

# Zoning Code Changes to Facilitate Residential Electrification - Noise

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# Outline

- Regulatory Background
- Equipment and Noise Levels
- Estimated Setbacks to 40 and 50 dBA Limits
- Setback Recommendations Based on Limits

# Regulatory Background

- Palo Alto Noise Ordinance

## 9.10.030 Residential property noise limits.

(b) No person shall produce, suffer or allow to be produced by any machine, animal, or device, or any combination of same, on residential property, a noise level **more than six (6) dB above the local ambient** at any point outside the property plane.

- Surrounding Community's Noise Standards (Nighttime)
  - East Palo Alto – 50 dBA
  - Los Altos – 50 dBA
  - Los Alto Hills – 40 dBA
  - Menlo Park – 50 dBA
  - Mt. View – 50 dBA
  - Portola Valley – 40 dBA
  - Sunnyvale – 50 dBA

# Equipment and Noise Levels

- Equipment Types:

- Heat Pumps
- Heat Pump Water Heaters
  - <https://www.paloaltoonline.com/blogs/p/2021/01/24/will-you-save-money-with-a-heat-pump-water-heater>
- Heat Pump Pool Heater
- Energy Storage Systems
- Electric Vehicle Charging Stations

- Equipment Noise Levels at 3 feet:

- Heat Pumps – 46-75 dBA
  - Avg./Med. – 56-58 dBA
- Heat Pump Water Heaters – 37-58 dBA
- Heat Pump Pool Heater – 55-65 dBA
- Energy Storage Systems - < 40 dBA
- Electric Vehicle Charging Stations - < 40 dBA



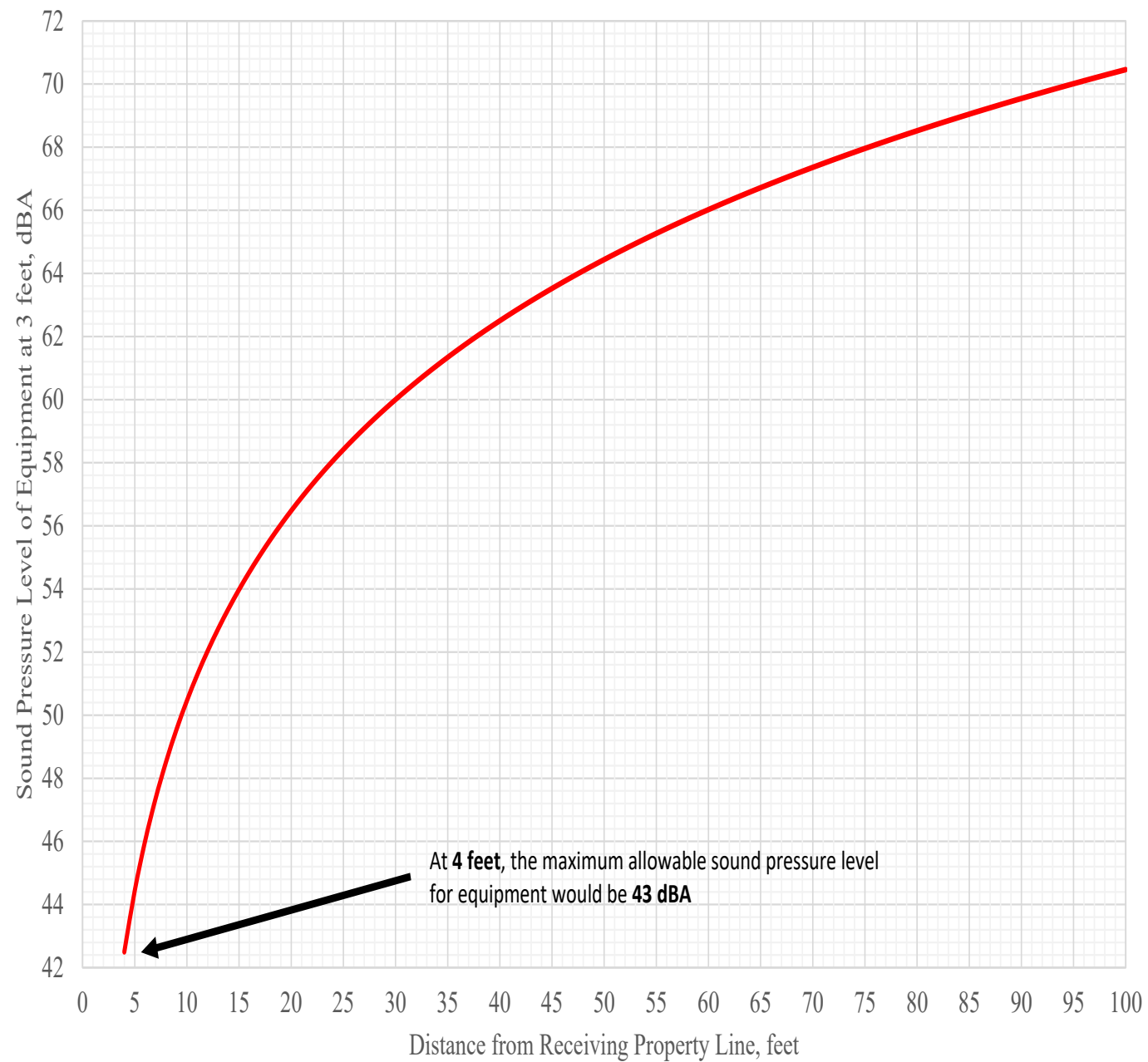
# Estimated Setbacks to 40 and 50 dBA Limits

Sound Pressure Levels of Heat Pumps	Minimum Distance to 40 dBA Limit	Minimum Distance to 50 dBA Limit
Under 40 dBA	3 feet or less	1 foot or less
40 to 50 dBA	3 to 10 feet	1 to 3 feet
50 to 55 dBA	10 to 20 feet	3 to 6 feet
55 to 60 dBA	20 to 30 feet	6 to 10 feet
60 to 65 dBA	30 to 55 feet	10 to 20 feet
65 to 70 dBA	55 to 100 feet	20 to 30 feet
Above 70 dBA	More than 100 feet	More than 30 feet

# Setback Recommendations Based on Limits

- If a threshold of 40 dBA is used:
  - Equipment **50 dBA or less** permitted at a minimum of **10 feet** from property line
  - Equipment **60 dBA or less** permitted at a minimum of **30 feet** from property line
  - Equipment **65 dBA or less** permitted at a minimum of **55 feet** from property line
  - Equipment over **65 dBA** shall require a noise study to verify thresholds are met
- If a threshold of 50 dBA is used:
  - Equipment **50 dBA or less** permitted at a minimum of **3 feet** from property line
  - Equipment **55 dBA or less** permitted at a minimum of **6 feet** from property line
  - Equipment **60 dBA or less** permitted at a minimum of **10 feet** from property line
  - Equipment **65 dBA or less** permitted at a minimum of **20 feet** from property line
  - Equipment **70 dBA or less** permitted at a minimum of **30 feet** from property line
  - Equipment over **70 dBA** shall require a noise study to verify thresholds are met

## Allowable Equipment Noise Level to Meet 40 dBA Limit at Property Line



## Allowable Equipment Noise Level to Meet 50 dBA Limit at Property Line

