Harbor Breeze Solar Node (~$10 enclosure, ~$65 total build)

Overview

The **Harbor Breeze Solar Node** converts a $10 - 15 Harbor Breeze 60-lumen solar LED floodlight (Lowe's item #SL1832) into a weatherproof, solar-powered mesh node. The floodlight already includes a small solar panel (rated ~0.6 W per the Lowe's listing; a rough estimate of ~90 mA at 5 V), an 18650 cell (the listing includes a 3.7 V ~1500 mAh 18650), a charge circuit, and a weatherproof enclosure - the hard parts are done for you. (Prices and specs as of 2026-06-08.)

Total cost including radio: approximately **$60 - 70** (as of 2026-06-08; the total tracks the volatile RAK4631 street price). Enclosure + solar hardware alone: $10 - 15.

Bill of Materials

All prices are commodity/street prices as of 2026-06-08 and will vary; recompute the total if the RAK4631 price changes.

Item	Cost
Harbor Breeze 60LM Solar LED Light (Lowe's #SL1832; includes a ~1500 mAh 18650)	$10 - 15
RAK4631 WisBlock Core (nRF52840 + SX1262)	$18 - 24 (street price, varies)
RAK19007 WisBlock Base Board (USB-C + JST) - $9.99 per store.rakwireless.com	$9.99
915 MHz LoRa Antenna 2 dBi SMA whip (typical commodity price)	$5 - 10
u.FL to SMA Bulkhead Pigtail (~10 cm; typical commodity price)	~$5

Item	Cost
18650 cell (optional - a ~1500 mAh cell is already included; only needed for a higher-capacity replacement or if depleted)	$5 - 10
Misc: heat-shrink, silicone sealant	~$5
Total (approx., as of 2026-06-08)	**~$60 - 70**

Assembly Overview

1. Remove the back cover of the floodlight housing.
2. Remove the LED assembly and cut existing wires near the board.
3. Drill a 1/4″ hole through the housing for the SMA bulkhead connector.
4. Install the RAK WisBlock base board and core module inside the housing.
5. Wire the battery: red = positive (+).
6. Wire the solar panel to the RAK19007 solar charge input header - **verify the exact header label and polarity against the RAK19007 datasheet before connecting**.
7. Weatherproof all cable entry points and the SMA hole with silicone sealant.
8. Reinstall the back cover.

Critical Warnings

- **Keep the solar input within the RAK19007's rated charge-input limit.** Confirm the exact maximum solar/charge input voltage against the current RAK19007 datasheet before connecting; as a conservative ceiling, do not feed more than ~6 V into the solar input. The Harbor Breeze panel is rated ~0.6 W trickle charge. Do not substitute a higher-voltage panel.
- Verify solar wire polarity *before* connecting to the charge-input header. Reverse polarity will damage the charge circuit.
- This panel provides trickle charge only - not suitable for high-duty-cycle backbone repeaters. Nodes that transmit frequently will discharge the battery faster than the panel can recharge it.

Best For

- Fence lines and yard boundary sensors
- Low-traffic area coverage (parking lots, fields, trails)
- Budget-conscious deployments where AC power is unavailable

Not recommended for high-traffic backbone repeaters or nodes that need continuous uptime.

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