CHATHAM FIRST LIGHT · BACKGROUNDER

Chatham Light After the 2026 Beacon Change

What changed, what the specifications show, and what would restore the light

August 21, 2026

What changed, what the specifications show, and technical options for discussion with the Coast Guard

In July 2026, the U.S. Coast Guard replaced the beacon at Chatham Light. The unit removed was a Carlisle & Finch DCB-224 rotating aerobeacon, in service since 1993 and part of an aerobeacon lineage at the station dating to 1969. In its place, the Woods Hole Aids to Navigation Team installed a single-tier Mesemar MBR300R LED lantern — a one-day job that cost approximately $15,000.

The Coast Guard has said the new beacon provides "the same, if not better, visibility offshore." The manufacturer's own published performance data — confirmed directly with the manufacturer — shows the installed single-tier unit cannot reach Chatham Light's published 24-nautical-mile offshore range, and it has eliminated the near-shore sweep mariners have relied on for over a century. This is a navigational safety issue, not only a heritage one.

Chatham's waters carry real, documented hazard — the shifting Chatham Bar and inlet system, currents where Nantucket Sound, Vineyard Sound and the open Atlantic converge, frequent fog, and a navigational history serious enough to produce the Coast Guard's own most celebrated small-boat rescue, the 1952 Pendleton. The 24-nautical-mile Light List standard was not set arbitrarily for this station — it reflects the reserve intensity mariners need in exactly these conditions. Near-shore loom and offshore range are two different problems with one shared cause: intensity.

A Longer View

Chatham's light dates to April 21, 1806, when Congress appropriated $5,000 for the Cape's second lighthouse station, with a further $2,000 in 1808 to finish the job. Twin wooden towers went up seventy feet apart, built deliberately as a pair of fixed lights so mariners wouldn't confuse Chatham with Truro's single beam at Highland Light. Samuel Nye was appointed the first keeper personally by President Thomas Jefferson.

The station has changed its optic and its light source five times since — and until this year, every change made the light stronger or held steady. In 1923 the north tower was moved to Eastham to become Nauset Light, and the remaining tower was fitted for the first time with a rotating fourth-order Fresnel lens, giving Chatham its single sweeping beam. Electrification in 1939 took intensity from 30,000 to 800,000 candlepower — the same year the Coast Guard absorbed the Lighthouse Service nationwide. In 1969 a modern rotating aerobeacon replaced the Fresnel lens, rated at roughly 2.8 million candlepower; the retired lens went to the Chatham Historical Society, which still displays it, lit, at the Atwood House Museum. The DCB-224 aerobeacon installed in 1993–94 held that 24-nautical-mile standard without interruption for the next 32 years.

Every prior transition — 1923, 1939, 1969, and 1993–94 — increased or held the line on performance. This is the first that did not.

2. Near-Shore Navigation and Safety

The U.S. Coast Pilot places Chatham Light in the near-shore navigation picture for Chatham Harbor, Chatham Roads and Stage Harbor — waters shaped by constantly shifting shoals, strong currents, rapidly building surf and the Monomoy shoals. For generations, the light's raw intensity scattered through humid coastal air to produce a distinctive loom or "aura" that fishermen and boaters used as a close-in reference, independent of the flash itself.

That loom was always a function of intensity, not beam width. The DCB-224's own beam was narrow too — about 1.5–2°, from a parabolic mirror. The installed MBR300R's beam geometry isn't the problem; at roughly 3% of the prior unit's candela, it simply doesn't carry enough light to scatter. Adding more LED tiers changes offshore throw, not this near-shore effect.

3. The Numbers

	DCB-224 Removed, July 2026	MBR300R, 1-Tier Installed, July 2026
Effective intensity	~2,800,000 cd	~78,000 cd (~3% of prior)

Offshore range at Fl(2) W 10s	24.3 nm	19.1 nm — 5 nm / 20% short of LLNR 525
Range in light fog (T=0.60, est.)	16.0 nm + loom	12.8–13 nm, no loom
Near-shore loom	Present — humid-air scatter	None — insufficient intensity to scatter

For context: the same Woods Hole ANT team installed a three-tier MBR300R at Sankaty Head Light (Nantucket) two years before Chatham, rated 23 nm at its slower Fl W 7.5s characteristic. Chatham's faster Fl (2) W 10s characteristic and near-shore duty mean Chatham needs four tiers at minimum by the Coast Guard's own recent practice — and was given one.

Fog and marine-layer figures use Allard's Law at the IALA 0.2 microlux threshold, with a transmittance of T=0.60 for "light fog" estimates, calibrated against Mesemar's own published 19 nm figure for the installed unit. These estimates are the group's own, not manufacturer-published, and are flagged as such throughout.

A note on one workaround sometimes raised: blanking half the installed unit's lens sectors and slowing rotation to roughly 3 RPM to trade flash rate for reach. Mesemar's own published table lists 20 nm at 3 RPM for the standard configuration — a real, manufacturer-published figure. But that configuration doesn't preserve Chatham's Fl (2) W 10s characteristic at that slower speed; matching the characteristic would require doubling lens sectors, which reduces intensity and puts actual range below 20 nm. It would also still fall short of the 24 nm standard.

4. Technical Options for Coast Guard Discussion

LED + Rotating Fresnel Optic — One Option Studied

One technically promising option is pairing a modern high-output LED source with a rotating Fresnel optic — Chatham's preserved 1923 fourth-order lens if condition, preservation and engineering review support it, or a faithful engineered reproduction. Preliminary analysis suggests a target effective intensity of roughly 1,000,000 cd and a potential path toward the 24 nm objective, subject to Coast Guard review, audit and engineering.

This option has relevant operating precedent, including the Coast Guard's November 2023 Montauk Point pilot. It is included here as technical background, not as a solution the Town is asking the Select Board or Coast Guard to approve before a working discussion.

Potential scope, if this approach were later considered: condition audit, lampist/optical engineering as needed, rotation equipment and a modern LED source. Cost has not yet been estimated for Chatham.

Standalone Multi-Tier LED Beacons

We also compared standalone multi-tier rotating LED beacons already used or approved in lighthouse service, including the Sabik VRB-25 and multi-tier Mesemar MBR300R & MBR600R configurations. They may improve offshore reach relative to today's single-tier unit, although our preliminary analysis indicates they may not reproduce the same near-shore intensity and loom. These alternatives, together with LED/Fresnel configurations and any Coast Guard-proposed option, should be evaluated collaboratively against agreed navigational requirements.

5. LED Sources with Fresnel Optics — Existing U.S. Background

Lighthouse	Fresnel	LED Source	Why Useful for Chatham
Montauk Point, NY	3½ order	SL-LED-216	Best precedent: restored historic Fresnel returned to active service in a Coast Guard pilot
Seguin, ME	1st order	SL-LED-324	Demonstrates LED illumination of a very large Fresnel optic
Cape Neddick, ME	4th order	SL-LED-216	Active LED/Fresnel example
West Quoddy Head, ME	3rd order	SL-LED-216	Major coastal lighthouse; LED/Fresnel
Bass Harbor Head, ME	4th order	SL-LED-216	Active LED/Fresnel example
Pemaquid Point, ME	4th order	SL-LED-216	Active LED/Fresnel example
Portsmouth Harbor, NH	4th order	SL-LED-216	Active LED/Fresnel example
Eatons Neck, NY	3rd order	SL-LED-324	Larger LED source with third-order optic
Staten Island Rear Range, NY	2nd order	SL-LED-324	Particularly significant second-order LED/Fresnel installation

The nine installations and LED models above come directly from the 2025 Coast Guard Auxiliary technical paper.

These examples show that modern LED sources have been used with Fresnel optics in U.S. lighthouse service. They are relevant technical background if the Coast Guard and Chatham decide to evaluate such a configuration; they do not predetermine the solution for Chatham.

Any Chatham solution would require engineering specific to the station's navigational requirements, characteristic, lantern room, operating constraints and desired beam geometry, under Coast Guard authority.

6. Technical Comparison — For Discussion

The table below summarizes options studied to date and today's installed unit. It is intended to inform a Coast Guard working discussion, not to ask the Select Board to select equipment. Final requirements and any preferred solution should be developed with the Coast Guard.

	RECOMMENDED 1923 Fresnel + LED	CONSIDERED VRB-25 or MBR300R, 4-tier	TODAY MBR300R, 1 tier	HISTORIC DCB-224, 1969–2026
Role	Recommended — actionable now via monitored pilot	Compared and not recommended	Baseline to correct	Chatham's own prior beacon, removed July 2026
Effective intensity	~1,000,000 cd (est.)	210,000–310,000 cd	~78,000 cd	~2,800,000 cd
Offshore range, clear air	**Target 24 nm — to be confirmed**	**21.5–22.6 nm**	**19.1 nm**	**24.3 nm**
Range in light fog	**14.4 nm + loom (est.)**	**14.3–14.9 nm, little loom**	**12.8 nm, no loom**	**16.0 nm + loom**
Usable presence in marine layer — engineering judgment, not a calculated range	**Mid to high teens — loom carries**	**High single digits — little loom**	**5 nm or less — brief direct flash only**	**High teens or better — loom carried (not separately estimated)**
Near-shore loom	**Restored — original lens**	**Limited — a fifth the intensity**	**None**	**Present — established for decades**
Beam character	The station's own historic optic	VRB swell-and-fade; MBR sharper	Compact LED array	Rotating aerobeacon — twin narrow beams (~1.5–2°)
Hardware cost (est.) — excludes labor	Audit and quote needed	$40,000–$65,000	$15,000 spent	N/A — legacy asset, since removed
Timing	Actionable now — audit, then pilot	Actionable now	Installed	In service 1969–2026; removed

7. Community Support and Next Steps

- **The Chatham Waterways Advisory Committee reviewed the issue on August 20 and voted to recommend action to the Select Board.**
- **The Chatham Historical Commission separately reviewed the matter and voted to support the effort.**
- **The Select Board is being asked to endorse the navigational objective and empower the Waterways Advisory Committee and community partners to engage the Coast Guard directly, with no Town expenditure authorized at this stage.**
- **Following a favorable vote, the Town and community effort should seek a face-to-face meeting with USCG Sector Southeastern New England and bring a small maritime delegation, including Town/Waterways, Harbormaster and commercial fishing perspectives.**
- **A formal written proposal should follow that discussion rather than precede it. The goal is to develop a practical path with the Coast Guard, including possible local funding or cost-sharing if appropriate and separately approved.**

Chatham Light is individually listed on the National Register of Historic Places and contributes to the Old Village Historic District. Historic character remains an important consideration, but the immediate engagement with the Coast Guard should lead with navigation and safety. Preservation and consultation issues can be addressed as part of any solution that emerges.

8. Sourcing

Cape Cod Chronicle, "A New Beacon For An Old Lighthouse," July 8, 2026 — CO Ross Comstock on bulb cost and the offshore-visibility claim; CPO Matt Provost (Woods Hole ANT) on depleted spare-parts inventory.

U.S. Coast Guard Light List, LLNR 525 (Fl (2) W 10s, 24 nm nominal). U.S. Coast Pilot 2, Chapter 4 — Chatham Roads, Stage Harbor and Chatham Harbor shoals.

Mesemar and Sabik published datasheets. USCG First District and Montauk Historical Society press materials, November 2023.

U.S. Coast Guard Auxiliary, 2025 technical paper on LED/Fresnel installations (nine active examples, cited in Section 5).

New England Lighthouses: A Virtual Guide; Lighthousefriends.com; U.S. Coast Guard Historian's Office; Chatham Historical Society (historic-chatham.org); National Register of Historic Places nomination, Old Village Historic District.