

The COVID-19 Pandemic

Public Transportation Responds: Safeguarding Riders and Employees

Strategies and tactical guidance for public transportation agencies during the COVID-19 pandemic and to inform future pandemic preparedness

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FOREWORD FROM APTA

The American Public Transportation Association (APTA) is proud to collaborate with WSP USA Inc. and faculty from the Johns Hopkins Bloomberg School of Public Health to provide an updated revision to our April 2020 publication, “The COVID-19 Pandemic: *Public Transportation Responds: Safeguarding Riders and Employees.*” This revision reflects new and evolving information learned over the last several months, as public health and medical leaders around the globe continue to gather more understanding about this disease.

As the only non-profit association in North America that represents all modes of public transit, our more than 1,500-member organizations are involved in every element of our industry. We are leading public transportation in the midst of seminal change and helping to create a new landscape of innovative, integrated mobility services and solutions. The unprecedented challenges created by the COVID-19 pandemic are now bringing about more change, today and perhaps for years to come. APTA’s responsibility is to help public transit agencies and business members recover, reinvent, and re-boot for a future that is safer and more resilient.

Toward that goal, this guide is more than a resource tool of best practices and policies; it represents who we are as public transportation leaders, not just what we do. Keeping our riders and employees safe has always been a core value for every APTA member. Over the past five months and through uncertain times, transit agencies across the country tirelessly and selflessly worked to keep Americans connected to the jobs and services upon which they depend. By providing vital answers to some of the most vexing questions regarding COVID-19, this guide will help transit agencies to continue delivering essential services safely and to emerge from the pandemic stronger.

We remain resolute and optimistic, as an industry and an association, about public transportation’s indispensable role in a new, more mobile, and safer future.

PREFACE

This guidebook is intended for senior transit and rail operations leaders. It is based on input from public health, medical, and transit professionals, as well as best practices shared by agencies in the United States. Readers should bear in mind that COVID-19 presents a new risk environment for transit and rail agencies. Based on FTA regulations and guidance, Safety Management System (SMS) implementation requires: 1) Evaluating hazards and system changes for risk; 2) Keeping up with the pandemic’s impacts on the transit and rail environment; and 3) Making changes that may bring risk tradeoffs.

Throughout this document, there are suggestions for reducing the risks related to COVID-19 to passengers and employees. Before implementing any of these suggestions, agencies should assess whether such a change can be scaled to its size and mode of agency in a manner that does not add unacceptable risk. Agencies are also encouraged to consult their local health officials in this process to determine whether different guidance or rules specifically apply to their locale.

APTA has revised this guide from its original April 2020 publication in an effort to stay consistent with emerging medical and public health information about COVID-19. To this end, APTA may continue to release updates as the understanding of this complicated disease advances.

ACKNOWLEDGEMENTS

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APTA also extends its thanks to Keshia M. Pollack Porter, PhD, MPH; and the numerous faculty members from the Johns Hopkins Education and Research Center for Occupational Safety and Health at the Johns Hopkins Bloomberg School of Public Health that helped the authors of this document identify relevant and credible sources for public health and medical information related to COVID-19, and also provided responses to APTA's transit-specific questions regarding COVID-19.

APTA also extends its gratitude to the thousands of transit workers across the United States who have tirelessly, selflessly, and bravely worked throughout this pandemic, providing critical access to essential jobs and services to communities. APTA also remembers the transit workers who have lost their lives to COVID-19 and extends our heartfelt condolences to their families and loved ones.

IN THIS REVISION

While much is yet to be learned about SARS-CoV-2 (the virus) and COVID-19 (the disease), our understanding of this disease has continued to advance since the original April 2020 publication of this Guide. Throughout this guide, new or substantively updated information is presented in **red font** in an effort to make it most easily accessible:

- Considerations around the adoption of international transit practices for COVID-19 resiliency.
- Throughout the Guide, references to “social distancing” have been replaced with “physical distancing” to emphasize the importance of maintaining physical separation between people to the extent possible. As the pandemic continues, finding ways to remain socially connected while physically distanced are critical.
- Guidance from US health officials reiterates that wearing masks or face coverings in public settings may help prevent the spread of COVID-19. Combining wearing masks/face coverings *with* efforts to maintain physical distancing to the extent possible is emphasized throughout this update, with an emphasis on working with local health authorities to identify physical distancing recommendations.
- New information from emerging studies will continue to evolve our understanding of this disease. This update reiterates the importance of considering health guidance from federal, state, and local health authorities, emerging science, and hazard analysis findings to fuel conversations with local health authorities in agencies' decision-making process.
- As parts of the country transition to more active in-person office usage, information is now included about preparing buildings/office spaces to more safely reopen to employees by reducing risk.
- Guidance regarding indoor air management protocols have been added in reference to buildings and restrooms.
- References to new CDC communications resources have been added.
- The section on Personal Protective Equipment, or PPE, has been updated to reflect guidance from US health officials on making, wearing, and cleaning masks/face coverings; as well as recent studies N95 mask decontamination.
- Information about disinfection products has been updated to reflect supply chain availability.
- Additional financial support and documentation guidance has been included.

TABLE OF CONTENTS

Foreword from APTA ii

Preface ii

Acknowledgements..... iii

In this Revision..... iii

Table of Contents iv

INTRODUCTION..... 1

WHAT EVERYONE NEEDS TO KNOW 1

 CDC Guidelines for Combating the Spread of the COVID-19 Virus 2

 International Transit Practices 2

 How the Virus is Inactivated 2

 Additional Guidance from Johns Hopkins to Help Protect Transit Staff and Riders..... 3

Employee PPE 3

Passenger PPE 4

Operators, Vehicles, and Facilities 4

STRATEGIES AND TACTICAL GUIDANCE..... 5

 Protecting Continuity of Operations..... 5

 Considering Protection of Riders 13

 Safety Assurance Programs 15

BUILDING SUPPLY CHAIN RESILIENCY 16

 Personal Protective Equipment (PPE)..... 16

 Disinfectants..... 18

FINANCIAL SUPPORT AND DOCUMENTATION 22

 Emergency Relief Provisions..... 23

 Tracking Expenses Associated with COVID-19..... 24

Resources 25

Pictures 25

Endnotes 25

INTRODUCTION

Public transportation agencies are playing a critical role during the COVID-19 pandemic response, and they will continue to do so as we navigate the road to economic and social recovery throughout our nation. Over the past five months, public transit agencies have worked tirelessly to provide bus and rail service so that essential workers can get to hospitals, pharmacies, and grocery stores during the COVID-19 emergency, underscoring how essential it is to keep public transit running.

Additionally, individuals must have access to food, pharmacies, and other essential medical services such as kidney dialysis and cancer treatments during periods of physical distancing and shelter-in-place orders across the country. Providing continuity of transit service is an imperative. In some parts of the country, transit is now providing service for non-essential travel with subsequent increases in ridership. Therefore, agencies must continue to maximize their efforts to protect the safety of riders and staff.



*Hillsborough Area Regional Transit Authority (HART)
advertisement (April 2020)*

Despite the contagious nature of COVID-19, public transportation can be operated and used with reduced risk if all those involved – the transit agency, staff, and riders – take the necessary steps and precautions. With little time to prepare, transit agencies across the country deployed service changes, new policies, and many other changes to aid in slowing the spread of this highly contagious disease, saving countless lives along the way. The first version of this guide was rapidly developed in April 2020 to share best practices in a time of public need, as the number of people testing positive for COVID-19 rose sharply across the nation. Transit agencies continue to grapple with providing service during uncertain times. This update incorporates new and changing guidance from the medical and public health community that has emerged in the subsequent three months since initial publication. These best practices may also inform future pandemic emergency preparation strategies.

On April 6, 2020, the Centers for Disease and Control and Prevention (CDC) provided broad guidelines for slowing/preventing the spread of this virus, including in the public transit industry. Since that time, CDC has released new and revised information. Based on inputs and advice from our nation’s preeminent public health experts at the Johns Hopkins University, APTA is providing this guide to translate the CDC guidelines into a set of tactical recommendations for agencies to consider in their efforts to reduce the areas of greatest risk related to COVID-19.

WHAT EVERYONE NEEDS TO KNOW

Understanding the following concepts will equip agency leaders to best understand the recommendations in this guide and, ultimately, make more informed decisions related to COVID-19. Transit agencies should consider engaging their local health official to interpret and apply this guidance and can consider developing their communications to staff and riders around these concepts. Federal funding was made available to flexibly support implementation of these concepts during the pandemic, as described in the recent [FTA Coronavirus Announcement and Emergency Docket](#).

CDC Guidelines for Combating the Spread of the COVID-19 Virus

According to the CDC, the COVID-19 virus is highly contagious and is thought to spread mainly from person-to-person through respiratory droplets produced when an infected person coughs, sneezes, or talks when in close contact with another individual. Notably, COVID-19 may be spread by people who show no symptoms and are unaware that they are infected.ⁱ There are other ways in which the virus may spread, such as coming in contact with other body fluids (e.g., blood, sputum), and via contact with contaminated surfaces or objects.ⁱⁱ Finally, the CDC stated that, “The virus that causes COVID-19 has been found in the feces of some patients diagnosed with COVID-19. However, it is unclear whether the virus found in feces may be capable of causing COVID-19. There has not been any confirmed report of the virus spreading from feces to a person,”ⁱⁱⁱ but this may be a consideration for restroom management.

CDC guidelines for preventing spread of infection^{iv} are summarized below in a simplified list:

- Know how it spreads
- Wash hands for at least 20 seconds, vigorously scrubbing with soap and water
- Avoid close contact by maintaining a six-foot physical distance to the extent possible from people who do not live in the same household
- Cover mouth and nose with a mask/face covering when around others
- Cover coughs and sneezes and immediately wash hands
- Clean and disinfect surfaces and materials
- Monitor health daily
- Self-quarantine after potential exposure and/or symptoms

CDC has also recommended that people wear a face covering in public even when maintaining physical distance.^v CDC’s current advice for transit is to maintain a physical distance to the extent possible to support the unique constraints and ensure safe continuity of transit service,^{vi} recognizing that there may be times that this distance is not feasible or practicable. For example, six-foot physical distancing is likely feasible in certain transit *facilities* but challenging in transit *vehicles*. Transit agencies are encouraged to engage their local health officials to provide support and credibility to the agency’s decision-making process and help adapt CDC’s guidance to the agency’s specific size and operating environment.

These guidelines served as the basis for [four fact sheets for public transit](#) released by CDC, which provide high-level information on protecting transit staff, as well as one for [members of the public](#). CDC more recently released [overarching guidance](#) for transit that includes these resources, in addition to guidance for mass transit administrators.

International Transit Practices

Some domestic transit agencies are now applying international transit practices to strengthen their COVID-19 resiliency toolkit. Physical distancing standards is one area in which international agencies have varying protocols, with some adopting the World Health Organization’s (WHO) recommendation of one meter^{vii} (approximately three feet), and others adopting different standards determined appropriate for their operations. Before implementing any international practices, agencies should be guided by *their local health authorities* to assess if they can be scaled to the agency’s size, age, and modes of transportation; and align with US laws, regulations, and cultural expectations in a manner that does not add unacceptable risk.

How the Virus is Inactivated

The CDC recommends three methods for inactivating the virus:

- **Soap/Detergent** – for hands, scrubbing with soap and water for 20 seconds or more; for soft (porous) surfaces, detergent and the warmest water possible.^{viii}
- **Alcohol** – hand sanitizer that is at least 60% alcohol^{ix} and any mixture with at least 70% alcohol for disinfecting surfaces.^x
- **Disinfectant** – products on [EPA List N: Disinfectants for Use Against SARS-CoV-2](#), when used according to instructions, are designed to break down the viral envelope; this list includes sodium hypochlorite (bleach), which is widely available. As a backup, other products with an EPA registration number and manufacturer claim that human coronavirus is listed as a target pathogen have a high likelihood of being effective at inactivating the virus.^{xi} [APTA's White Paper Cleaning and Disinfecting Transit Vehicles and Facilities During a Contagious Virus Pandemic](#) addresses both the methods supported by US health officials, as well as emerging areas of study, such as UV light.

While researchers have found the virus's protein and lipids structure decays over time, there is still much we do not know. In an early release article published on CDC's website, researchers found that "The virus is more stable at low-temperature and low-humidity conditions, whereas warmer temperature and higher humidity shortened half-life."^{xii}

Until more information is available on virus decay over time and use of other technologies, agencies should depend on the three primary techniques described above for inactivating the virus.

According to Johns Hopkins University, "What's getting a lot of press and is presented out of context is that the virus can last on plastic for 72 hours—which sounds really scary. But what's more important is the amount of the virus that remains. It's less than 0.1% of the starting virus material. Infection is theoretically possible but unlikely at the levels remaining after a few days."¹

Additional Guidance from Johns Hopkins to Help Protect Transit Staff and Riders

To develop more specific guidance for transit agencies, APTA submitted a list of core questions to the Johns Hopkins Bloomberg School of Public Health.^{xiii} Faculty from the Johns Hopkins Education and Research Center for Occupational Safety and Health at the Johns Hopkins Bloomberg School of Public Health provided response to these questions in April 2020, with minor revisions in July 2020. The information is based on guidance from CDC^{xiv} and is for general purposes only. The responses have not been subjected to robust peer review or consensus development.

Employee PPE

Q. What is the recommended PPE for transit operations staff?

A. For transit operators, potential sources of exposure include close contact with a passenger with COVID-19 or contacting surfaces touched or handled by a person with COVID-19. According to the CDC, workers should protect themselves by: Limiting close contact with others by maintaining a physical distance; **wearing a mask/face covering**; avoiding touching surfaces often touched by transit passengers; practicing routine cleaning and disinfection of frequently touched surfaces, including those in the operator area commonly touched by the operator, following the directions on the cleaning product's label; and using gloves if required to touch surfaces contaminated by body fluids.

It is important to remember that proper hand hygiene is an important infection-control measure. Regularly wash your hands with soap and water for at least 20 seconds or use an alcohol-based hand sanitizer containing at least 60% alcohol, and avoid touching your eyes, nose, or mouth. Workplace-specific times for hand washing include before and after work shifts; before and after work breaks; and after touching frequently touched surfaces, such as fareboxes and handrails. In addition, hands should be washed before, during, and after preparing food; before eating food; after using the toilet; and after blowing your nose, coughing, or sneezing.

Passenger PPE

Q: What is the recommended PPE for passengers to wear if they are or suspect they are infected? What additional safeguards are to be considered?

A: Passengers (and operators) with known or suspected COVID-19 should not ride public transit. Based on recent studies, a significant portion of individuals with coronavirus lack symptoms (“asymptomatic”) and those who eventually develop symptoms (“pre-symptomatic”) can transmit the virus to others before showing symptoms. This means that the virus can spread between people interacting in close proximity – for example, speaking, coughing, or sneezing – even if those people are not exhibiting symptoms. Thus, CDC recommends wearing masks/face coverings in public settings where other physical distancing measures are difficult to maintain when in areas of significant community-based transmission. CDC is additionally advising the use of simple masks/face coverings to slow the spread of the virus and help people who may have the virus and do not know it.

Operators, Vehicles, and Facilities

Q: Should operators be carrying any additional supplies?

A: Operators should have access to disposable sanitizing wipes to use on any surface with which they have regular contact. Surfaces should be wiped regularly, after each stop if possible. If disposable wipes are scarce, another option is to have a bottle with disinfectant spray (Lysol, etc.) and dry paper towels.

Q: Should HVAC be running at any point in the transit vehicle or facility?

A: HVAC systems should be on if they are using fresh (outside) air, at the highest setting possible, and filters should be changed regularly.

Q: What should agency staff use to clean with?

A. A list of products with EPA-approved emerging viral pathogens claims is available at: <https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2>.

In addition, diluted household bleach solutions prepared according to the manufacturer's label for disinfection can be used if appropriate for the surface. Follow manufacturer's instructions for application and proper ventilation, and confirm the product is not past its expiration date. Never mix household bleach with ammonia or any other cleanser. Also, alcohol solutions with at least 70% alcohol is an effective disinfection product.

When cleaning, wear the PPE required for using the cleaning and disinfection products according to the product manufacturer's



Dallas Area Rapid Transit (DART) using an EPA-approved fogging technology to disinfect a Light Rail Vehicle.

instructions. After removing PPE, wash your hands with soap and water for at least 20 seconds. Work uniforms worn during cleaning and disinfecting should be laundered afterwards. Clean your hands after handling laundry by washing your hands with soap and water or using an alcohol-based hand sanitizer with at least 60% alcohol if soap and water are not available.

Q: How does this guidance apply to paratransit operations?

- A. The issues with paratransit are more complex and may vary based on the use of paratransit in your area. **Each transit agency should be guided by their local health officials to establish guidelines for paratransit that specifically address policies and procedures related to COVID-19.**

STRATEGIES AND TACTICAL GUIDANCE

The following guidance adapts CDC guidelines to the public transit environment. **The applicability of these recommendations will depend on an agency's size, modes of operation, geography, and available resources; consequently, agencies are encouraged to engage their local health officials and conduct their own hazard analyses to help guide the adoption of these recommendations.** Implementing *any* of these recommendations will help reduce the risk of COVID-19 spreading among agency staff and riders, and can be used in the development/enhancement of agency Emergency Management Plans, Continuity of Operations Plans (COOP), and [Contagious Virus Response Plans](#).

Protecting Continuity of Operations

Most transit agencies around the nation directed capital and administrative staff to telework starting in the spring of 2020; many agencies have continued to encourage or require their staff to continue doing so. Accordingly, the following actions are **recommended** to protect the agency's operations and maintenance staff and help preserve overall continuity of operations.

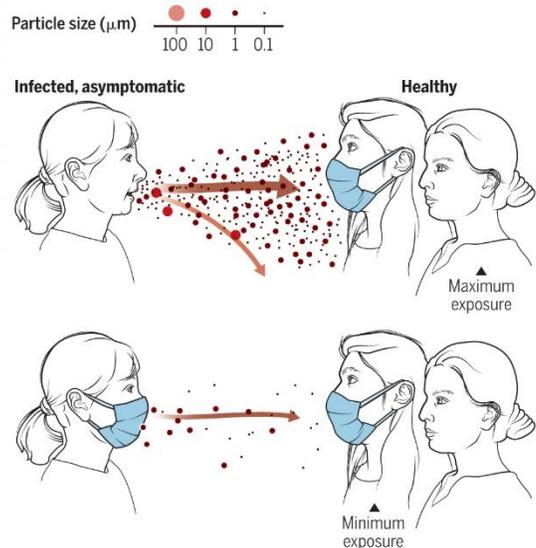
General Workforce Resiliency Considerations

- Continually educate staff and riders on how to manage and mitigate risks associated with COVID-19. Additionally, agencies must communicate and reinforce new policies and procedures as they are developed and updated.
- Work proactively and transparently with labor leadership to build trust and coordination as policies or procedures are developed/modified, and as safety messaging and training is delivered.
- **Instruct agency employees to stay home if they were directly exposed to the virus and/or have symptoms (fever, difficulty breathing, dry cough) for 14 days.^{xv}**
- Screen employees, contractors, and visitors for symptoms,^{xvi} maintaining physical distancing to the extent possible, through interview/questionnaire and infrared thermometer readings prior to a shift.
 - **Apply or adapt screening criteria from [CDC recommendations for screening employees for COVID-19 symptoms](#).**
 - Consider giving employees a wristband (or other distinctive item) when they have cleared daily screening process and only allow them in facilities if wearing a wristband.

- Coordinate with your human resources department to implement procedures that align with the Health Insurance Portability and Accountability Act of 1996 (HIPAA) Privacy Rule.
- Break the workforce into “A” and “B” teams by shift, thus isolating/limiting employees’ daily interaction with the same population.
- Provide tissues and no-touch, lined, disposal receptacles for use by employees.
- Encourage employees to frequently wash their hands and use hand sanitizer (at least 60% alcohol).
- In the absence of regulation PPE, encourage employees to use alternative, reusable PPE (such as masks/face coverings) and associated disinfection protocols between uses (see PPE section below).
- Per CDC guidance, it is important “to perform hand hygiene after removing PPE.”
 - Hand hygiene should be performed by using an alcohol-based hand sanitizer that contains 60-95% alcohol or washing hands with soap and water for at least 20 seconds.”^{xvii}
 - “CDC does not have a recommended alternative to hand rub products with greater than 60% ethanol or 70% isopropanol as active ingredients.”^{xviii} Accordingly, **benzalkonium chloride-based sanitizers are not recommended.**
- Equip employees, vehicles, and workspaces with gloves, alcohol-based wipes or spray (at least 70% alcohol), and dry paper towels for spot-disinfection, as described throughout this document, based on a hazard analysis of their potential for exposure in their job duties.
- Encourage staff at desks and stations to wipe down (at least 70% alcohol) desk, keyboard, mouse, telephone, microphone, etc., at the beginning and end of each shift.
- Avoid dry sweeping and other mechanical actions with potentially contaminated surfaces to minimize the possibility of dispersing virus; use wet cleaning methods instead. This is consistent with CDC guidance to “not shake dirty laundry.”^{xix} Amend standard operating procedures (SOPs) accordingly for the duration of the pandemic.
- All cleaning, sanitizing, and disinfecting should follow manufacturers’ instructions, including required PPE and contact time, to ensure efficacy against the virus.

Masks reduce airborne transmission

Infectious aerosol particles can be released during breathing and speaking by asymptomatic infected individuals. No masking maximizes exposure, whereas universal masking results in the least exposure.



Graphic: V. Altounian/Science
[\[https://science.sciencemag.org/content/368/6498/1422.full\]](https://science.sciencemag.org/content/368/6498/1422.full)

Coupling face covering with efforts to maintain adequate physical distancing in public is a key tactic in any setting to reduce the spread of the virus agency staff and/or riders.

- Shut-off/tape-off drinking fountains; encourage use of bottle filling stations, sinks, or employees bringing water from home.
- Manage limited supply of cleaning resources by closing low ridership stations or stops. The FTA states that Title VI equity analyses are not required for temporary emergency service cuts and changes during the COVID-19 emergency, but reasonable measures must be taken to prevent unintentional discrimination.^{xx}
- US health guidance suggests that transit agencies “Designate someone to be responsible for responding to COVID-19 concerns. Employees should know who this person is and how to contact them.”^{xxi}

Staff, Vehicle, and Facility Quarantine Considerations

- If a known exposure to the virus occurs, agency staff are encouraged to use data to inform the managerial reaction; this can help agency leaders take deliberate action without inciting unnecessary panic among staff and/or riders.
- Require **staff** to follow federal, state, and local health authorities’ guidance and self-quarantine after a known exposure to the virus.
 - Align staff quarantine policies with CDC guidance (test-based and non-test-based): <https://www.cdc.gov/coronavirus/2019-ncov/hcp/disposition-in-home-patients.html>
 - If appropriate, refer to vehicle and facility quarantine recommendations below.
- Develop protocol for cleaning and disinfecting a **vehicle** after a person with COVID-19 was known to be in the space:
 - Designate special “quarantine” parking zones for any vehicles that have had suspected or known exposure to the virus.
 - If an operator is still in a vehicle immediately after known exposure, ask the operator to perform the following steps, which allow for sufficient air changes to remove potentially infectious particles:
 - Park the vehicle in designated area.
 - Leave the engine running and turn on HVAC to maximum fan speed.
 - Open windows (if possible) and vehicle door(s).
 - Use lockdown procedures to ensure nobody can enter/exit vehicle while quarantined; this could include additional steps such as license plate removal and placing caution/warning signs on the vehicle.
 - Based on US health officials’ guidance for cleaning/disinfecting EMS transport vehicles,^{xxii} as long as air changes are occurring in vehicle as described above (or via continuous running of the HVAC system and/or opened windows while vehicle is in use), personnel can enter the vehicle for cleaning/disinfection after approximately 30 minutes.
 - Clean and disinfect vehicle using the appropriate [disinfectants approved by the EPA for effectiveness against SARS-CoV-2](#), appropriate PPE, and other instructions required by the manufacturer of the disinfectant.
 - Replace vehicle filter(s).
 - See Alternative PPE section below if required PPE is unavailable.

- Develop protocol for cleaning and disinfecting **part of a facility/building** after a person with COVID-19 was known to be in the space:
 - Open windows and turn on HVAC system to maximum fan speed to facilitate air changes to remove potentially infectious particles.
 - Use normal lockdown procedures to ensure no one can enter/exit the space while quarantined; this may include additional steps, such as placing caution/warning signs on the building/space.
 - According to CDC, it is unknown how long the air inside a room occupied by someone with COVID-19 remains potentially infectious. Facilities will need to consider factors such as the size of the room and the ventilation system design (including flowrate [air changes per hour] and location of supply and exhaust vents) when deciding how long to close off rooms or areas before beginning disinfection.”^{xxiii} Accordingly, agencies are encouraged to engage their local health authorities to determine how much time should elapse before a cleaning/disinfecting crew is sent into the space.
 - **Close off areas visited by the infected person (closing affected areas may allow operations to continue in other unaffected areas). If possible, open outside doors and windows and use ventilating fans to increase air circulation in the area. Wait 24 hours or as long as practical before beginning cleaning and disinfection.**^{xxiv}
 - Create new SOP for cleaning/disinfecting quarantined space, including appropriate [disinfectants approved by the EPA for effectiveness against SARS-CoV-2](#), appropriate PPE, and other instructions required by the manufacturer of the disinfectant.
 - Include replacement of HVAC filter(s).
 - See Alternative PPE section below if required PPE is unavailable.

General Facility/Station Considerations

- Where possible, make hallways “one-way” to minimize people meeting in halls.
- Consider marking-out appropriate spacing increments on the floor where employees may queue or wait to encourage proper physical distancing.
- Partially open doors wherever possible to reduce touching of common surfaces.
- Place alcohol-based hand sanitizer (ABHS) units at the entrance of frequently used rooms, especially near security doors that cannot be propped open.
 - At least 60% alcohol
 - Ideally touchless units
- Regularly clean/disinfect facilities and stations (daily for high traffic areas if resources permit).
- Clean/disinfect frequently touched surfaces throughout daily operations, such as:
 - Elevator buttons
 - Exit buttons
 - Handrails
 - Grab bars
 - Seats/benches
 - Garbage cans
 - Doorknobs

- Call boxes
- Ticket Vending Machines
- Turnstiles/gates

- Ensure ventilation systems operate properly and take steps to improve ventilation,^{xxv} such as by increasing the percent of outside air and/or total airflow supply to occupied spaces.
- Increase HVAC filter efficiency to as high as possible and within OEM guidance.^{xxvi}
- Consider using supplemental techniques to enhance air cleaning, such as portable high-efficiency particulate air (HEPA) fan/filtration systems which have been adequately sized to the space by qualified engineers.
- Consider the supplemental use of ultraviolet germicide irradiation (UVGI) in the upper-room air of common, high-bay spaces in accordance with industry guidelines.^{xxvii} Note upper-room UVGI does not apply the technology inside an air handling unit; this technology is used to help disinfect air near the ceiling of a given space where the UV light is not likely to cause damage to human tissue.
- Before resuming operations in a building that has been unoccupied, make sure it is ready for occupancy:^{xxviii}
 - Review new construction startup guidance provided in ASHRAE Standard 180-2018, Standard Practice for the Inspection and Maintenance of Commercial Building HVAC Systems for heating, ventilation, and air conditions (HVAC) systems.
 - Take steps to ensure that all water systems, features, and devices are safe to use.

General Restroom Considerations

- Partially open bathroom doors if possible and/or install hand sanitizer dispenser outside of bathroom to allow for hand hygiene after touching doorknob.
- Clean/disinfect toilets, sinks, and floors as frequently as practical, especially for restrooms used by a larger population.
- If time and resources permit, consider installing:
 - Touchless or pedal-control faucets
 - Touchless soap dispensers
 - Touchless paper towel dispensers or hand dryers
- Ensure exhaust fans in restroom facilities are functional and operating at full capacity when the building is occupied.^{xxix}

Control Center/Dispatch Considerations

- Set up small trailer or booth outside of the main operations building to distribute daily bus/rail manifests from a window to reduce gatherings in the main facility.
 - Set up a drive-thru where operators can receive assignments before exiting their personal vehicle.

- Include materials and instructions to wipe down (at least 70% alcohol) desk, keyboard, mouse, telephone, microphone, and other frequently touched surfaces at the beginning and end of each shift.
- Provide each person their own keyboard, mouse, and/or telephone headset to use, stored separately.
- Create and/or use backup facilities (e.g., Operations Control Center, crew room) and divide crews for each shift into “A” and “B” teams; assign the “A” team to use the main facility and the “B” team to use the backup facility.
 - This keeps the same staff together in the same space for the duration of the pandemic.
 - This helps insulate against losing an entire crew on a single shift to quarantine in the instance of a known exposure of staff to the virus.
- Proactive succession plans can help an agency pivot if controllers or depot clerks need to self-quarantine unexpectedly.

Operations and Maintenance Facility Considerations

- Close staff gathering spaces, such as lounges, gyms, locker rooms, and hangout areas, and/or block off non-essential equipment and couches to promote physical distancing between staff and minimize opportunities to gather.
- Create two break rooms in each building and divide staff for each shift into “A” and “B” teams; assign the “A” team to use the main break room and the “B” team to use the backup breakroom.
 - This keeps the same staff together in the same space for the duration of the pandemic.
 - This helps insulate against losing all operators/mechanics on a single shift to quarantine in the instance of a known exposure to the virus.
- Transition operators to call-in and/or check online for their daily assignments, if feasible. Operators can sign in/report for duty by radio from their assigned vehicle before they begin their pre-trip inspection.
- Prohibit use of kiosks and shared computer equipment for completing accident reports and other forms/reports. Use individually assigned tablets, paper forms, etc.
- Postpone any regularly scheduled staff activities that would require gathering, such as operator /sign-up/bid picks and/or conduct virtually (call in or online).
- Transition operators to electronic and/or virtual bulletin boards via intranet to disseminate detours, alerts, route instruction sheets, and/or paddles.
- Transition staff to email and/or text communications to reduce the amount of face-to-face communications.
- Transition operators to direct deposit instead of paper payroll checks, reducing the need for operators to pick up their checks. Provide direct deposit confirmation electronically or mail to their home.

- Provide oversight and supervision for any pandemic policies to confirm appropriate application, including:
 - Validate that operators/engineers have the required PPE available before beginning trip and that they are using it in service.
 - Wipe down vehicles/tools/equipment with disinfectant before and after use.
- Provide for operator reporting of any known or suspected passengers with symptoms of the virus; refer to the quarantine recommendations above for further advice.

Station Considerations

- Require station attendants to wipe down (at least 70% alcohol) desk, telephone, and other frequently touched surfaces at the beginning and end of each shift.
- Allow station attendant to stay in kiosk to avoid interacting with riders unless needed for critical/emergency purposes.
- Disinfect frequently touched surfaces often, such as:
 - Escalator handrails
 - Elevator buttons
 - Stairwell handrails
 - Water fountains
 - Fare collection touchscreens and buttons
 - Turnstiles/gates
 - Doorknobs
 - Fare equipment
 - Food/drink vending machines



Massachusetts Bay Transportation Authority (MBTA) disinfecting ticket vending machines.

Customer Service/Paratransit Reservation Call Center Considerations

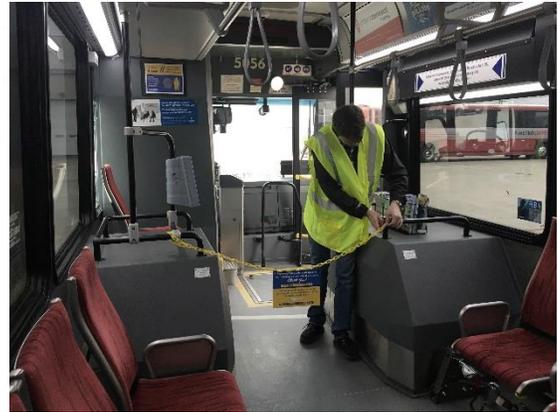
- Transition call center employees to working from home/telework, as possible.
- Physically separate call center employees in workstations. Tape off and/or remove equipment from closed workstations.
- Consider if the facility can be split into multiple "work zones," where the unoccupied work zone is disinfected prior to the arrival of the subsequent shift.
- Assign the same workstation to the same employee(s).
- Require call center employees to wipe down (at least 70% alcohol) desk, keyboard, mouse, telephone, microphone, and other frequently touched surfaces at the beginning and end of each shift.
- Give call center employees their own keyboard, mouse, and/or telephone headset.
- Increase ventilation by opening windows if available.

Operator/Engineer Cabin Special Considerations

- All Revenue and Non-revenue Vehicles
 - Wipe-down steering wheel, seatbelt, console, and other frequent touchpoints (at least 70% alcohol wipes) before the operator/engineer boards the vehicle or as part of pre-trip routine.
 - Handle lost and found items with gloves, limiting exposure to items.
 - Require operators to mist and/or wipe down (at least 70% alcohol) frequently touched surfaces in the passenger compartment at layovers.
 - Consider suspending fare collection and/or enforcement.

- Bus and Paratransit Vehicles
 - For vehicles with multiple doors, institute rear door boarding/exiting, persons requiring a wheelchair ramp exempted.
 - Block off or remove front seats in proximity to operator
 - Install a temporary standee line (chain or other barrier) allowing additional distance to operator but easily removable when access to/from wheelchair ramp is needed.
 - Use operator shields, if equipped.
 - Instruct operators to monitor passenger loads and advise of load capacity to allow passenger spacing.
 - **Minimize or eliminate shared rides on paratransit/dial-a-ride vehicles, Personal Care Attendant (PCA) excluded; or allocate larger paratransit vehicles that allow for capacity for physical distancing (vans, cutaways, etc.) for shared rides.**
 - Use gloves and mask/face covering when strapping wheelchair passengers.

- Rail Vehicle
 - Limit operator/engineer exposure:
 - **Run additional railcars to allow capacity to support physical distancing.**
 - Have the operator/engineer walk outside, rather than through the cars to their operating cab.



Capital Metro distancing passengers from the operator.

Field Supervision Considerations

- Eliminate overlapping shifts (keeping the same staff together – same logic as the “A and B Day” schedule noted above).

- Create mobile offices for supervisors and assign the same vehicle to the same supervisor. If shared, assign to the same two supervisors.
 - Vehicle should be disinfected before and after each shift.
 - Issue tablets or laptops for use in the field to complete accident/incident reports.

- Limit dispatching supervisors to incidents/accidents that involve gatherings of first responders.

Internal Communications

- Build education campaign for agency staff around the following topics:
 - Physical distancing *with* mask/face covering use^{xxx}
 - Handwashing
 - Respiratory Hygiene (cough into elbow, use tissue, etc.)
 - PPE use (see PPE section below)
 - Disinfection of surfaces and materials
 - Any policies or procedures that are new/modified as a result of the pandemic
- Consider adopting some of the principles and using resources from CDC's Crisis & Emergency Risk Communication (CERC) framework:
<https://emergency.cdc.gov/cerc/>
 - This resource provides guidance on human psychology to help make health emergency communications more persuasive (e.g., wearing face coverings on transit, maintaining physical distance, etc.).
 - This resource also includes various templates and tools that may be adapted to supplement and strengthen existing agency communications protocols.
- Consider use of pre-made advertisements to support staff education (scroll to bottom):
<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public>
- Consider use of the communication tools and resources provided by CDC:
<https://www.cdc.gov/coronavirus/2019-ncov/communication>

Considering Protection of Riders

Protecting riders' health and safety throughout this pandemic is paramount. Accordingly, the following actions are recommended to keep critical services functioning and accessible in our communities.

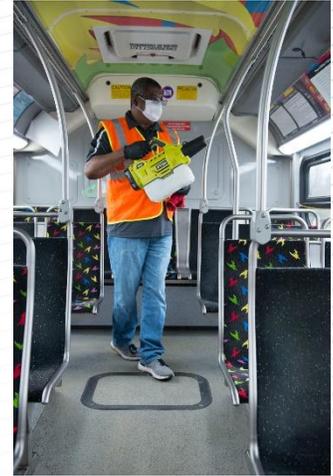
General Rider Safety Considerations

- The greatest prevention benefits are derived from using masks/face coverings coupled with physical distancing as a means to reduce contact with respiratory droplets from infected individuals – the primary mode of transmission.^{xxxi}
 - Require riders to use masks/face coverings on transit vehicles and at transit stops and stations.
 - Maintain or increase service levels as necessary, and to the degree workforce availability permits, to enable more effective physical distancing on vehicles.
- Make sanitizer available to riders:
 - Place alcohol-based wipes (at least 70% alcohol) near the entrance of vehicles and stations; encourage riders to use a wipe to open doors, hold grab bars, etc.
 - Consider placing alcohol-based hand sanitizer (ABHS) units at the entrance of vehicles and stations; be mindful of possible slip hazards related to spilled sanitizer.
 - Based on at least 60% alcohol
 - Ideally touchless units
- Regularly clean/disinfect frequently touched surfaces such as fare payment terminals, including touch-screen surfaces and credit/debit card PIN keypads.

- Prominently post when the last cleaning was performed on vehicles and stations.

Revenue Vehicle Special Considerations

- Provide vehicle capacity that supports physical distancing measures to the extent possible (PCA excluded).
- Maximize ventilation rates on HVAC system and crack open windows while vehicle is in use (when possible and safe).
- Increase frequency of cleaning and disinfecting of vehicle to fully disinfect every revenue service vehicle at least once a day,^{xxxii} if not more;^{xxxiii} consider adding a midday cleaning/disinfecting for paratransit vehicles.
- Limit passenger boarding/alighting to rear door if vehicle is equipped with two or more doors, persons requiring a wheelchair ramp exempted.
- Consider suspending fare collection and/or enforcement.
- Consider applying the “Quiet Ride” concept in revenue vehicles (i.e., encouraging customers to refrain from speaking, particularly loudly, including on cell phones) to minimize the dispersion of respiratory droplets, as “Aerosol emission during speech has been correlated with loudness of vocalization.”^{xxxiv}
 - Note that face coverings should still be required, even on vehicles applying the “Quiet Ride” concept.



Cleaning and disinfecting a Central Midlands Regional Transit Authority (The Comet) vehicle.

External Communications

- Identify and implement persuasive messaging to encourage rider vigilance with wearing masks/face coverings and physical distancing, considering the CERC framework as a resource:
<https://emergency.cdc.gov/cerc/>
- Adapt and apply the communication tools and resources provided by CDC:
<https://www.cdc.gov/coronavirus/2019-ncov/communication>
- Communicate boarding considerations such as “rear door boarding only” and/or “face covering required” on transit vehicles with the destination sign and automatic voice announcements (AVA) inside/outside of vehicle at every stop.



Your cloth face covering may protect them. Their cloth face covering may protect you.

Graphic: <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/diy-cloth-face-coverings.html>

- Frequent operator and station announcements (through the public address system) about:
 - Precautionary measures the agency is taking.
 - The value of passengers maintaining a log of their transit trips, including time of trip, vehicle number, route, seating position, number of riders, etc.; riders with smartphones can document with one or two photos when on the vehicle.
- Create a COVID-19 “Rider Responsibility” campaign, using all available media, centered on the following messages:
 - Do not ride if you have any indication that you might be ill or have been exposed to someone with COVID-19; if riding transit is your only way to get help, wear a mask/face covering, cough into your elbow, and minimize touching surfaces with your hands.
 - During any local “stay-at-home” period, only use public transit for essential trips.
 - Wear a mask/face covering
 - Physical distance from other customers.
 - Avoid interactions with the operator/conductor/engineer and respect his/her need to distance from passengers.
 - If you feel uncomfortable on a specific vehicle for whatever reason, get off and take the next vehicle.



New Jersey Transit advertisement to riders (April 2020)

- Create a COVID-19 “Rider Education” campaign including:
 - Precautionary measures the agency is taking
 - Encourage use of masks/face coverings and gloves (see PPE section below)
 - Encourage passengers to carry alcohol-based hand sanitizer (at least 60% alcohol) and alcohol-based wipes (at least 70% alcohol) for disinfection of frequently touched surfaces
 - Expectations for physical distancing/spacing
 - Fare expectations
 - Lost and Found information if regular protocols have been suspended

Safety Assurance Programs

A Safety Assurance Program allows agencies to monitor whether strategies and actions related to COVID-19 are fully implemented as intended and provides data to measure how effective those strategies/actions are in fighting the spread of COVID-19. An assurance program can include the establishment of performance measures to track the number of staff and rider COVID-19 cases, and also includes audits to monitor compliance with the policies and procedures.

As with the other recommendations in this guide, the applicability of safety assurance recommendations will depend on an agency’s size, modes of operation, geography, and available resources. However, implementing any of these recommendations will help to reduce the risk of COVID-19 spreading among agency staff and riders:

- Refresher training for managers on the HIPAA Privacy Rule – especially the sections on “Protected Health Information” and “De-identified Health Information:”
<https://www.hhs.gov/hipaa/for-professionals/privacy/laws-regulations/index.html>

- COVID-19 Performance Measures
 - Count of known infected staff (and trend over time)
 - Count of known infected riders (and trend over time)
- Audits and Inspections (to be tracked with Maintenance Management System [MMS] or spreadsheet)
 - Safety Officers observe cleaning process/PPE usage
 - Develop disinfectant cleaning schedule
 - Assign checklists at each location for cleaning completion accountability and signature
 - Supervisors required to conduct two quality control inspections
 - Supervisor visually observe percentage of checklists throughout system
 - If possible:
 - Cross reference MMS work order materials used with checklists and supervisor audits
 - Cross reference tracked hours (labor) and equipment used in MMS
 - Track labor and materials (masks/face coverings, gloves, bleach, etc.) in MMS
 - Daily calls/meetings with teams/assignments to report out on cleaning progress
 - Assign escorts to contractor cleaning teams
 - Escort takes photos of contractors in PPE as proof of compliance
 - Contractor supervision takes photos of PPE, work as proof to include a daily report/narrative
- Continually review data and information (including updates or changes that would modify this Guide's information) from:
 - Municipal, state, and federal governments
 - CDC and National Institute for Occupational Safety and Health (NIOSH)
 - Local health officials

BUILDING SUPPLY CHAIN RESILIENCY

As public transit agencies work to procure accepted/standard PPE, cleaning products, and disinfectants, agencies should also develop a resiliency plan – including both a “Plan B” and “Plan C.” This can include procuring alternative products with associated protocols and/or working with other agencies and organizations (that may have a surplus) to enable resource sharing/rebalancing between entities until stock can be procured and replenished. It is also important to explore alternative levels of protection (reduced protection PPE and cleaning products) as a last resort. **Agencies are encouraged to engage their local health officials and conduct hazard analyses to help guide the adoption of these recommendations.**

Personal Protective Equipment (PPE)

According to the Occupational Safety and Health Administration (OSHA) guidance on preparing workplaces for COVID-19, “all types of PPE must be:

- Selected based upon the hazard to the worker
- Properly fitted and periodically refitted, as applicable (e.g., respirators)

- Consistently and properly worn when required
- Regularly inspected, maintained, and replaced, as necessary
- Properly removed, cleaned, and stored or disposed of, as applicable, to avoid contamination of self, others, or the environment^{xxxv}

Agency staff can be exposed to infected people and bodily fluids while conducting their job. If proper/standard PPE is unavailable, the next best strategy for transit agencies is to move away from the disposable mentality. Agencies and agency employees can take some of the recommendations in this guide to employ reusable PPE. Some of the items in this guide, such as reusable gloves, can be purchased at retailers. Others like cloth face coverings/respirators can be home-made with available materials. All of this reusable PPE should be coupled with disinfecting and handwashing protocols before/after each use.

Proper/Standard PPE

- **The CDC recommends that people wear masks/face coverings in public settings, particularly where other physical distancing measures are difficult to maintain.**^{xxxvi}
 - Agencies should use this guideline to determine which staff should wear masks/face coverings during normal operations.
 - All riders should be encouraged to wear masks/face coverings.
- **When cleaning and disinfecting any vehicles, stations, and facilities, follow the manufacturers' instructions for all required PPE, which may require among other things, a more efficient mask/face covering, gloves, or eye protection.**
- Gloves must be used if staff are required to touch surfaces contaminated by body fluids.
- Agencies are advised to calculate the number of disposable respirators and gloves they will need in normal operations and compare existing inventory with availability from vendors to determine if supply is sufficient.
 - If disposable PPE is in abundant supply, it can be offered to all operations staff to support the strategies and actions in this document.
 - If disposable PPE is not in abundant supply, it should be conserved as appropriate for staff who are cleaning/disinfecting vehicles and facilities after a person with COVID-19 was known/suspected to be in the space.
 - In its recommendations for healthcare workers, CDC states, "Standard specifications for nitrile gloves, natural rubber gloves, and polychloroprene gloves indicate higher minimum tensile strength and elongation requirements compared to vinyl gloves."^{xxxvii}
 - Transit agencies are also encouraged to set a threshold value for inventory of PPE to trigger the need to conserve disposable gloves as described above.
- Consider controlling inventory to prevent masks/face coverings, gloves, sanitizer, and disinfectant from theft or use outside of any PPE conservation policies set by the agency.

Alternative PPE

- **Cloth masks and face coverings**
 - **Easy instructions are provided by the CDC for creating a cloth mask/face covering from common materials on their [website](#) and as a [video](#).**

- A home-made cloth mask/face covering can also be used as a pre-filter to extend the life of normal/standard masks/face coverings.
- It is important to remember:
 - The more layers of material in your mask/face covering, the more effective it can protect against contracting COVID-19; however, too many layers of material may make breathing too restrictive.
 - **To maximize its effectiveness, the mask/face covering must also have a good “seal,” fitting snugly around the nose and mouth.**
 - The mask/face covering must be properly disposed or cleaned and disinfected after use to minimize the chances of cross-contamination.
- **CDC offers additional guidance on making, wearing, and washing cloth face coverings.**
- **Gloves**
 - Cloth gloves that are dipped/coated in nitrile, natural rubber, or polychloroprene offer breathability; the palm of your hand is generally protected but the back of your hand is exposed under a loose weave.
 - Reusable gloves made entirely of nitrile, natural rubber, or polychloroprene, or cloth gloves that are “full dipped” to coat both the entire glove offer more protection but little breathability and can be uncomfortable if used for extended periods.
 - Leather and cloth gloves that only have “dots” of nitrile, natural rubber, or polychloroprene on the palm for grip will not offer comparable protection.
- **Disinfection regime between uses:**
 - **Cloth masks/face coverings and gloves should be washed and dried between each use, with detergent and the warmest water possible, in accordance with CDC guidelines for cleaning and disinfecting soft (porous) surfaces.^{xxxviii} It is safe to launder these items with regular laundry.**
 - **While filtering facepiece respirators (FFRs), like N95s, are meant to be disposed after a single use, FFR decontamination and reuse may be needed during times of shortage to ensure continued availability. CDC offers a variety of methods to safely decontaminate FFRs.**
 - **Ultraviolet germicidal irradiation (UVGI), vaporous hydrogen peroxide (VHP), and moist heat showed the most promise as potential methods to decontaminate FFRs.^{xxxix}**
 - **Select a disinfection method that has the lowest chances of affecting structural integrity of the item. Refer to manufacturer’s cleaning instructions, CDC resources, and/or other research to determine how many times a mask/face covering can be disinfected before structural integrity is compromised.**

Disinfectants

According to the CDC, “**Cleaning** refers to the removal of germs, dirt, and impurities from surfaces. It does not kill germs, but by removing them, it lowers their numbers and the risk of spreading infection. **Disinfecting** refers to using chemicals, for example, EPA-registered disinfectants, to kill germs on surfaces. This process does not necessarily clean dirty surfaces or remove germs, but by killing germs on a surface after cleaning, it can further lower the risk of spreading infection. If surfaces are dirty, they should be cleaned using a detergent or soap and water prior to disinfection.”^{xl} **For more information on cleaning and disinfecting transit vehicles and facilities, please also refer to APTA’s White Paper on Cleaning and Disinfecting Transit Vehicles and Facilities During a Contagious Virus Pandemic.**

Recommended Disinfectants

- The CDC recommends soap/detergent and alcohol (at least 70%) for inactivating the virus.
 - Soap/detergent is recommended for soft (porous) surfaces; CDC states:
 - “For soft (porous) surfaces such as carpeted floor, rugs, and drapes, remove visible contamination if present and clean with appropriate cleaners indicated for use on these surfaces. After cleaning: launder items as appropriate in accordance with the manufacturer’s instructions. If possible, launder items using the warmest appropriate water setting for the items and dry items completely.”^{xli}
 - Alcohol is recommended for hard (non-porous) surfaces and “electronics such as cell phones, tablets, touch screens, remote controls, and keyboards, remove visible contamination if present.”
 - Follow the manufacturer’s instructions for all cleaning and disinfection products.
 - If no manufacturer guidance is available, consider the use of alcohol-based wipes or sprays containing at least 70% alcohol to disinfect touch screens. Dry surfaces thoroughly to avoid pooling of liquids.”^{xlii}
 - Note that using alcohol as disinfectant is not cost-effective for treating large surface areas like the interior of a transit vehicle but can be very convenient for wiping down a desk or vehicle console.
- The EPA maintains a list of other [Disinfectants for Use Against SARS-CoV-2](#). All products on this list meet EPA’s criteria for use against SARS-CoV-2, the virus that causes COVID-19.^{xliii}
 - This list is continually updated with additional products and can be sorted to see the date that new products were added.
 - The list indicates the required contact time, whether the product is dilutable liquid, ready-to-use liquid, solid, wipe, or a fog/mist.
 - Required contact time affects the speed of disinfection procedure.
 - Manufacturers’ directions must be followed for the virus specified on the EPA website to ensure efficacy.
 - This website lists several products with sodium hypochlorite (bleach) as the active ingredient; a name-brand of bleach is not necessary to effectively inactivate the COVID-19 virus and it is low cost, however at the time this paper was written, national supply of bleach was running low.
 - If bleach is available:
 - CDC recommends “diluted household bleach solutions (at least 1000ppm sodium hypochlorite) can be used if appropriate for [hard] surface. Follow manufacturer’s instructions for application, ensuring a contact time of at least one minute, and allowing proper ventilation during and after application. Check to ensure the product is not past its expiration date. Never mix household bleach with ammonia or any other cleanser. Unexpired household bleach will be effective against coronaviruses when properly diluted.
 - **Prepare a bleach solution by mixing: 5 tablespoons (1/3rd cup) bleach per gallon of water or 4 teaspoons bleach per quart of water.**^{xliv}
 - **Bleach solutions can be prepared up to 24-hours prior to use without losing effectiveness.**

- Agencies should use the above COVID-19 disinfectants as an overlay to their existing cleaning regime. This includes continued use of products that **do not** inactivate the COVID-19 virus but are still geared toward controlling the growth of other microbes.
- Tradeoffs between methods of application and product availability of disinfectants on EPA List N: Disinfectants for Use Against SARS-CoV-2. The following table was generated from a small sample of products known to be available for immediate purchase:

Type	Dilutable Liquid (Spray or Wipe-on)	Ready-to-use Liquid (Spray or Wipe-on)	Towelette/ Wipe	Solid (Mix with H ₂ O; wipe-on)	Dry Fog
Surface Type	All Hard (Nonporous)	All Hard (Nonporous)	All Hard (Nonporous)	All Hard (Nonporous)	All Hard (Nonporous)
Products Researched	Ecolab Peroxide Multi Surface, Lysol Clean & Fresh, Diversey Phato 1:64	Lysol Bathroom Cleaner, Envirocleanse, Wex-Cide, Spray Nine, Mold Armor	Clorox and Lysol Residential Wipes; Caviwipes Bleach	Selectroicide	Halosil HaloMist and Tomi SteraMist
Contact Time	2-10 minutes	0.5-10 minutes	3-10 minutes	10 minutes	10-15 minutes
Availability of Alternative Products	Many Alternatives	Many Alternatives	Many Alternatives	Only 1 Alternative which is discontinued	Only 2 vendors; no EPA approved alternatives
Coverage when Ready to Use	~100 sq.ft. per gallon (only where directly applied)	~100 sq.ft. per gallon (only where directly applied)	~2 sq.ft. per wipe (only where directly applied)	~100 sq.ft. per gallon (only where directly applied)	~7,000 -11,500 cu.ft. per Gallon (Gets into all nooks and crannies)
Rough Cost When Ready for Use	~\$0.47 - \$2.62 per gallon	~\$13 - \$32 per gallon	~\$0.04 - \$0.14 per wipe	~\$1.62 - \$3.55 per gallon	~\$100 - \$150 per gallon
Rough Cost Per Unit of Coverage	\$0.0047 - \$0.03 per sq.ft. treated	\$0.13 - \$0.32 per sq.ft. treated	\$0.02 - \$0.07 per sq.ft. treated	\$0.0162 - \$0.04 per sq.ft. treated	~\$0.0087 - \$0.02 per cu.ft. treated
Current Availability with Vendors	Many Vendors; In-Stock	Many Vendors; In-Stock	Many Vendors; In-Stock	In-stock	Equipment in stock; Liquid 1-2-week lead

Note: This Guide does not advise which of these products are best for transit agencies or riders. Rather, it identifies the materials and methods still available at the time this Guide’s publication, which can be used until supply chain issues are resolved.

Special Considerations for “Fogging” Methods

- “Fogging” is a generic term often used to describe two distinct methods of applying a disinfectant to a given space: Dry fogging and fogging with a handheld device (e.g., electrostatic sprayer/gun).

- **Dry fog methods:**
 - Generate ultra-fine disinfectant droplets (approximately 5-15 micron) that can stay suspended in the air for extended durations until eventually landing on a surface.
 - This method does not require a technician to be in the vehicle or facility during the disinfection process.
 - Manufacturers of these devices provide paper test strips which can be placed throughout a given space and change color when sufficient chemical contact has occurred to achieve the manufacturer’s human coronavirus or SARS-CoV-2 kill claim.
 - The disinfectant solution for these foggers only has a claim for effectiveness against human coronavirus or SARS-CoV-2 when used with the manufacturer’s equipment.
- **Handheld device (e.g., electrostatic sprayers/gun) methods:**
 - Generate a wider range of disinfectant particle sizes (approximately 5-50+ micron); the larger particles fall out of the air to the floor or surfaces within a short distance in front of the sprayer.
 - This method requires employees to carry the equipment throughout a vehicle or facility for the duration of the disinfection process, which can expose those employees to other potential health hazards.^{xlv}
 - The EPA cautions “Unless the pesticide product label specifically includes disinfection directions for fogging, fumigation, or wide-area or electrostatic spraying, EPA does not recommend using these methods to apply disinfectants.”^{xlvi}
- **[Additional information on both methods of fogging can be found in APTA’s White Paper on Cleaning and Disinfecting Transit Vehicles and Facilities During a Contagious Virus Pandemic.](#)**

Procurement and Where to Buy:

- Agencies can check with their state government to see if they can “piggyback” on any existing vendor agreements to procure cleansers and disinfectants.
- **All transit agencies that receive federal funding may be eligible to purchase supplies via the GSA schedule**, which can help avoid a separate procurement process.
 - Agencies are encouraged to ask all vendors if they will offer GSA or other discounted prices.
 - Federal GSA has additional [guidance on purchasing assistance](#) related to the pandemic.
- Agencies can make supply chain resiliency easier through peer-agency discussions to determine:
 - What products neighboring agencies and other organizations prefer using
 - Other agencies’ contingency plans
 - Backup vendors
 - Using the same cleaning and disinfectant products as neighboring agencies and organizations (who may have a surplus) can enable potential “borrowing” of products in an urgent situation.

FINANCIAL SUPPORT AND DOCUMENTATION

It is important for agencies to document fiscal impacts of the pandemic to ensure preparedness for Coronavirus Aid, Relief, and Economic Security (CARES) Act. FTA is frequently updating guidance on the use of CARES Act funding. Consult the [FTA Frequently Asked Questions page](#) or your Regional FTA office for additional guidance as necessary.

CARES Act FTA Funding

The CARES Act is the largest economic relief bill in U.S. history, allocating \$2.2 trillion in support to individuals, businesses, and organizations affected by the Coronavirus pandemic and economic downturn. The CARES Act provides \$25 billion of Federal Transit Administration (FTA) formula funding to public transit agencies for operating and capital expenses related to the COVID-19 public health emergency. This is nearly twice as much funding as the entire FTA appropriations in fiscal year (FY) 2020 and is almost three times the amount authorized for public transportation in the American Recovery and Reinvestment Act of 2009 (ARRA).

All expenses that are normally eligible under the 49 U.S.C. §5307 Urban Area Formula Grants and the §5311 Rural Area Formula Grants programs are eligible under the CARES Act. Expenses that were incurred on or after January 20, 2020, are generally considered by FTA to be in response to economic or other conditions caused by COVID-19 and thus eligible under the CARES Act. Funds remain available until expended, although FTA urges agencies to spend funds expeditiously to help prevent, prepare for, and respond to the COVID 19 pandemic and offset financial losses due to lost farebox revenues and lower tax receipts.

CARES Act Funding Requirements

Many of the normal restrictions on use of FTA formula funds have been waived. Under the CARES Act:

- Transit agencies serving large Urbanized Areas (UZAs) over 200,000 population may use §5307 funds for operating expenses.
- FTA funding is available at a 100% Federal share to maintain operations and for capital expenses for emergency relief.
- There is no limit on what percentage of funds may be used for operating expenses – 100% of CARES Act funds may be used for operating expenses by any transit agency of any size.
- The limit on using up to 10% or 20% of a recipient's apportionment of §5307 or §5311 funds for paratransit service in accordance with the Americans with Disabilities Act does not apply.
- Funds used to pay for operating expenses do not need to be included in the Transportation Improvement Program or the Statewide Transportation Improvement Program.

Other normal requirements for §5307 and §5311 formula grant programs do apply:

- Grant funds will be applied for and awarded through the Transit Award Management System (TrAMS).
- States and UZAs must update their Split Letters and Suballocation Letters to include funds made available under CARES Act and expeditiously upload them to TrAMS

- All labor protections under 49 U.S.C. §5333 apply and Department of Labor certification is required.
- Capital funds that are used for projects involving substantial functional, location, or capacity changes must be included in the TIP/STIP.
- States are required to use at least 15% of §5311 formula grant funds for intercity bus transportation, unless the Governor certifies, after consulting with affected intercity bus service providers, that the intercity bus service needs of the State are being adequately met.

Operating and Capital Expenses Eligibility under CARES Act

All operating activities that occurred on or after January 20, 2020 – after fare revenues are netted out – are eligible operating expenses. These include:

- Operator Salaries
- Fuel
- Items having a useful life of less than one year (including PPE and cleaning supplies)
- Administrative leave for employees due to reductions in service or required for quarantined workers
- Using public transportation assets for non-transit activities such as meal or grocery delivery
- Exclusive special-purpose trips that serve critical community needs (such as providing transportation for schoolchildren to meal sites)
- Charter service in response to the COVID-19 emergency may be provided for up to 45 days without a waiver
- All other operating activities described in §5307 guidance circular 9030.1E, Chapter IV or §5311 guidance circular 9040.1G, Chapter III
- FTA has also clarified eligibilities regarding third-party contracts, including eligibility for employees providing operations or maintenance services that are placed on administrative leave under certain conditions

Emergency Relief Provisions

In addition to CARES Act funding, FTA has expanded the eligibility of federal assistance available under FTA's Emergency Relief Program to help transit agencies respond to COVID-19 in states where the Governor has declared an emergency.

All transit providers can now use federal formula funds under the §5307 and §5311 grant programs for emergency-related capital and operating expenses. This eligibility includes the provision of personal protective equipment or special-purpose trips.

FTA also established an Emergency Relief docket that allows transit providers in states where the Governor has declared an emergency related to COVID-19 to request temporary relief from federal requirements under 49 U.S.C. Chapter 53 as well as any non-statutory FTA requirements.

Some federal requirements include specific provisions regarding emergencies and thus will not require a waiver under the Emergency Relief docket. For example, federal procurement standards (2 CFR Part 220.317-326) permit noncompetitive sole source procurement when emergency circumstances do not permit the delay that would result from a competitive solicitation.

Tracking Expenses Associated with COVID-19

Agencies should consider setting-up one or more special charge codes in their accounting system to track COVID-19 related operating and capital expenses for:

- Potential reimbursement under CARES Act grants
- Documenting where a waiver of FTA regulatory requirements may be required to help maximize reimbursement of expended funds
- Documenting damages related to COVID-19 that may be eligible in the event that future FEMA grant opportunities become available

RESOURCES

- [Johns Hopkins COVID-19 Map](#) (current statistics on COVID-19 cases)
- [APTA COVID-19 Homepage](#)
- [APTA COVID-19 Shared Practices/Documents](#)
- [APTA White Paper on Developing a Contagious Virus Response Plan](#)
- [APTA White Paper on Cleaning and Disinfecting Transit Vehicles and Facilities During a Contagious Virus Pandemic](#)
- [CDC Guidance for Businesses and Employers](#)
- [CDC Guidance for Mass Transit Operators](#)
- [CDC Guidance for Using Transit](#)
- [FTA COVID-19 Resources and Frequently Asked Questions](#)
- [OSHA Guidance on Preparing Workplaces for COVID-19](#)
- [EPA List-N: Disinfectants for Use Against SARS-CoV-2](#)

PICTURES

Images in this document were sourced from the social media accounts of the public transit agencies depicted, unless otherwise noted in the image's caption.

ENDNOTES

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- ⁱ <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/how-covid-spreads.html>
- ⁱⁱ <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/how-covid-spreads.html>
- ⁱⁱⁱ <https://www.cdc.gov/coronavirus/2019-ncov/faq.html>
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