PA 233 Noise Limits — Briefing

Key Ask

Adopt more protective residential noise limits for large renewable energy facilities: Day ≤40 dBA and Night ≤35 dBA at the nearest nonparticipating dwelling; apply tonal penalties and align an upper bound with New York's ≤45 dBA standard.

Why Change Now

• WHO: Noise below 55 dBA is linked with sleep disturbance, annoyance, cardiovascular disease, and cognitive impacts; night-time >55 dB L_night is increasingly dangerous (World Health Organization, 2011).

• Pediatrics: Children are uniquely vulnerable; occupational limits don't protect infants, children, or adolescents; effects start in infancy and are cumulative (Balk et al., 2023).

• Practice: New York §94-c applies ≤45 dBA at homes with rigorous baseline monitoring, ISO-based modeling, and mitigation (Resource Systems Group, n.d.).

What We Propose

1. Limits: Day ≤40 dBA; Night ≤35 dBA at residences; +5 dB tonal penalty or equivalently lower numeric limits when tonality is present; benchmark ≤45 dBA as upper bound; add protections for schools/daycares.

2. Special Protections: Stricter targets near schools, daycares, and healthcare (e.g., Day ≤35 dBA / Night ≤30 dBA).

3. Modeling & Compliance: Seasonal baseline measurements; ISO-based propagation modeling capturing tonality and cumulative sources; transparent reporting and community-facing summaries.

4. Mitigation Toolkit: Quieter equipment specifications; acoustic enclosures/barriers; equipment orientation away from receivers as needed.

Evidence Snapshot

• WHO burden: ≥1,000,000 healthy life-years lost annually in western Europe due to environmental noise; sleep disturbance accounts for the largest share (World Health Organization, 2011).

• Night thresholds: Adverse effects begin in the 40–55 dB L_night band; vulnerable groups are more affected; >55 dB is increasingly dangerous (World Health Organization, 2011).

• Pediatric health & learning: Environmental noise degrades sleep and classroom learning; infants and children require lower background levels; occupational limits are not applicable (Balk et al., 2023).

• Siting practice: New York's ≤45 dBA residential limit is achievable with rigorous modeling/mitigation and provides a defensible benchmark (Resource Systems Group, n.d.).

Executive Summary

Michigan PA233 sets a 55 dBA Leq limit; evidence from WHO, AAP, NY §94-c, and the Headlands Study shows rural ambients far lower and tonal inverter noise exceeding L90 by 16–21 dB. Many Michigan jurisdictions adopt 30–45 dBA limits.

Headlands Solar Study Key Findings (K & S Engineers, LLC., 2025)

• Rural filtered daytime ambients: 36.8–41.3 dBA; L90 backgrounds: 26.3–30.1 dBA.

• Tonal inverter noise at 630 Hz and 1250 Hz measured 40–42 dBA at ~1000 ft.

• Projected inverter sound: 47 dBA at 400 ft; 40 dBA at 940 ft.

USA Solar Noise Limits

• Indiana: 50 dBA; NY: 45 dBA; Ohio: 40 dBA; Oregon: 36 dBA.

Michigan Jurisdiction Noise Limits (Original Metrics)

Examples: Conway: 40/35 Lmax; Cohoctah: 40/35 Lmax; Montcalm: 40 Lmax; Marion: 40/35 Lmax; Garfield: 45 Lmax; Moore: 40 Leq; Deerfield: 40 Lmax; Brady: 40 Lmax; Fort Gratiot: 45 Leq; Leslie: 45 Leq day/40 Leq night; Locke: 40/35 Lmax; Montrose: 40 Leq; Thetford: 45 dBA; Venice: 40 Lmax; Davison: 50 dBA; Iosco: 40/35 Lmax; Macon: 30 dBA.

Recommendations

Adopt ≤40 dBA day / ≤35 dBA night limits; apply tonal penalties; benchmark ≤45 dBA as upper bound; add protections for schools/daycares.

FAQs (for Board/Public)

Q: Won't lower limits block renewable projects?
A: No. Projects in New York routinely meet ≤45 dBA at homes via quieter equipment, strategic siting, and enclosures; similar tools can meet ≤40/35 dBA in low-ambient areas (Resource Systems Group, n.d.).

Q: Why focus on night?
A: Sleep is the primary pathway for health risk. WHO shows large population burdens from sleep disturbance; protecting night-time is the most effective, equitable approach (World Health Organization, 2011).

Q: Why special protections for children?
A: AAP guidance shows children are uniquely susceptible; protections at homes/schools/daycares align with health and education goals (Balk et al., 2023).

References (APA)

Balk, S. J., Bochner, R. E., Ramdhanie, M. A., & Reilly, B. K. (2023). Preventing excessive noise exposure in infants, children, and adolescents. Pediatrics, 152(5), e2023063752.

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Resource Systems Group, Inc. (n.d.). Modeling noise to advance New York's clean energy goals. RSG.

World Health Organization. (2011). Burden of disease from environmental noise: Quantification of healthy life years lost in Europe. WHO Regional Office for Europe.