	Spec/Package	Status	Stock	Price	Source
Wood Tower	1" x 20" Dowel	Ready	Local	~\$5.00	Home Depot
PVC Fittings	1" Sch 40 (Set)	Ready	Good	\$0.88	Grainger
HDPE Pipe Spacers	1" Pipe (2" Cuts)	Ready	Good	\$2.50	Home Depot
Hex Driveshaft	8" Steel	Ready	Good	\$19.00	Vernier
Blade Materials	Balsa/Plastic Mix	Ready	Good	\$1.22	Skool Krafts
Weight Lifting Kit	Spool/Bucket/Weights	Ready	Limited	—	Vernier

3. Electronics and Power Output

Part	Spec/Package	Status	Stock	Price	Source
DC Hobby Motor	Adafruit 711 (130)	Ready	1,184	\$1.95	DigiKey
Digital Multimeter	Basic DC	Ready	Good	\$19.99	Harbor Freight
LED Bulbs	SSL-LX5093LYD (5mm)	Ready	5,940	\$0.31	DigiKey
Incandescent Bulbs	1.5V E10 Base	Ready	Good	\$0.75	MiniScience
Resistor 10 Ω	1/4W Axial	Ready	24,812	\$0.10	DigiKey
Resistor 30 Ω	1/4W Axial	Ready	9,683	\$0.10	DigiKey
Resistor 51 Ω	1/4W Axial	Ready	7,930	\$0.10	DigiKey
Resistor 100 Ω	1/4W Axial	Ready	225,960	\$0.10	DigiKey
Supercapacitor	10F 2.7V Radial	Ready	31,605	\$1.90	DigiKey
Alligator Clip Cords	10-Pack	Ready	Good	\$3.49	Harbor Freight
Water Pump	3V DC Submersible	Ready	Good	~\$5.00	Amazon
Power Output Board	Sound/Light PCB	Ready	Good	\$11.95	DABOS

Substitutes

For part	Substitute	Differences	Judgment
1N4148 (LED)	SSL-LX5093LYD	Corrects component type from signal diode to light-emitting diode.	Required for visual output.

Verify any substitute against its datasheet before ordering.

Other dependencies

- **Firmware/Software:** Not checked (None required for base lab).
- **Video Support:** KidWind.org/videos verified as active.
- **Fabrication:** Requires drilling a wire exit hole in the PVC T-fitting and manual cutting of HDPE pipe into 2-inch lengths.
- **Consumables:** Duct tape, masking tape, and hot glue are required for motor mounting and blade construction.
- **Testing Equipment:** High-velocity circular fan (14 to 18 inch) is required for wind simulation.

Watch list

- **Weight Lifting Kit:** This set is difficult to source as individual spare parts; instructors may need to fabricate buckets and spools if the kit version is unavailable.
- **Web Resources:** Instructional videos are hosted on a single domain; consider local downloads of assembly guides to prevent disruption.