

Addressing COVID-19 & Overheating in Non-Profit Housing

May 13, 2020



BC HOUSING



CITY OF
VANCOUVER



BCNPHA

BC Non-Profit Housing Association

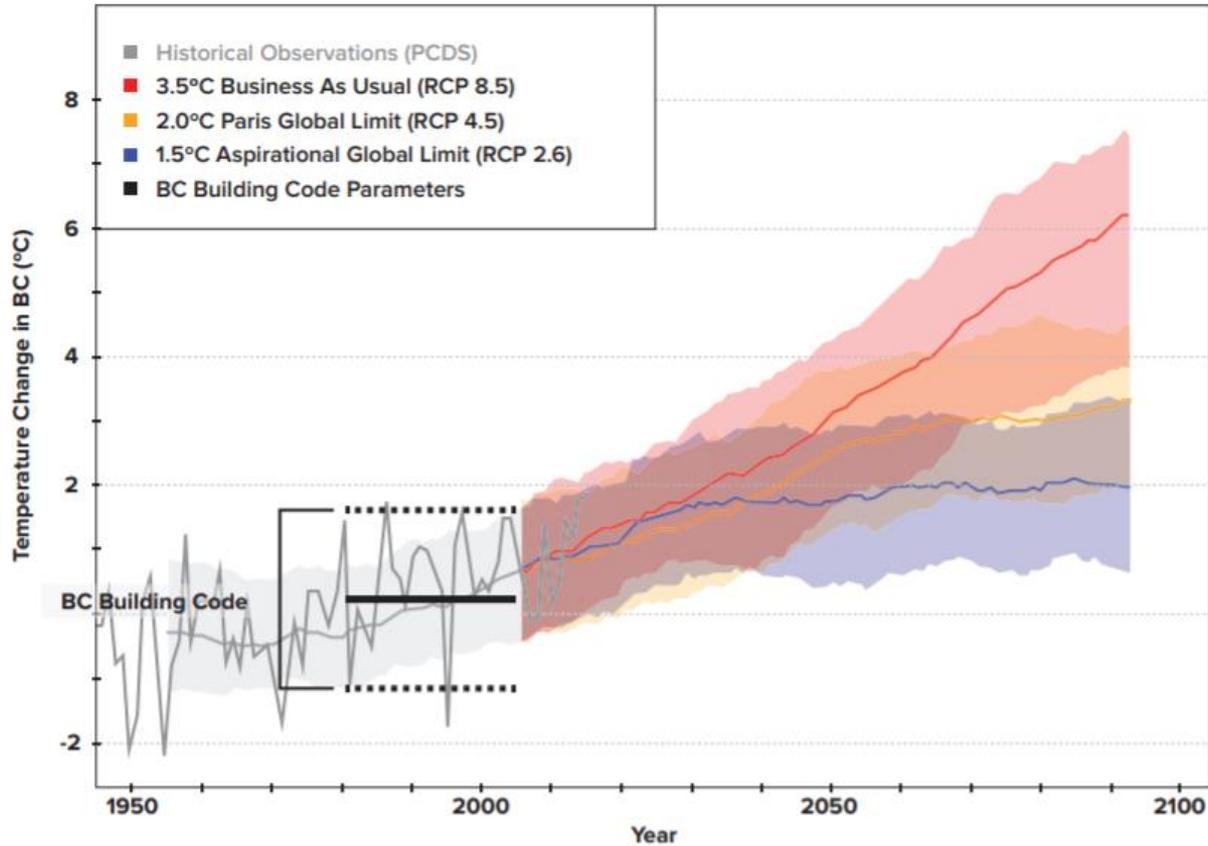
	Outline	
1. Introduction	Welcome/logistics/introductions	Jackie Kanyuk, BCNPHA
2. Context & CoV response	<ul style="list-style-type: none"> • Climate projections • Risks • Preparations at the City of Vancouver 	Tamsin Mills, City of Vancouver
3. Metro Van Case study	<ul style="list-style-type: none"> • Extreme heat response, Metro Van Housing • Existing tools & resources 	Ulryke Weissgerber, Metro Vancouver
4. Low/no- cost strategies	<ul style="list-style-type: none"> • Low cost/no cost strategies for single family and low-rise buildings 	Chris Higgins, City of Vancouver
5. COVID-19 Guidance	<ul style="list-style-type: none"> • COVID-19 transmission • Cleaning and disinfection • Considerations for setting up cooling rooms 	Angela Eykelbosh, National Collaborating Centre for Environmental Health, BCCDC
6. Resources	<ul style="list-style-type: none"> • BC Housing tools and resources 	Jackie Kanyuk
7. Closing Remarks	<ul style="list-style-type: none"> • Q+A and closing remarks 	Jackie Kanyuk

A Changing Climate

Hotter, Drier Summers
with air quality issues

- A number of temperature records were broken on Tuesday August 29, 2018:

- **Vancouver Harbour 30.5 C (28.9 C in 1967)**
- **Kamloops 38.5 C (35.6 C in 1915)**
- **Princeton 36 C (35 C in 1897)**
- **Sparwood 32.1 C (30.6 C in 1972)**
- **Williams Lake 31.9 C (31.1 C in 1967)**
- **Pemberton 35.1 C (34.4 C in 1974)**
- **Whistler 31.8 C (31.1 C in 1996)**



 **58%**
decrease in
snowpack

WHICH MEANS

increased
risk of
summer
drought 

minimum
temp goes
up by
4.8° 

 **29%**
reduction
in home
heating
needs

increased risk
of coastal
flooding



because of king tides
and stormy weather

Warmer, wetter winters

Hotter, drier summers



more
frequent
heat
waves

hottest
days
even
hotter



WHICH MEANS

increased
health risks
to vulnerable
people

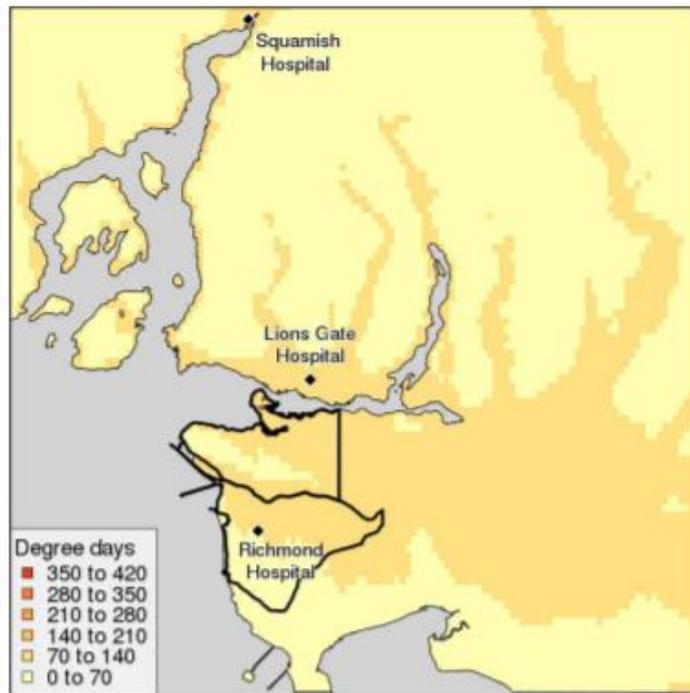


20%
less rain

increased
water
restrictions



Cooling Degree Days – Past



Cooling Degree Days – Future (2050)

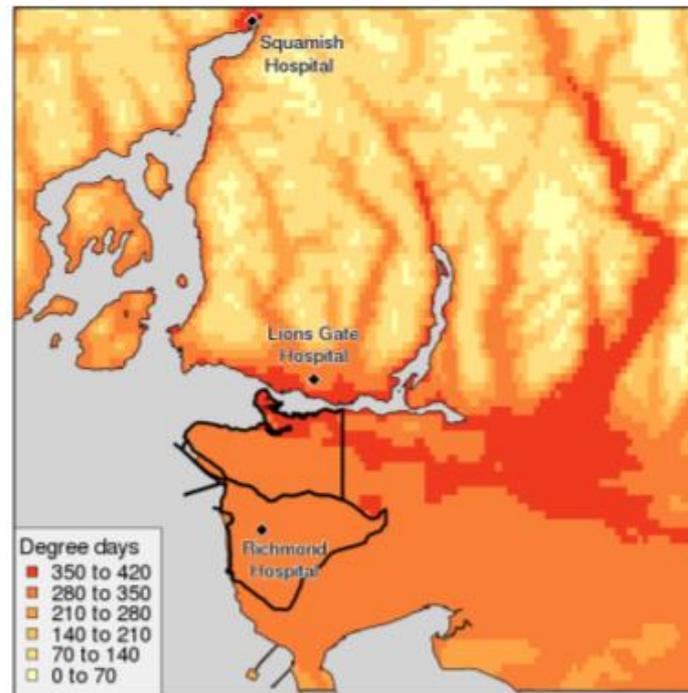
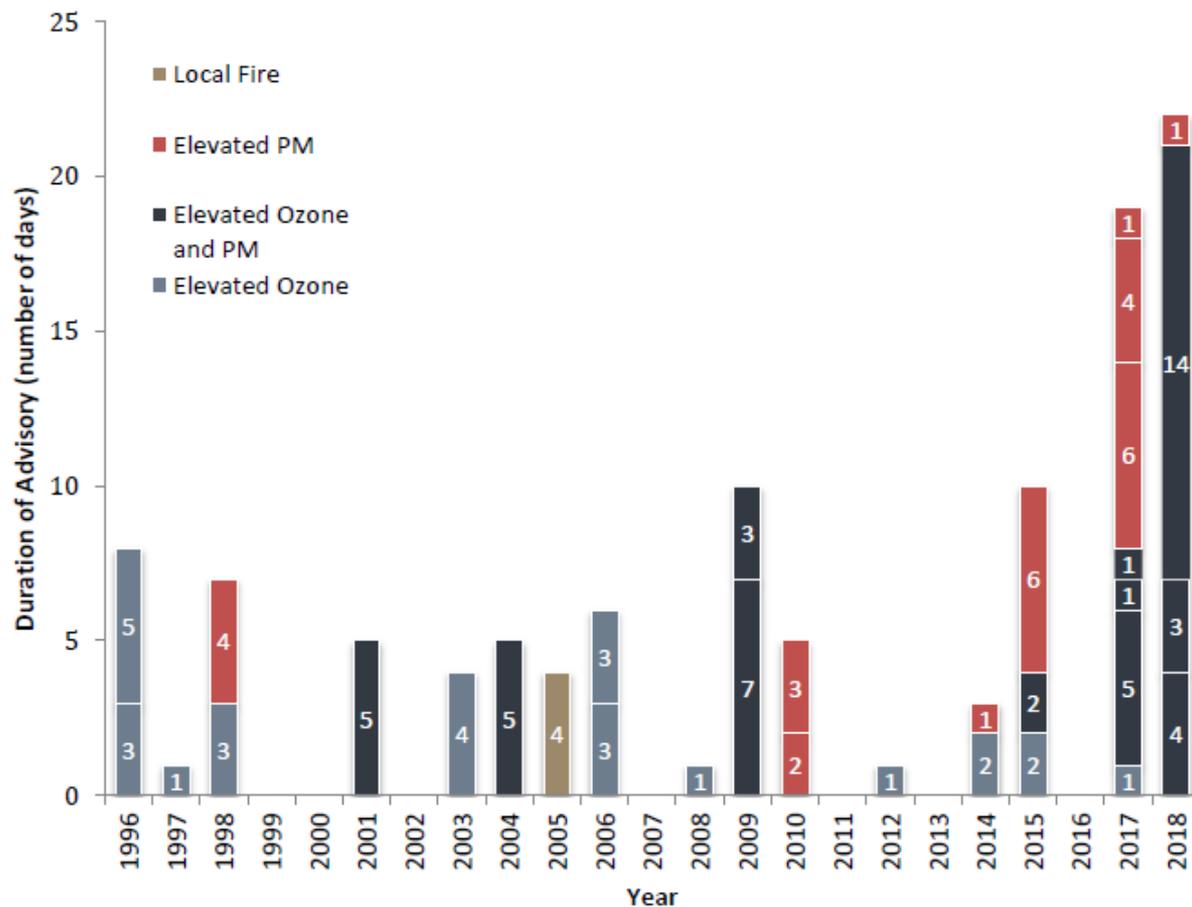


Figure 7: Cooling Degree Days – Past and Future (2050)

Air quality advisories 1996-2018



Data in this graph was provided by Metro Vancouver.

“authorities expect [a] 120 percent increase in daily physician visits and an 80 percent rise [in] asthma prescription medications dispensed at pharmacies, according to the BC Centre for Disease Control.”

- The National Post (August 21, 2018)



When it rains it pours

Longer Growing Season



BC Climate Projections 2050

- Van. Isl.: Similar to Vancouver projections
- Interior and Cariboo: also hotter and drier with a longer dry season and increased risk of wildfire.
- North: Increased precipitation in summer but with warmer temperatures
- Streamflow changing: less summer precip., reduced snowpack, earlier / more rapid snowmelt

BC Climate Risk Assessment

Summary of Risk Assessment Rankings

RISK EVENT	PRESENT-DAY LIKELIHOOD	2050 LIKELIHOOD	CONSEQUENCE	RISK SCORE AND RATING
 Severe wildfire season	3	4	4.5	18.0 High
 Seasonal water shortage	4	5	3.4	16.9 High
 Heat wave	3	4	3.6	14.5 High
 Ocean acidification	2	5	2.8	13.8 High
 Glacier mass loss	1	5	2.5	12.5 High
 Long-term water shortage	3	3	4.0	12.0 High

Heat Event Preparedness and Response

Extreme Heat IRG

- Event Escalation & Notification
- Preparedness Activities
- Response Activities
 - Increase access to drinking water
 - Provide shelter from heat
 - Monitor outdoor spaces & SROs
 - Messaging
- Tools
 - Notification templates & agendas, contact list, key messaging by topics, web links, handouts, etc.

4.3 Monitoring Outdoor Spaces For People Suffering Heat-Related Illness

Function	Activity	Department/Agency		Special Weather Statement	Heat Warning
		Lead	Support		
Increase Vigilance for People Outside	Activate VVC to patrol at risk neighbourhoods to advise vulnerable groups on locations to water fountains and to report malfunctioning water fountains	OEM	ENG (OPS)	•	•
	Perform drive-by in parks and in commercial areas to assist people exhibiting signs of heat-related illness and to encourage people to look after each other (where operationally feasible).	VFRS		•	•
	Patrol neighbourhoods and nearby parks (particularly the DTES) by Neighborhood Policing Officers and other officers to refer vulnerable populations to nearby water access points	VPD		•	•
	Increased park patrols by Park Rangers to locate and assist people suffering from heat-related illness	PARIS		•	•
Increasing Hours of Operations for Spray Parks	Extend wading pool and spray park hours of operations (dependent on approvals)	PARIS		•	•

Long Term Planning for Heat

- Pilot clean air shelters
- Building bylaw changes
- Adding water fountains
- Temporary spray parks
- Improving shade where needed
- Non-market housing - temporary and long term fixes



Thank you

Tamsin.mills@vancouver.ca
Sustainability Group
City of Vancouver



Metro Vancouver Housing

EXTREME HEAT

Ulryke Weissgerber

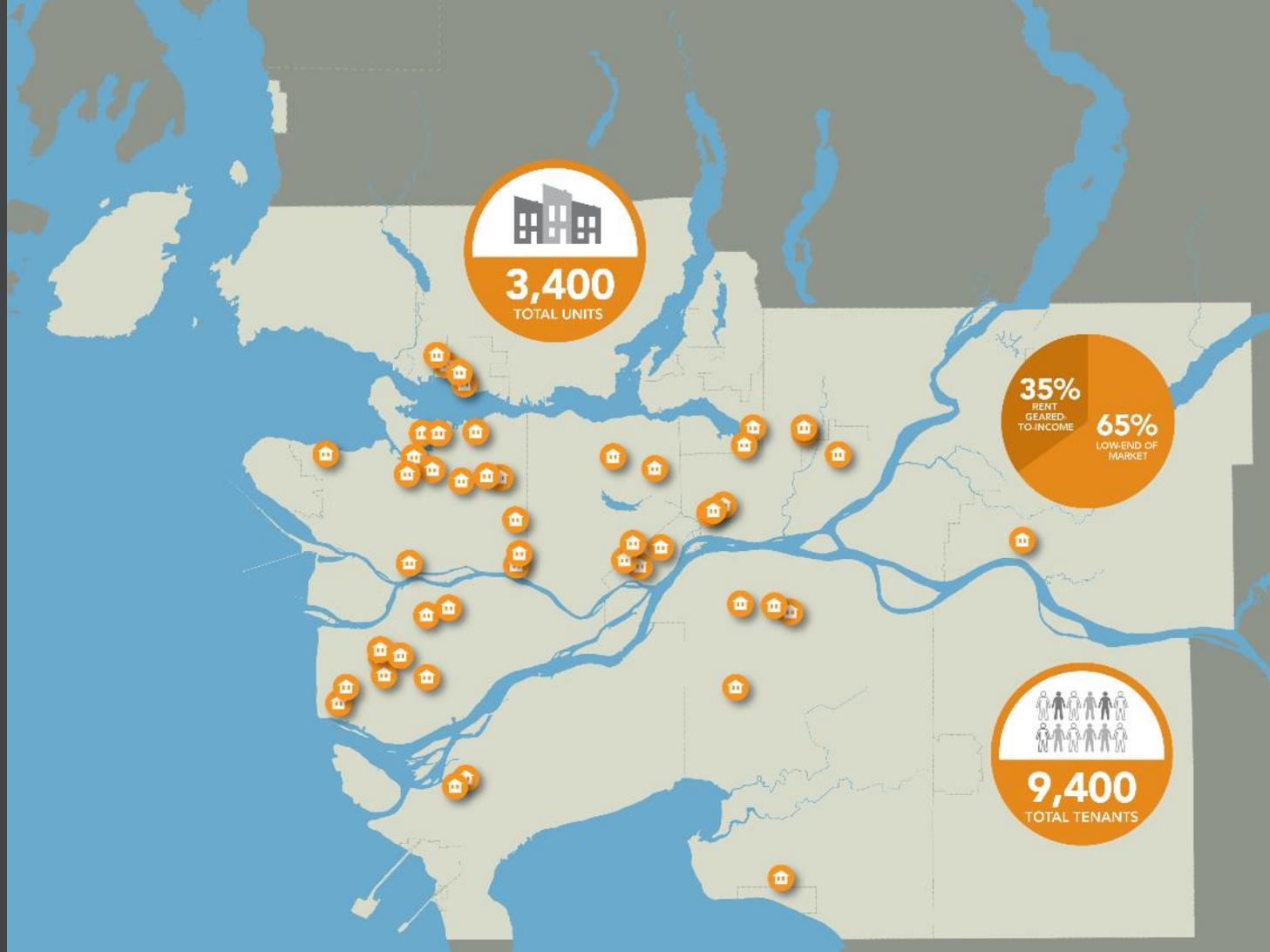
DIVISION MANAGER, AREA OPERATIONS

BC Non Profit Housing Association Webinar May 13, 2020



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SERVICES AND SOLUTIONS FOR A LIVABLE REGION

Metro Vancouver Housing Sites



For Staff

Awareness

Keep Your Cool

Safety tips for working outdoors in the sun and extreme heat

When you work outdoors in summer, you must take steps to protect yourself from heat-related illness and the sun's harmful ultraviolet radiation (UV).



DRINK UP

- Take a half-gallon (or more) of water every 15 to 30 minutes, even if you are not thirsty when you start your day.



ACCLIMATIZE

- Take time to get used to working outdoors with your equipment before you start your full and hot days.



COVER UP AND PROTECT

- Wear light-colored clothing to keep you cool. A long-sleeved shirt and long pants with a Sun Protection Factor (SPF) of at least 30 and 100% UVA/B protection keep you 2 hours of extra shade.



SHIELD FROM SUN

- Set up shade structures or use umbrellas. But as a good rule, shield your face from the sun's rays with sunglasses on a nice day.



TIME IT RIGHT

- Avoid the sun at midday, especially between 10 a.m. and 4 p.m. when the sun's rays are strongest.



COOL OFF

- Take breaks to rest and cool off in the shade or in a cool building or air-conditioned area.

CCOHS 1-800-668-4284 www.ccohs.ca

<https://www.ccohs.ca/products/posters/pdfs/keepyourcool.pdf>

Neighbourhood Information

Tips to Beat the Heat!

KEEP HYDRATED
Drink lots of water!



LIMIT

Non-essential strenuous activity during the hottest parts of the day



AVOID
Alcohol and caffeine as they can make dehydration worse



SOAK

Take a cool shower or bath to help you cool down



BE COOL

Stay indoors and make use of fans and air conditioners



REST

Make sure you get enough sleep, and rest if you are feeling tired



CHECK ON OTHERS

Including children, elderly people with medical conditions and pets



EAT COOL

Try eating cold foods such as salads and fruits



SEEK RELIEF

When outside



WEAR COOL

Wear lightweight clothing and use sun screen

WATCH OUT... BE ON THE LOOKOUT FOR ANY SYMPTOMS OF HEAT-RELATED ILLNESS OR CONDITIONS
www.healthdirect.gov.au/heat-related-illness-conditions

See a doctor if you are not feeling well, and in a medical emergency call 911

Places to cool off near **Kingston Gardens** :

Guildford Recreation Centre 15105 105 Ave, Surrey (604) 502-6360

Hours of operation: Mon to Fri: 6am-10pm Sat and Sun: 8am-8pm

Cooling Centre

Date: June 13, 2019
To: **All Residents, Cedarwood Place**
From: Lisa Jacques, SW Area Manager
Mary Ricci, Tenant Programs & Services Supervisor
Cc:
RE: **Cooling Zone at Cedarwood Place**

Metro Vancouver Housing is pleased to provide a cooling zone in the Cedarwood Place Community Room during the summer months for residents to enjoy.

The air conditioning unit will run from 9:00 am to 10:00 pm daily.



During extreme heat events, residents are reminded to drink lots of water, wear lightweight clothing, limit strenuous activity, stay indoors and enjoy the cooling room.

To ensure the cooling zone works properly:

- Do not to tamper with the controls on the air conditioning unit
- Keep doors to the room closed at all times to keep the cool air in.

If temperature adjustments are required, please let us know.

Your comments are always welcome.

Daily Safe Checks

- Program is voluntary, 100% participation not required
- Interested tenants place a hotel style card on the outside of their door
- The card is removed on waking
- Tenant volunteers check each door at a pre-appointed time every day (around noon)
- If a card is still on a door, attempts to reach the tenant are made (by knocking on the door, phoning, and contacting site staff)
- Residents just that if lonely and wanting a visit, leave the card on the door



Thank you



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SERVICES AND SOLUTIONS FOR A LIVABLE REGION



Low-Rise Residential: Lower Cost Actions to Improve Air Quality

CITY-WIDE
BUILT RESIDENTIAL
FLOOR AREA
(2014-18)

BC ASSESSMENT (2019)

LOW-RISE
IS NEARLY
70%

55%
SINGLE-
FAMILY

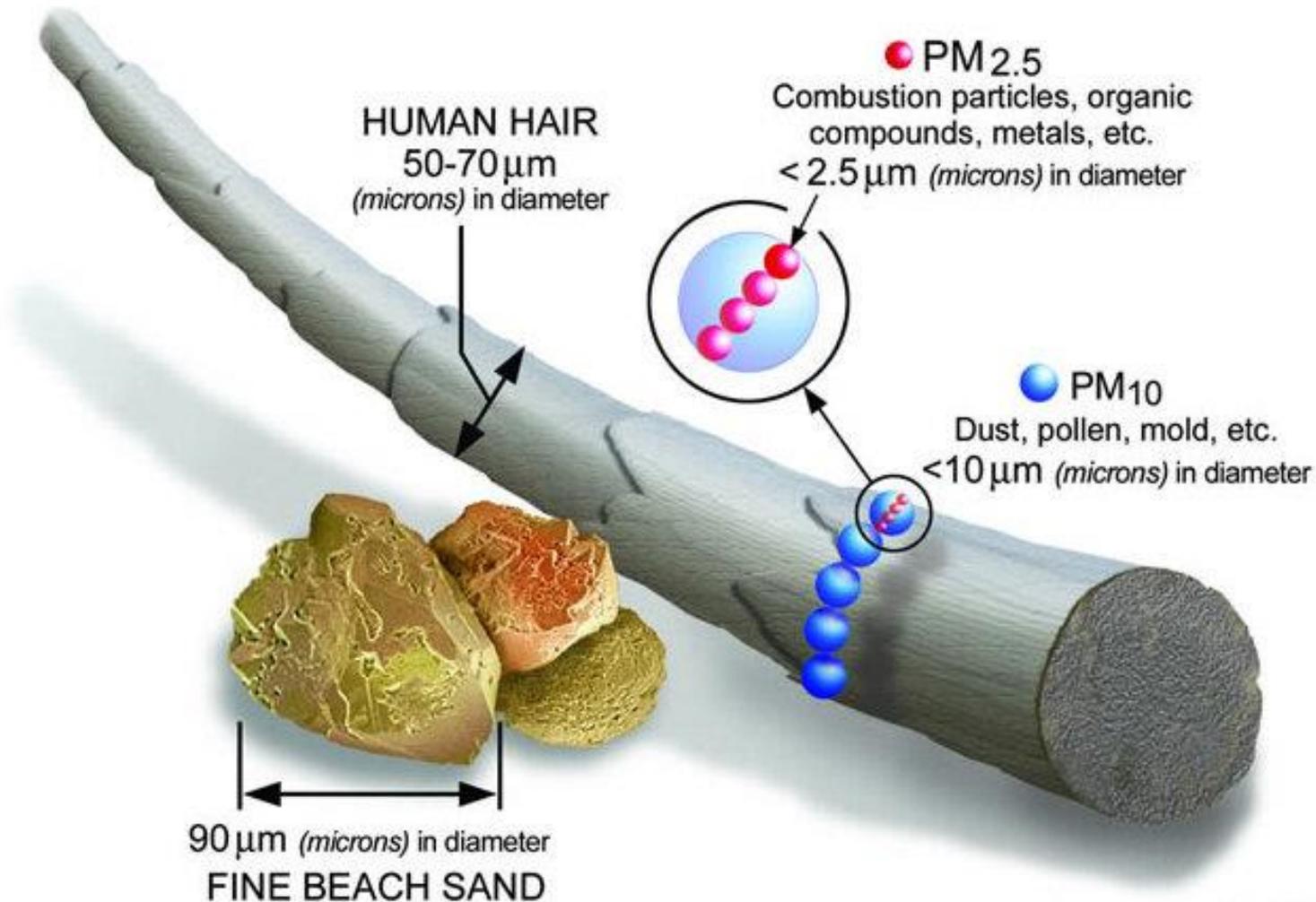
9%
DUPLEX, TH, RH,
MCD

6%
MIXED-USE

26%
MID-/HIGH-RISE
(>4 STOREYS)

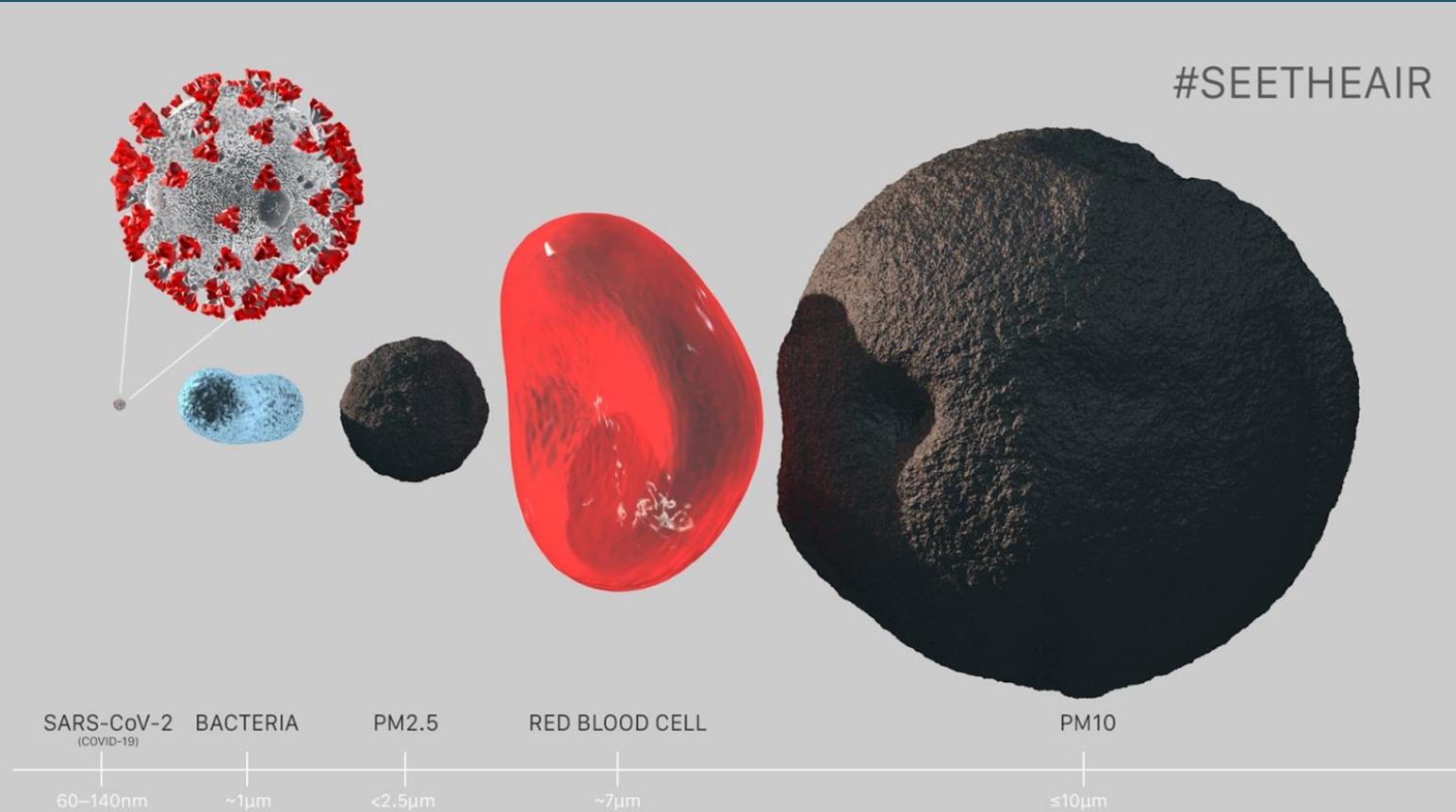
5%
LOW-RISE
(≤4 STOREYS)

What is PM 2.5?



What is PM 2.5?

#SEETHEAIR



Where does PM 2.5 come from?

where does
PM_{2.5}
from?



Transportation



Construction



Burning for
agriculture



Household



Industrial
Factory

What is the MERV Scale

MERV Rating	Air Filter will trap Air Particles size .03 to 1.0 microns	Air Filter will trap Air Particles size 1.0 to 3.0 microns	Air Filter will trap Air Particles size 3 to 10 microns	Filter Type ~ Removes These Particles
MERV 1	< 20%	< 20%	< 20%	Fiberglass & Aluminum Mesh ~ Pollen, Dust Mites, Spray Paint, Carpet Fibres
MERV 2	< 20%	< 20%	< 20%	
MERV 3	< 20%	< 20%	< 20%	
MERV 4	< 20%	< 20%	< 20%	
MERV 5	< 20%	< 20%	20% - 34%	Cheap Disposable Filters ~ Mold Spores, Cooking Dusts, Hair Spray, Furniture Polish
MERV 6	< 20%	< 20%	35% - 49%	
MERV 7	< 20%	< 20%	50% - 69%	
MERV 8	< 20%	< 20%	70% - 85%	Better Home Box Filters ~ Lead Dust, Flour, Auto Fumes, Welding Fumes
MERV 9	< 20%	Less than 50%	85% or Better	
MERV10	< 20%	50% to 64%	85% or Better	
MERV 11	< 20%	65% - 79%	85% or Better	
MERV 12	< 20%	80% - 90%	90% or Better	Superior Commercial Filters ~ Bacteria, Smoke, Sneezes
MERV 13	Less than 75%	90% or Better	90% or Better	
MERV 14	75% - 84%	90% or Better	90% or Better	
MERV 15	85% - 94%	95% or Better	90% or Better	
MERV 16	95% or Better	95% or Better	90% or Better	HEPA & ULPA ~ Viruses, Carbon Dust, <.30 pm
MERV 17	99.97%	99% or Better	99% or Better	
MERV 18	99.997%	99% or Better	99% or Better	
MERV 19	99.9997%	99% or Better	99% or Better	
MERV 20	99.99997%	99% or Better	99% or Better	

Illustration Provided by LakeAir / www.lakeair.com

MERV Scale

MERV 6

MPR 300



lint



household
dust



pollen

MERV 8

MPR 600



lint



household
dust



pollen



dust mites
debris



mold
spores

MERV 11

MPR 1000



lint



household
dust



pollen



dust mites
debris



mold
spores



pet
dander



smoke



smog



cough/
sneeze

MERV 13

MPR 1900



lint



household
dust



pollen



dust mites
debris



mold
spores



pet
dander



smoke



smog



cough/
sneeze



bacteria



virus
carriers

Three Approaches

Single Room

Lowest cost if limited rooms are to be cleaned

Whole Home Furnace

A great option when replacing a furnace or fan coil

Whole home HRV

A great option on a new building of any size, filters can be outside the suite for easy maintenance

Cleaning a single room

Clean one room: Blue Air 211+



Cleaning a whole home

Lennox Clean Air 16





**Zehnder
ComfoWell
HRV filter**



 MITSUBISHI
ELECTRIC

 hi

Costing

Operating Costs

Higher MERV filters cost more, though a lower MERV filter could be used part year

MERV 11 Filter

\$30 a year for single family

MERV 16 filter

\$120 a year for single family

What it means to a homeowner/renter

Comfort at home

due to improved filtration

Ability to shelter in place

Less dust, with carbon systems a cleaner smell

Needed focus on filter change

Filters must be changed every 12 months



Thank You



COVID-19 Transmission and Precautions for Shared Spaces

May 13th, 2020

Angela Eykelbosh, PhD

National Collaborating Centre for Environmental Health

BC Centre for Disease Control

Angela.Eykelbosh@bccdc.ca

*Production of this presentation has been made possible through a financial contribution from the **Public Health Agency of Canada**.*





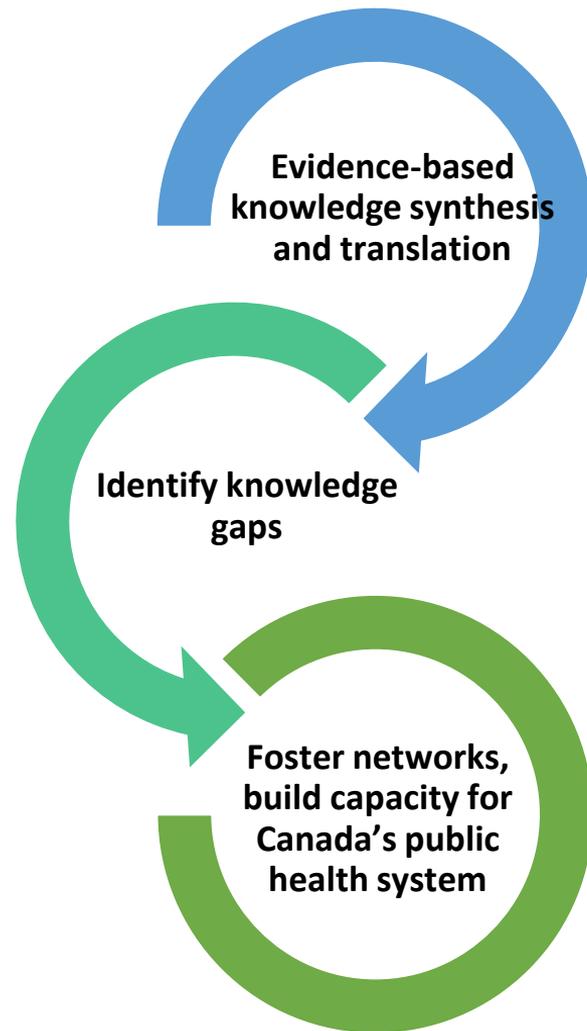
National Collaborating Centres
for Public Health

Centres de collaboration nationale
en santé publique



STRENGTHENING PUBLIC HEALTH ACROSS CANADA | APPUYER LA SANTÉ PUBLIQUE AU CANADA

Established by the Public Health Agency of Canada in 2005 to promote evidence-informed public policy.



COVID-19 Topic Page

- Review of 50+ public health websites
- Many env health topics
- Our documents:
 - Disease backgrounder
 - Building re-opening
 - Precautions for MURBs
 - Guide to masking
 - Outdoor safety

Environmental Health Resources for the COVID-19 Pandemic

[Built Environment](#) [Contaminants and Hazards](#) [Infectious Diseases](#)

The transmission of SARS-CoV-2, the virus that causes COVID-19, occurs primarily via direct contact with or respiratory droplets from an infected person. However, there is evidence to suggest that transmission via other modes – such as contaminated surfaces, aerosols, or contact with fecal material – is possible. As such, environmental health practitioners have a key role to play in promoting general hygiene measures as well as addressing unique information needs as the pandemic affects all aspect of public and private life.

This topic page has been created to promote key COVID-19 resources to environmental health practitioners and related professions. We are actively collecting and curating resources from more than 50 Canadian and international public health agencies, and will be promoting those resources via social media and by providing the essential resources on this topic page. This information is current to the date at the bottom of the page.

NCCEH Resources

- [An Introduction to SARS-CoV-2](#) (NCCEH 2020)

This *short reference guide* provides an introduction to the basic biology and transmission of SARS-CoV-2, the virus that causes COVID-19, and the spread of the virus.

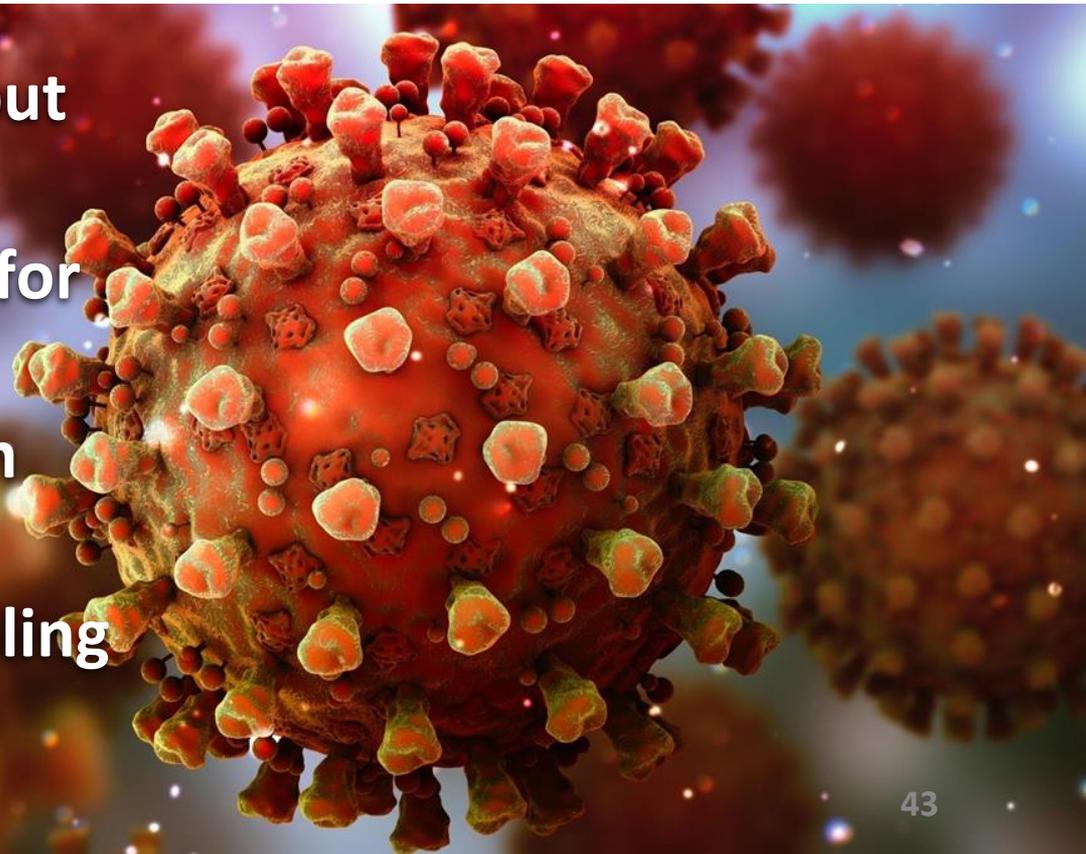
- [Managing Legionnaires' Disease in the COVID-19 Pandemic](#) (NCCEH, 2020)

Find it at our website:

www.ncceh.ca

Today

- What do we know about transmission?
- What does that mean for MURBs?
- Cleaning & disinfection guidance
- Risk mitigation for cooling centers



Modes of SARS-CoV-2 Transmission

- Evidence supports **5** potential modes.
- Direct **contact** and **respiratory droplets** are primary modes.
- Role of aerosols and fecal shedding still unclear



Direct Contact



Respiratory Droplets



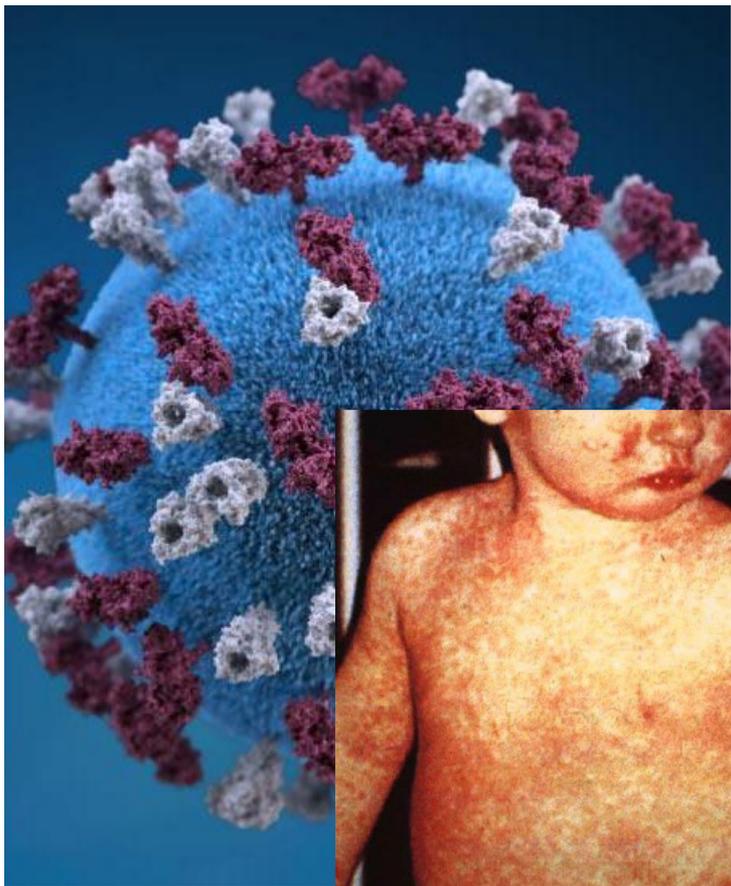
Indirect contact



Aerosols?



Fecal shedding?



Is the virus “airborne?”

- Means different things to different people
 - Transmits easily via an aerosol over longer distances/periods.
 - E.g., Measles: aerosol that remains suspend for ~2 hours.
 - Can catch it from someone even if you’ve never been in the same room as them.
 - Highly contagious: up to 90% of susceptible contacts will get it!

What's the difference?

Respiratory droplets

Aerosols

“Large” ($> 5 \mu\text{m}$) gobs of mucus and virus

Relatively smaller ($< 5 \mu\text{m}$)

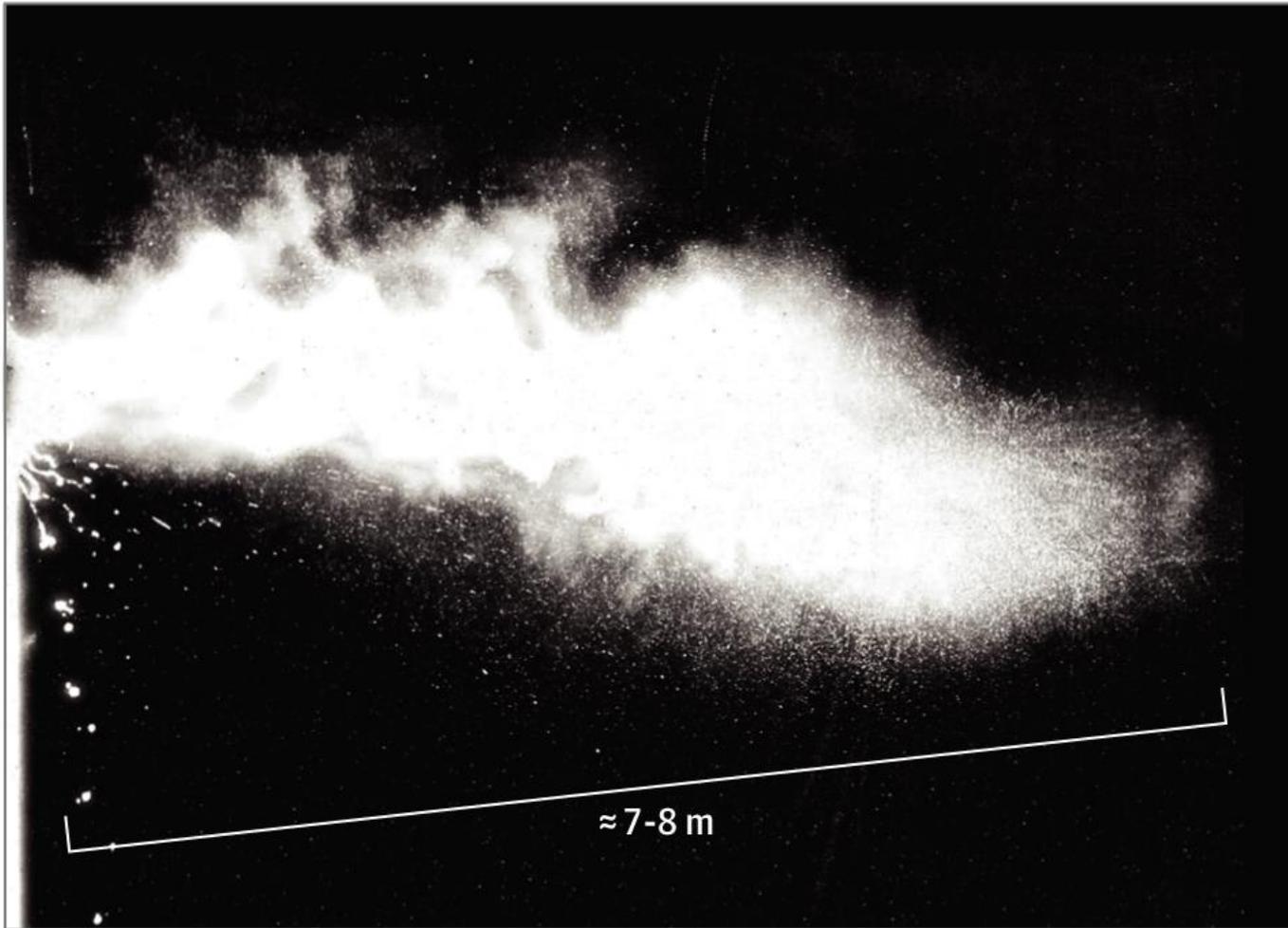
Expelled or generated when coughing, sneezing, talking, laughing, singing, and speaking.

Float a few seconds, fall within $\sim 1 \text{ m}$ ($\sim 2 \text{ m}$ for safety).

Float for minutes to hours, can travel further than 2 m .

Infect by contacting the eyes or mucus membranes (nose or mouth)

Are inhaled deeper into the lung



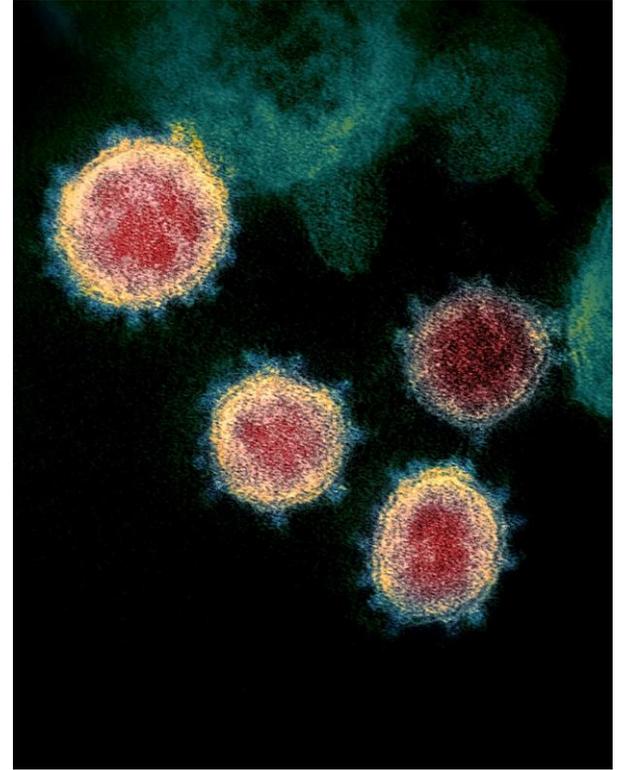
Multiphase turbulent gas cloud from a sneeze.

“Throughout the trajectory, droplets of all sizes settle out or evaporate at rates that depend not only on their size, but also on the degree of turbulence and speed of the gas cloud, coupled with the properties of the ambient environment...”

*Bourouiba et al. JAMA
MAR 26, 2020*

Is there a reason for concern?

- People DO generate aerosols:
 - Does every droplet carry the virus? What concentration of virus-laden aerosols are produced?
- Viral RNA HAS been found in the air in hospitals
 - How long does it remain infectious? How far does it travel?
- We CAN artificially generate viral aerosols that remain infectious for hours.
 - Does a sick person generate an aerosol like that, and when? How long does it remain infectious? How many viruses do you need to inhale to establish an infection?



Where are people getting sick?

- 75,000+ cases in China and US:
 - Most transmission is **within families**.
 - Household secondary attack rate varies (~0.5-20%), but is low.
- Outbreaks in residential buildings with **interpersonal interaction** and/or **shared facilities**:
 - Seniors homes, work camps, dorms, prisons.
- There are specific instances in which droplet/aerosol transmission has been implicated over a **short range**.
 - E.g., Guangzhou restaurant, Washington choir, South Korean call centre
- **MURBs? No evidence of outbreaks or long-range transmission to date.**



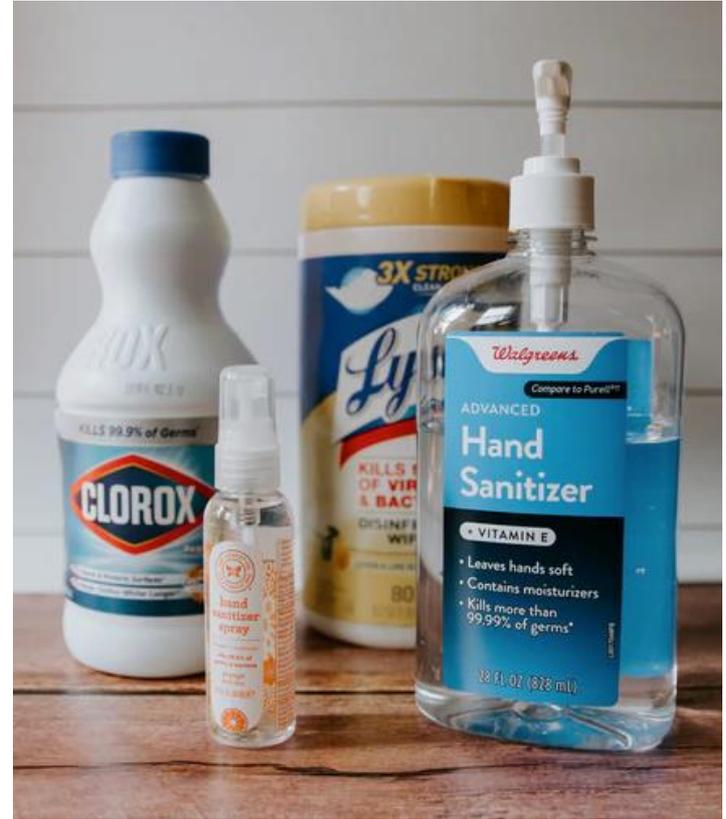
What does this all mean for MURBs???



- Need to keep people **away** from each other:
 - Close amenities, limit elevator/laundry access, discourage gatherings, electronic meetings.
- Need to enhance **cleaning**:
 - Sustainable enhanced cleaning protocol
 - Prevent cross-contamination in shared facilities
 - Close what you cannot clean
- Need to **communicate** with residents, reinforce health messaging
- Need to keep people **comfortable and healthy** in their homes

Cleaning and Disinfection

- Public Health Agency of Canada: manual cleaning with soap and water and/or a disinfectant product.
 - 2-in-1 products (wipes) only work on lightly soiled surfaces
 - If in doubt, there is a product list.
- High touch surfaces cleaned 2x a day
- Vacuuming: HEPA exhaust filter, diffuser
- Steam cleaning fabric items
- Removing what you can't clean easily
- Spraying and fogging: problematic
- **Do not mix products! Follow the label!**
- *NCCEH has a guide on disinfectants and household cleaning.*



PPE for Staff/Cleaners

- Should ALWAYS use PPE as per label on the disinfectant product
- Disposable or reusable products OK
 - Launder and dry hot
 - Gloves: use only for that purpose
- Do s/he need a mask?
 - Is the cleaner within 2 m of people?
 - Is s/he creating dust?
 - Does s/he wish to wear a non-medical mask to protect others?
- *NCCEH has a guidance doc on masking*



Current Guidance on Ventilation for MURBs

- In the building:
 - Consult an HVAC professional
 - Ensure systems is maintained and functioning as designed, run it 24/7, increase outdoor air
 - ***NCCEH Building Shutdown and Reopening page***
- In suites:
 - Increase ventilation (open windows).
 - Air cleaners (ASHRAE)



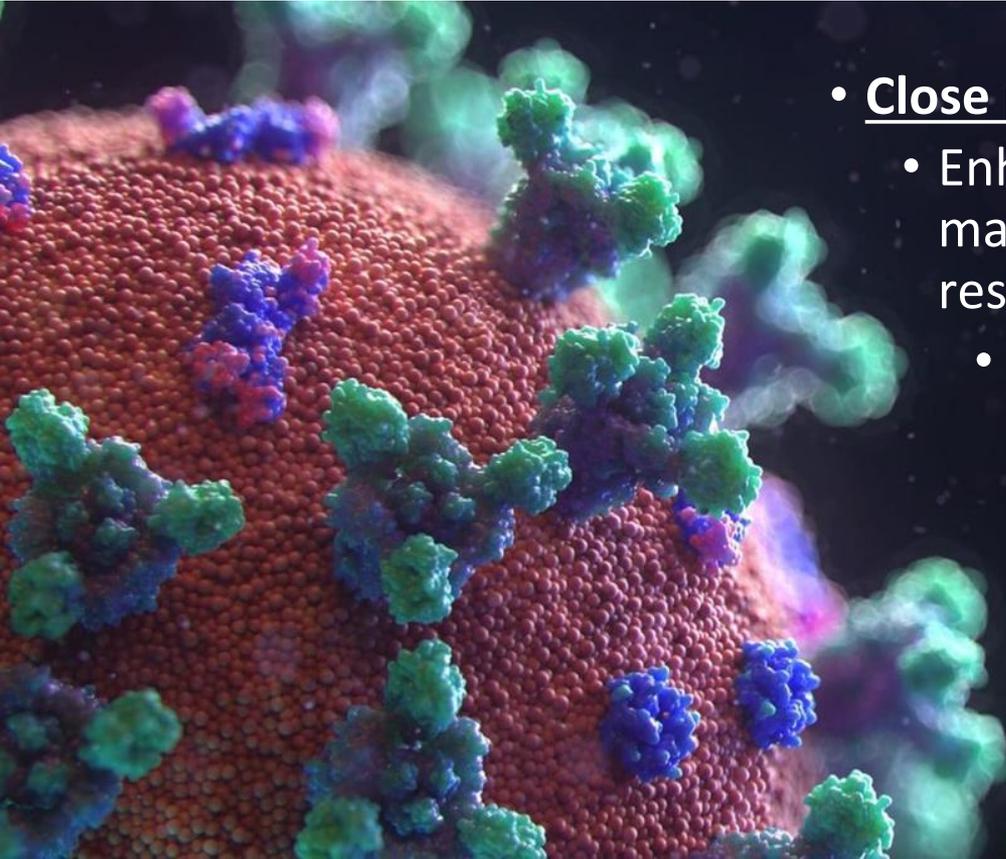
COVID-19, extreme heat, and smoke

- New normal: Public spaces used for cooling/cleaner air shelters may be closed or restricted
- Staying cool at home or in cooling rooms will be more important
- People who are most vulnerable to heat and smoke are ALSO most vulnerable to COVID-19.
- Sharing indoor spaces = some degree unavoidable risk
- Technical challenge: ventilation and recirculating air

COVID-19, extreme heat, and smoke

- So what should we do?
 - Support in-home cooling with equipment and wellness checks.
 - Outdoor cooling areas: transmission risk greatly decreased
 - Last resort: cooling rooms
- Cooling rooms have some degree of unavoidable risk, but save lives!
 - Cleaning and disinfection
 - Spaced out seating?
 - Masks if do not impede breathing?
 - Portable AC units and portable air cleaners?

Key Messages



- Close proximity is key for transmission.
 - Enhanced cleaning and HVAC maintenance are necessary to promote resident health and comfort.
 - Cooling rooms are riskier now; must manage the risks of extreme heat and social isolation against COVID-19 risk in shared spaces.
 - Must communicate with residents to ensure cooling rooms are used when necessary.

Extreme Heat Response: Resources



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BC Non-Profit Housing Association



What to do: A Checklist

Extreme Heat Checklist



You can do the following things to help reduce the amount of heat in your building:

- Check if heat is off in hallways
- Open windows in hallways and communal spaces (if safe) to create cross breeze at night and during the day if there is wind, otherwise keep these windows closed

You can do the following to make sure that tenants are aware of what to do in extreme heat situations:

- Identify community assets with air conditioning that your tenants can use if there is an emergency
 - These assets can include public spaces such as libraries, malls, community centres, etc.



What to do: A Checklist

Extreme Heat Checklist



- Have an information session with tenants and mention:
 - Keeping windows closed during the day and open at night
 - Closing window coverings during the day, if their unit has window coverings
 - Reducing use of heat generating appliances like stoves/ovens to reduce heat emitted
 - The list of places to go in the community that are clean air or cool air shelters

- Post tenant information communication sheets about Extreme Heat
 - Post the [Health Canada sheet](#) or BC Housing's [Tips to Beat the Heat](#) sheet in common areas

- If you have pre-identified tenants, check on them to make sure they are prepared for the heat
 - Pre-identification of tenants, especially vulnerable to extreme heat should be done in the spring
 - For more information about steps to prepare your building(s) for summer extreme heat in the spring time, see the Pre-Season Extreme Heat Checklist.



Communicate with Tenants

STAYING HEALTHY in the HEAT



Why is heat a HEALTH CONCERN?



Health Canada Santé Canada

HEAT EXHAUSTION

- Skin rash 
- Muscle cramps 
- Dizziness or fainting 
- Nausea or vomiting 
- Heavy sweating 

- Headache 
- Rapid breathing and heartbeat 
- Extreme thirst 
- Dark urine and decreased urination 

! If you experience any of these symptoms during extreme heat, immediately move to a cool place and drink liquids; water is best.

HEAT STROKE

- High body temperature 
- Confusion and lack of coordination 

- Dizziness/ Fainting 
- No sweating, but very hot, red skin 



What are the **SIGNS AND SYMPTOMS** of heat illness?

Tips to Beat the Heat!



KEEP HYDRATED
Drink lots of water!



AVOID
Alcohol and caffeine as they can make dehydration worse



LIMIT
Non-essential strenuous activity during the hottest parts of the day



SOAK
Take a cool shower or bath to help you cool down



BE COOL
Stay indoors and make use of fans and air-conditioners



REST
Make sure you get enough sleep and rest if you are feeling tired



CHECK ON OTHERS
Including children, elderly, people with medical conditions and pets!



EAT FRESH
Try eating cold foods such as salads and fruits



SEEK SHADE
When outside

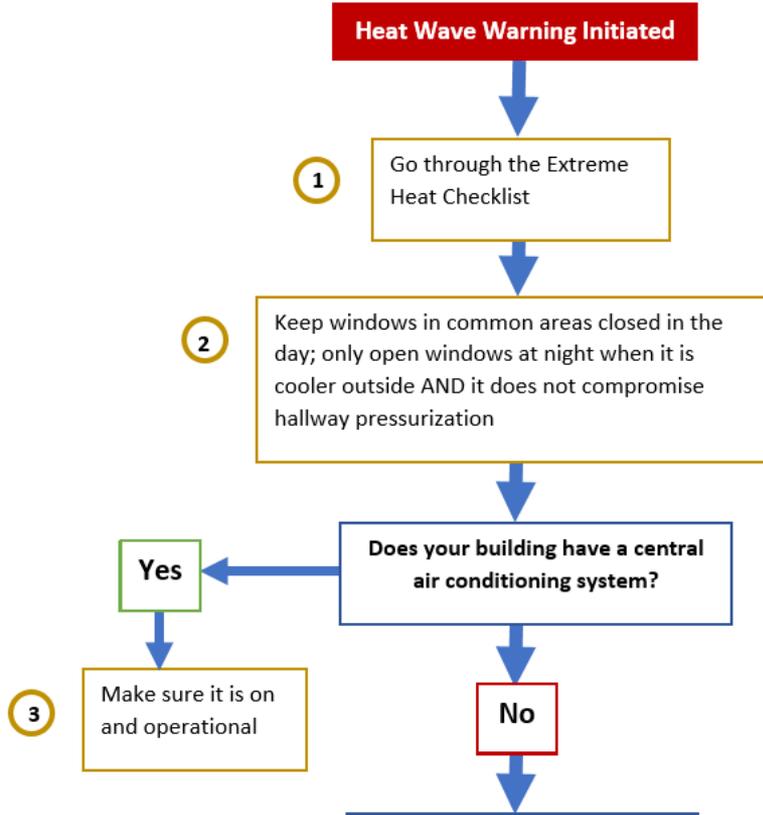


DRESS DOWN
Wear lightweight clothing and use sun screen





What to do: Extreme Heat Decision Tree

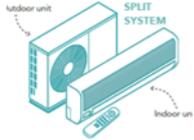
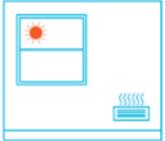




	WHAT TO LOOK FOR		WHAT TO DO		
HEAT STROKE	<ul style="list-style-type: none"> › High body temperature (103°F or higher) › Hot, red, or dry skin › Absence of sweat › Fast, strong pulse › Headache 	<ul style="list-style-type: none"> › Dizziness › Nausea › Confusion › Fainting (passing out) 	<ul style="list-style-type: none"> › Call 911 right away – heat stroke is a medical emergency › Move the person to a cooler place 	<ul style="list-style-type: none"> › Help lower the person's temperature with cool cloths or a cool bath › Do not give the person anything to drink 	HEAT STROKE
HEAT EXHAUSTION	<ul style="list-style-type: none"> › Heavy sweating › Cold, pale, and clammy skin › Fast, weak pulse › Nausea or vomiting › Muscle cramps 	<ul style="list-style-type: none"> › Tiredness or weakness › Dizziness › Headache › Fainting (passing out) 	<ul style="list-style-type: none"> › Move person to a cool place › Loosen tight clothes › Put cool, wet cloths on the person's body › Take a cool bath › Sip water 	<p>Get medical help right away if:</p> <ul style="list-style-type: none"> › The person is throwing up › Symptoms get worse › Symptoms last longer than 1 hour 	HEAT EXHAUSTION
HEAT CRAMPS	<ul style="list-style-type: none"> › Heavy sweating during intense exercise 	<ul style="list-style-type: none"> › Muscle pain or spasms 	<ul style="list-style-type: none"> › Stop physical activity and move person to a cool place › Drink water or a sports drink › Wait for cramps to go away before doing any more physical activity 	<p>Get medical help right away if:</p> <ul style="list-style-type: none"> › Cramps last longer than 1 hour › The person is on a low sodium diet › The person has a heart problem 	HEAT CRAMPS
HEAT RASH	<ul style="list-style-type: none"> › Red clusters of small blisters that look like pimples on the skin (often on the neck, chest, groin, or in elbow crease) 	<ul style="list-style-type: none"> › Intense scratching of inflamed skin/blisters 	<ul style="list-style-type: none"> › Keep the rash dry › Don't scratch the rash 	<ul style="list-style-type: none"> › Use powder (e.g. baby powder) to soothe the rash › Apply calamine lotion 	HEAT RASH



Strategies for Cooling Rooms: Mechanical

Type of Cooling	 Personal Fan Pedestal/Tower	 Portable Air Conditioners	 Window Mounted Air Conditioners	 Packaged Terminal Air Conditioners (PTACs)	 Heat Pumps	 Central Air Conditioning
Cost (Purchase and Maintenance)	\$\$	\$\$\$	\$\$\$	\$\$\$\$	\$\$\$\$	\$\$\$\$\$

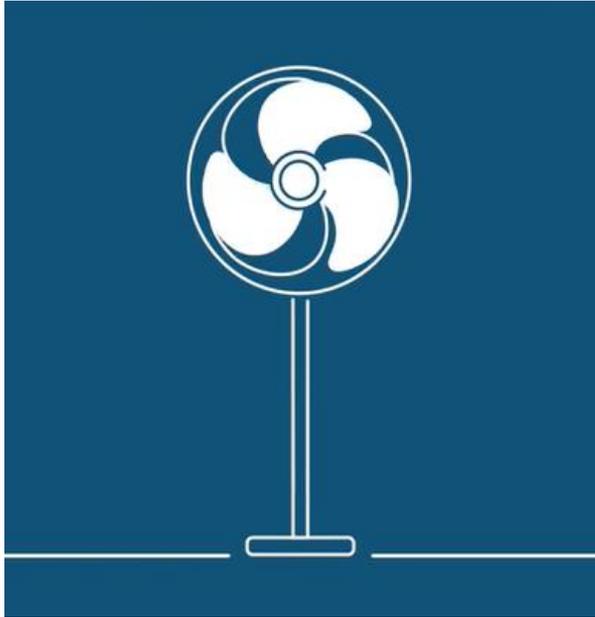
Efficiency

Least efficient

Most efficient



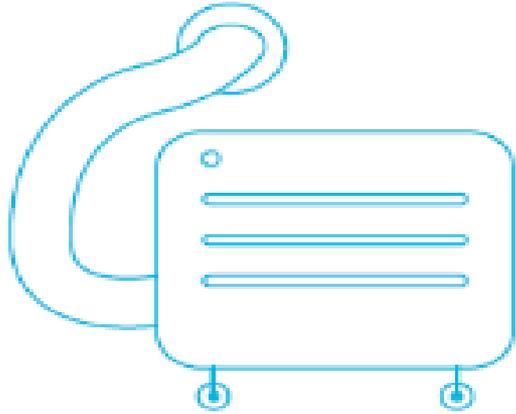
Mechanical Cooling: Fans



- ✓ Inexpensive
- ✓ Low running costs and energy usage
- ✓ Portable, adjustable airflow direction
- ✓ Provides temporary cooling when directed at the body
- × Does not lower room temperature
- × Single room use only



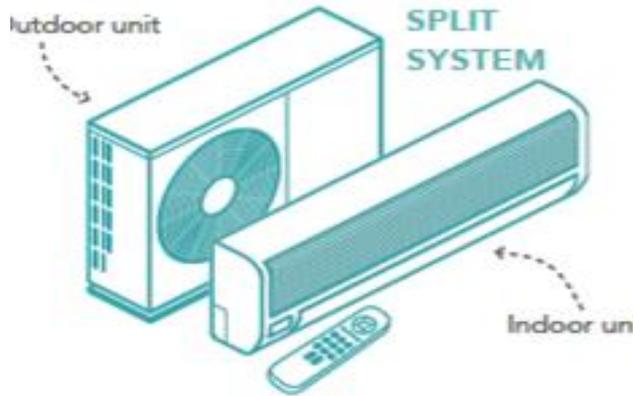
Mechanical Cooling: Portable Air Conditioners



- ✓ Portable
- ✓ Easy and inexpensive to install
- × Less efficient – discharges heat
- × Electric costs = 5x more than fan
- × Smaller spaces only
- × Noisy operation
- × Has placement restrictions
- × Could go missing
- × Water drainage/management issues
- × Requires frequent filter maintenance
- 🔍 2-hose models are more efficient than single hosed models



Mechanical Cooling: Mini Split Heat Pumps



- ✓ Provides cost savings: offers both heating and cooling
- ✓ Very efficient
- ✓ Quiet operation
- ✓ Low energy costs
- ✓ Requires only a small hole in wall
- ✓ May be used for multiple rooms
- ✗ Expensive to purchase and install



Resources for adding mechanical cooling

Cooling System
Assessment Guide



Cooling System Specifications



Air Conditioner Sizing Worksheet



Air Purifier Sizing Worksheet

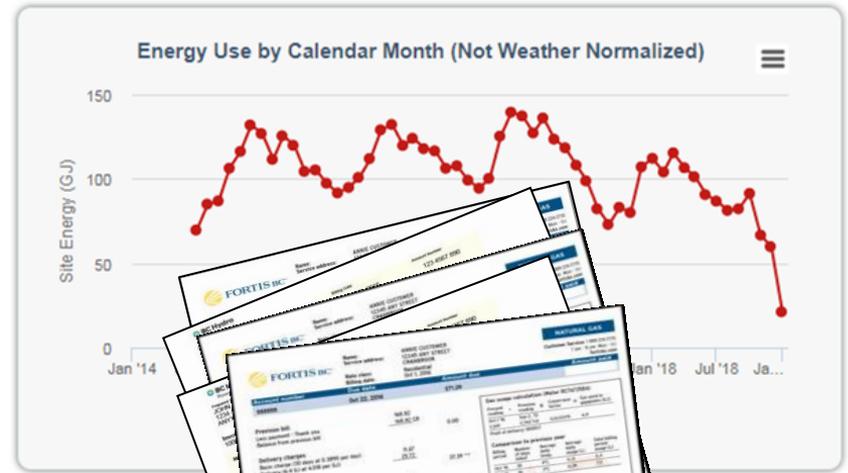


BC HOUSING



A Word on Energy Management and Cooling

- Mechanical cooling increases energy use
- Utility incentives are for energy *savings*
- No rebate programs to add cooling in multi-unit residential
- Contact energy@bcnpha.ca for help and more information





Contact BC Non-Profit Housing Association for help



Free Virtual Energy Audits



Capital Planning Services



Energy Management Services

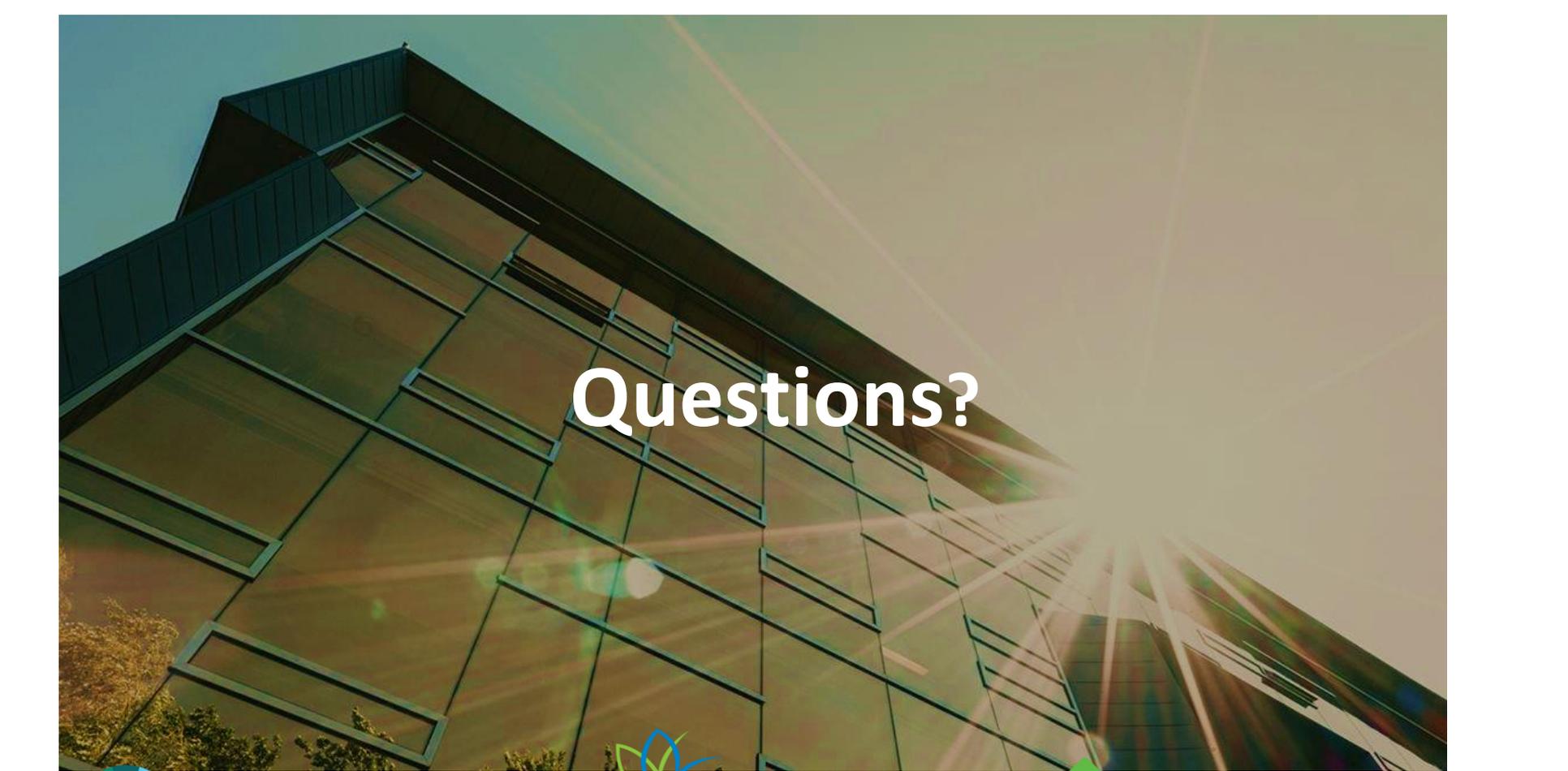


Support with Retrofit Funding



BCNPHA

BC Non-Profit Housing Association



Questions?



BC HOUSING



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BC Non-Profit Housing Association

Thank you for attending

Contact:

energy@bcnpha.ca



BC HOUSING



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