# % rzero Renew America's Schools

Webinar | Monday, May 13th

R-ZERO SYSTEMS, INC. | Proprietary and Confidential Information

# Agenda today

- Renew America Schools Grant Program
- Why Now?
- How R-Zero can add to your submission package
- Air quality
- Energy Efficiency
- Disinfection





# Meet the speakers





#### Uri Kogan

Vice President, Product Marketing R-Zero

#### **Michael Chu**

Senior Director, Business Operations R-Zero

# Renew America Schools Grant Program



💥 rzero

Round 1 of funding was awarded in 2023, and Round 2 applications are now open until June 13. Each selectee will receive **\$7 million - \$14 million** to implement energy efficiency & air quality projects.

### **3 Phase Process**

	1		
	<b>Phase 1</b> Portfolio + Team	Phase 2 Strategic Plan + Energy Audits	Phase 3 Implementation
Goal	Assemble project team, assemble portfolio of school facilities, demonstrate the need for energy improvements, and	Conduct ASHRAE Level 2 energy audits and build a comprehensive plan for implementing energy	Oversee implementation of the energy improvement projects identified at the end of Phase 2.
	outline plans for Phase 2.	improvements.	In this phase, DOE will allocate a set amount of funding per
	The selected grantees will move on to Phase 2 and begin negotiations with the DOE for a Cooperative Agreement.	Phase 2 funding will reimburse grantees for costs related to energy audits and strategic planning.	grantee and work with recipients to ensure projects are deployed within the allotted budget.
Award per Selectee	\$300k	\$500k - \$1m	\$7m - \$14m
Cost Share	None	Minimum 5%	Minimum 25%
	t		

Up to 23 winners. Minimum of 10 schools per portfolio selected.

### How to apply and timeline

Create an account on HeroX to access all the grant resources and complete the submission package online by **June 13 at 5 pm EST**. <u>https://www.herox.com/renewschoolsprize</u>

Once registered, click on "Begin Entry" to start populating the application. From here, you will be able to access all the required elements of the submission package.

For more detailed instructions, please refer to the "HeroX Competitor Registration Instructions" in the resources tab of HeroX.

Milestone	Date	
Phase 1 Submission Deadline	June 13, 2024: 5 pm EST	
Office Hours	May 29, 2024: 2 pm EST	
Phase 1 Winners Announcement	August 2024	
Expected Timeframe for Cooperative Agreement Negotiations	Starting Fall 2024	

Submission Items for Phase 1		
0	Team Name	
1	Technical Narrative	
2	Energy Justice Mapping Tool Reports	
3	Schools Energy Assessment (SEA) Form Tool Reports	
4	Community Benefits Plan (CBP)	
5	Resumes	
6	Letters of Commitment	
7	Summary Slide	





### Sweeping indoor air and emissions directives: ASHRAE, CDC, Lancet, and NYC's LL97



ASHRAE 241 Control of Infectious Aerosols

 3x + increase in clean air rate



**CDC** Ventilation in buildings

 Recommends at least 5 eACH for all occupied spaces



Lancet For non-residential, non-healthcare spaces

 6+ eACH is "best" for reducing exposure to airborne microbes



Local Law 97 Emissions and Sustainability Goals`

 25,000+ sq ft buildings must cut emissions 40% by
 2030 and 80% by 2050

### ASHRAE & CDC requirements







💥 rzero

### Different ways to achieve clean air



**r**zero

### UV-C delivers more clean air than HVAC with lower energy use



Source: Comparison of effectiveness and energy use of airborne pathogen mitigation measures to meet clean air targets in a prototypical office building. <u>Building and Environment 257 (2024) 111466</u>

#### 🖹 rzero

Department of Energy research: UV-C is most energy efficient way to add equivalent air changes

- Only portable air cleaners come close, but they are noisy, create drafts, hard to maintain, and often turned off / down by occupants
- Unlike portable cleaners and HVAC, presence-detecting in-room UV-C turns off when rooms are empty, increasing savings even more than shown

# How R-Zero can add to your submission package



# **Building Intelligence platform**



#### **Smart cleaning**

#### **Energy savings**

#### Air quality

# Air and surface disinfection

# R-Zero monitoring and disinfection ecosystem



# Air quality

### Why indoor air and environmental quality matter



💥 rzero

#### 💥 rzero

# **R-Zero's IAQ offering**



- Industry-leading IAQ monitoring hardware
- Analytics
- HVAC control

# Comprehensive air and environmental quality monitoring

#### **Air Monitor**

#### Comprehensive air and environmental quality monitor with enterprise security

#### Standard indoor air quality measures

- Temperature
- Relative humidity
- CO2
- PM 2.5
- VOCs

#### Advanced indoor air quality measures

- PM 1 & 10
- Formaldehyde

#### **Environmental quality measures**

- Pressure
- Noise
- Light



#### 🖹 rzero

#### **Key parameters**

- RESET accredited
- Wall power or power over ethernet
- Bluetooth or Wifi
- Up to 1,000 sqft

# **Energy Efficiency**

# A modern way to control HVAC based on occupancy



**CONVENTIONAL DCV** 

#### **OCCUPANT COUNT DCV**

Energy Savings	Sensor accuracy	Low	High
Total Cost	Sensor maintenance	High	Low
Employee Productivity	Fresh air response time	Slow	Fast

# How it works



R-Zero sensors count occupants entering and exiting each HVAC zone R-Zero software calculates required ventilation for each zone and reports on savings



-

3

HVAC delivers the right ventilation level for each zone at each moment

# Higher energy savings from more accurate occupancy measurement



💥 rzero

# Increased performance from faster response to occupancy changes



**r**zero

Conventional DCV's CO<sub>2</sub>-based ventilation control lags behind occupancy by ~40 minutes, time **students and staff aren't getting adequate fresh air** 

Occupant-count DCV instantanly optimizes airflow as people move through your space.



### Achieve MERV 13 air quality with energy use lower than MERV 8

Sign In	and the second se
Enter your email and password to algo inl	Provide State of Stat
G Sign in with Google	
or .	
Ernel*	
mal@ommigle.com	
Pressure rd*	
Min, 8 chiesectronic (200	
Reep me logged in Forget password?	Learn more about R-Zero on
and the second sec	
Not registered yet? Create an Accessrit	
sens, Inc. All Rights Reserved	Prough Raley Laness Terms at



Ventilation energy savings produce an ROI of 2-3 years depending on sizing of HVAC and local utility rate



Outside air energy savings are 4-5x greater than ventilation & the most cost effective mechanism to achieve Net Zero



Reduce filter replacements 2-3x, keep maintenance labor costs low & reduce TCO

# Disinfection



#### Effective

12+ equivalent air changes per hour

Continuous disinfection of 500-2,000 square feet

#### Efficient

#### Energy use of typical laptop charger

Only operates when room is occupied and a short time after they leave

#### Safe

Wall or ceiling mounted at 7 feet+

Turns off if motion is detected in beam

### **R-Zero Vive**



🖹 rzero

Continuous surface and air disinfection and odor control with patented, human-safe far-UV

- Ceiling mount
- Runs autonomously when room is occupied
- Turns off automatically when room isn't occupied

### **R-Zero Arc**



# Routine mobile disinfection

- Eliminates 99.99% of certain microbes in an unoccupied room in 7 minutes
- Easy operation and powerful reporting
- Portable with a range of 1,000 square feet, Arc also neutralizes odors and mold spores

**K** rzero



# Landmark study to understand upper-room UV effect on SARS-CoV-2 in wastewater

Controlled trial in **a top 5 largest US school district.** R-Zero Beam installed in classrooms, libraries, and cafeterias in 4 schools for 5 months in 2022



Study **conducted** by **Dr. Nardell of Harvard Medical School** 



#### REDUCTION

Of samples contained SARS-CoV-2 in intervention schools **O%** INCIDENTS

No complaints were reported during the study

### R-Zero has been deployed at scale by customers across industries



# **750+**

Locations Protected



# **Thank you! Questions?**





💥 rzero

#### Uri Kogan Vice President, Product Marketing R-Zero ukogan@rzero.com

#### Michael Chu

Senior Director, Business Operations R-Zero **mchu@rzero.com** 

# Thank you



Learn more about the CDC & ASHRAE guidelines for healthy buildings