CHICAGO
MAYOR BRANDON JOHNSON

Residential Sound Insulation Program (RSIP)

O'Hare Noise Compatibility Commission (ONCC) May 13, 2025

CDA
Chicago Department of Aviation

O'HARE & MIDWAY
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INTRODUCTION

- Title: O'Hare Residential Sound Insulation Program (RSIP)
- Subtitle: A Guide to Sound-Insulating Your Home
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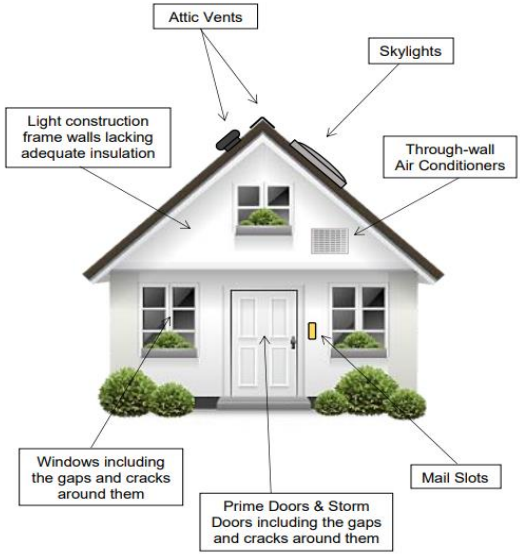
OVERVIEW

- The purpose of the RSIP is to reduce aircraft noise entering homes near Chicago O'Hare International Airport.

- Goal: To guide homeowners, who are not eligible for the RSIP, on effective home improvement strategies to reduce aircraft noise.

KEY AREAS OF NOISE ENTRY

- **Windows:**
  - Noise enters through gaps and cracks around window frames and loose-fitting glass.
  - Single-pane windows and old, poorly sealed units allow the most noise penetration.
- **Doors:**
  - Poorly sealed prime and storm doors allow noise infiltration through cracks and under-door gaps.
  - Doors with hollow cores or thin materials do not block sound effectively.
- **Walls:**
  - Thin paneling and uninsulated walls offer minimal sound resistance.
  - Cracks in drywall or plaster and unsealed electrical outlets also allow noise entry.
- **Vents & Heating, Ventilating and Air Conditioning (HVAC) Systems:**
  - Attic vents, kitchen exhaust vents, and through-wall HVAC units provide direct noise paths.
  - Poorly insulated ductwork amplifies external noise.
- **Other Openings:**
  - Mail slots, fireplaces, and exhaust fans contribute to noise intrusion if not properly sealed.

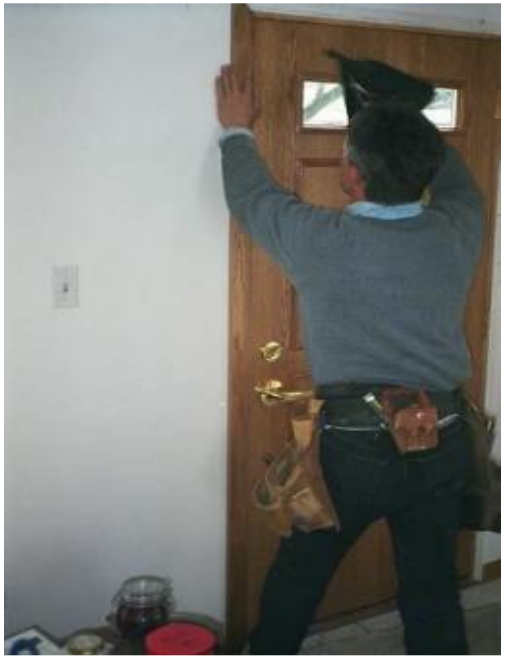


WINDOW SOLUTIONS

- **Replacement Windows:**
  - Use acoustic windows with a minimum Sound Transmission Class (STC) rating of 40 for superior noise reduction.
  - Multi-layered glass with varying thickness and large air gaps enhances sound insulation.
  - Ensure full perimeter caulking and insulation during installation to prevent air leaks.
- **Maintenance:**
  - Replace broken or cracked glass promptly.
  - Apply fresh glazing compound and use silicone caulk to seal gaps around window frames.
  - Inspect and repair weatherstripping to ensure a tight seal.
- **Storm Windows:**
  - Cost-effective option to improve noise reduction over existing windows.
  - Maintain a 2–4-inch air gap between storm and prime windows for best results.

DOOR SOLUTIONS

- **Prime Doors:**
  - Use solid-core wood doors for better noise reduction (avoid hollow or thin metal doors).
  - Pre-hung doors with integrated weatherstripping provide a more secure, noise-resistant fit.
- **Storm Doors:**
  - Select storm doors with at least an STC rating of 30 for additional noise reduction.
  - Choose models with thick glass and magnetic or compression seals for a tighter closure.
- **Weatherstripping:**
  - Install compressible weatherstripping (minimum 3/8" thickness) on door frames and sills.
  - Use durable door sweeps to block noise under the door.
  - Inspect doors regularly and replace worn-out seals to maintain noise protection.
- **Maintenance**
  - Maintain doors by filling cracks, sanding, and sealing. Ensure installation gaps are under 1/2" and fill smaller gaps. Use fiberglass insulation and caulking for better insulation.



WALL & CEILING MODIFICATIONS

- **Walls:**
  - For thin or uninsulated walls, install R13 or higher fiberglass batt insulation.
  - Add a second layer of 5/8" drywall to dampen vibrations.
  - Offset the seams of the second layer from the first to prevent sound leaks.
  - Seal electrical outlets with foam gaskets to prevent noise intrusion.

- **Ceilings:**
  - Replace suspended ceiling tiles with 5/8" drywall for enhanced soundproofing.
  - Ensure attics have at least R49 insulation. For extra noise control, adding an additional layer of drywall will help minimize noise intrusion.

INSULATION

- **Walls:**
  - Use fiberglass or cellulose blown-in insulation to fill all wall cavities.
  - Avoid gaps in insulation, especially around windows, doors, and outlets.

- **Attics:**
  - Install a minimum of R49 insulation in attic spaces to block noise and improve energy efficiency.
  - Use a plywood or drywall layer on the attic floor for additional sound dampening.
  - Ensure proper ventilation with insulated baffle boxes to reduce sound through roof vents.

HVAC SOLUTIONS

- **HVAC:**
  - Central air conditioning allows windows and doors to remain closed, reducing outside noise.
  - Choose an external condenser unit with a low decibel rating to minimize operational noise.
  - Install duct liners or flexible ducts to absorb sound from air movement.

- **Through-Wall Units:**
  - Use acoustic enclosures or sound baffles to minimize noise from these systems.
  - Remove and patch wall openings if these units are no longer needed.
  - For areas where ductwork could not be installed, install ductless mini-split systems with small wall penetrations.

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