**THE METROPOLITAN TRANSPORTATION AUTHORITY**

**ACTING BY**

**MTA CONSTRUCTION AND DEVELOPMENT**

# RFI-0000447823

# Request for Information

# for

# Subway Stations Cooling Technologies

2 Broadway, 8th Floor
New York, NY 10004-2207

**Construction & Development**

September 19, 2023

Subject: RFI-0000447823 – Subway Stations Cooling Technologies

Dear Interested Parties:

The MTA Construction and Development Company ("MTA C&D") is seeking information from engineering firms, contractors, manufacturers and vendors in the railway and technology industry for innovative and cost-effective technology solutions for cooling MTA's subway stations.

I am MTA C&D's designated Point of Contact for this RFI and I can be reached at fabrizio.raho@mtacd.org. All communications related to this RFI, including Respondent's RFI response should be directed to me. Responses should be submitted by October 31, 2023.

Thank you for your participation.

Sincerely,

Fabrizio Raho
Contracts Supervisor

## 1. INTRODUCTION

The Metropolitan Transportation Authority (MTA) is North America's largest transportation network. The MTA's operating agencies are New York City Transit, Long Island Rail Road, Metro-North Railroad, and Bridges and Tunnels. Construction & Development (MTA C&D) supports these agencies by identifying, developing, and building the capital infrastructure projects needed to renew and enhance the MTA's extensive assets.

The New York region, and subsequently the MTA, is vulnerable to climate change-driven extreme heat. The New York City Panel on Climate Change projects up to three times as many days with temperatures over 90°F and up to nearly four times as many heat waves in the 2030s compared to recent years. On days 90°F and hotter, subway platforms are often hotter than the street level due to limited ventilation and train operations such as car air conditioning and train deceleration actions. These elements all contribute to hot station conditions for MTA customers and employees.

In recent years, various cooling methods have been piloted in other subway transit systems. Through this RFI, MTA C&D seeks to survey the Railway and Technology Industry to obtain information related to innovative subway station cooling technologies for the passenger occupied zone of platforms that will enable MTA C&D to develop viable strategies for cost-effective subway station cooling. MTA C&D is particularly interested in solutions that are energy efficient and low emissions.

This is only an RFI; it is issued exclusively to elicit information. It does not represent a Request for Proposal (RFP) or any promise that an RFP will be issued in the future. This RFI does not commit MTA C&D to contract for any material or services and MTA C&D will not pay for any information or any costs incurred in responding to this RFI. MTA C&D shall have the right to use any information submitted in response to this RFI without obligation or compensation.

## 2. HISTORY OF EFFORTS TO DATE

Feasibility and cost constraints have limited station cooling and tempering in subways, but there are air tempering (cooling) systems installed at the following stations: 34$^{th}$ St – Hudson Yards (7); Grand Central (4,5,6); South Ferry (1); 96$^{th}$ St, 86$^{th}$ St, 72$^{nd}$ St (Q); Lexington Ave – 63$^{rd}$ St (Q, F); and Cortlandt St (1). The following stations also have platform fans installed: Times Square (S); Grand Central (7); 14$^{th}$ St Union Square (4,5,6); Wall Street (2,3); and Bowling Green (4,5).

## 3. PREFERRED CRITERIA

A viable subway station cooling technology should:

- Provide cost-effective localized cooling of the air within the passenger occupied zone of the subway station platform during high ambient temperature days to an average target temperature between 82ºF to 85ºF during peak cooling load (i.e., the amount of heat that must be removed in an hour to maintain the target temperature).
    - The occupied zone of the platform is the volume of space 2 feet from the platform edges, 20 feet from the ends, and 6 feet above the platform surface.
- Be designed based on an outside ambient temperature of 95ºF, and a maximum simulated platform area ambient temperature (to be simulated by the respondent).
- Require minimal space, fit within the existing station envelope, and be capable of installation in subway station environments.

- Be capable of being installed cost-effectively within a complex system and capital program in which both capital funds and the resources available for capital work are at a premium and state of good repair work must be prioritized.
- Be capable of operating 24 hours per day, 7 days per week.
- Withstand steel dust concentrations, water conditions (e.g., groundwater and stormwater exposure), vandalism, and constant shaking/high vibrations.
- Be designed to be replicated across different station configurations.
- Achieve passive or low energy consumption, where feasible.

## 4. INFORMATION SOLICITED FOR SUBWAY STATIONS COOLING TECHNOLOGIES

Please provide answers to the following questions:

1. Describe your experience in the design of innovative, non-conventional large-scale air-conditioning systems and air-distribution for large areas, specifically including any public transportation facilities and stations. In your response, please specify the size (BTUs) of the system installed.

2. Describe your innovative, non-conventional solution, including cooling capacity, power, space, and venting requirements. Please include a schematic/block diagram of your solution.

    a. What are the components of your proposed solution and where are they installed?

    b. Does your proposed solution require the use of any fluids (e.g., freon) or hazardous materials? If yes, please specify.

    c. Will your proposed solution trigger code upgrades?

    d. If your proposed solution includes geothermal cooling, please specify the water source and square footage of underground that would require excavation, and any other accompanying space requirements.

3. Describe detailed capital, operating, maintenance, and life cycle costs for your proposed solution.

4. Describe the cost-effectiveness, scalability, and flexibility of your proposed solution. Specifically, can your proposed solution be implemented in tandem with other station improvements? Is it scalable, and if so, to what degree? Please describe.

5. Describe how your proposed solution takes into consideration existing ventilation systems, whether natural or mechanical, and any modifications to existing ventilation systems that your proposed solution would require.

6. Is your proposed solution also appropriate for and scalable to back-of-house spaces, e.g., employee facilities and rooms that house equipment sensitive to prolonged heat conditions?

7. Is your proposed solution installed on other transit systems and if so, where, and was your proposed solution installed as part of initial construction or as a retrofit?

8. Has your proposed solution been independently tested? If so, please provide any test reports.