NEW ECOLOGY NEWSLETTER

Spring 2020

BuildingWell

A NOTE FROM THE PRESIDENT

"Contrary to popular belief, productivity isn't about how much you can do. It's about whether or not you're doing the right things—the things that matter to your work and to you. And that means starting small with what you know matters to you.[1]"

As is the case with most businesses, during the past few months, New Ecology has had to greatly adapt and alter our usual ways of conducting business. Our dedication to our clients, staff, partners, and the health and safety of everyone remains our top priority.

This newsletter has some interesting stories of how we, and our clients, have adapted in this trying time. As always, we thank you for your support and flexibility as we continue to navigate this ever-changing situation.

— Edward F. Connelly
NEI President

[1]Melissa Steginus, "Self Care at Work: How to Reduce Stress, Boost Productivity, and Do More of What Matters"

Video Inspections Protocol for Construction Sites

BY ASHLEY WISSE, SENIOR PROJECT MANAGER

2020 and the onset of COVID-19 has created unique and ever-changing circumstances in the construction industry. Social distancing protocols and proper personal protective equipment (PPE) are now daily conversations at engineering, architecture, and construction firms around the world. Here at New Ecology, we are doing our best to keep our staff safe, while also continuing to move our time-sensitive work forward through live video inspections. As everyone is jumping on video calls to talk to friends and family, NEI is utilizing these same platforms to view and inspect ongoing work at construction sites. Although video is certainly not preferred to in-person inspections, and while delaying in-person inspections and/or testing is the ideal choice, it is not always available. Therefore, the use of video meeting technology, along with multi-user notetaking platforms, such as Dropbox Paper, allows for real-time review of installed conditions, recording of conversations and video, and collaborative note-taking by all attending staff members.

NEI conducts a video inspection

In order to ensure that the video inspections are useful and efficient, NEI has created a protocol of tasks to complete before, during, and after the inspections. Pre-inspection tasks include identification of complicated areas that will need to be inspected on video and briefing of on-site personal. During the video, NEI requests permission to record all on-site video and audio, confirms unit numbers for each location visited during the inspection, and keeps detailed notes, ensuring that all required items are observed. Post-inspection, involved NEI staff members discuss observations, save all notes and videos for future reference, and determines the need for additional inspections and/or follow-up photographs of on-site conditions.

As NEI and all other members of the construction industry continue to navigate the everchanging COVID-19 situation, protocols and preferences will also change. Video inspections have provided a temporary solution for inspections; but, they cannot replace necessary testing and verification – particularly related to infiltration and air leakage testing mentioned above. With that in mind, NEI will strive to continue providing all services to our clients, while prioritizing the safety of our staff and looking ahead to the future beyond COVID-19.

NEI has secured grant funding to expand our ReMO service. The Massachusetts Department of Energy Resources (DOER) is making subsidies available to save energy and improve operations through ReMO. There are two exciting opportunities:

- For low-income multi-family residential buildings, MA DOER is offering up to a $3,375 rebate on our ReMO service, and additional funding for monitoring enhancements and repairs;
- For non-profit buildings, MA DOER is offering a no-cost documentation of central systems and equipment (a $2,000 value) AND $3,000 off the total cost of the NEI Remote Monitoring service.

Additional incentives may be available through Mass Save rebate programs.

If you are interested in learning more, please contact us today! ReMO@newecology.org or 855-888-6468.

ReMO

INTERESTED IN LEARNING MORE ABOUT REMO? WATCH THIS!

NEI's Remote Monitoring System Eliminates the Need for a Service Call During the Coronavirus Pandemic

A New Ecology (NEI) ReMO system was installed to monitor an affordable, senior housing building. During the normal course of our work, we informed the owner that the DHW return was incorrectly piped and that balancing valves needed to be installed. We advised the owner that the domestic hot water (DHW) system was occasionally delivering temperatures that were too low. NEI specified the repairs directly to the owner's contractor in January, and offered to assist on balancing the system's temperature when the work was completed.

In following weeks, our engineer began to review the post-repair data collected, which illuminated that low DHW temperatures persisted, and in fact, had worsened. Concurrently, the building staff had called their contractor again, as they were receiving complaints from tenants. The contractor surmised that the issue must be caused the thermostatic mixing valve. They quoted $4,000 to do the replacement. They were ready to dispatch their team to the building.

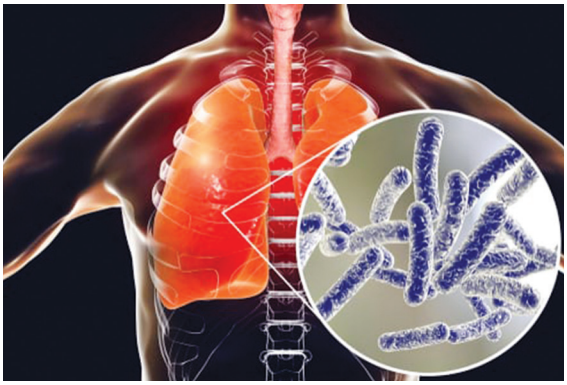
New Ecology called the owner to suggest that system's new balancing valves may not have been adjusted properly after the repairs, and that the problem was likely caused by the valve positions of the DHW recirculation system. To safeguard their tenants and solve the issue as quickly as possible, and save the cost and disruption of a repair that might be unneeded, the building staff joined a video conference with NEI and together they solved the problem.

How Was the ReMO Team Able to Identify, Diagnose and Fix the Problem?

The ReMO system collects data real-time and enables understanding of cause and effect through analysis methods we have developed. The engineer was able to immediately determine that the DHW mixing valve was not faulty. Our engineer then looked for other causes and saw that while the storage tank temperatures were more than adequate, water delivered to residents was only reaching adequate temperatures in short bursts. His experience led him to suspect the balancing valve positioning, which affects flow rates, as the problem.

On the video chat, using ReMO's real-time temperature logging feature and the building's laundry room slop sink and common area kitchen sink, on-site maintenance workers created different DHW demand conditions while the NEI engineer remotely reviewed temperature feedback. Ultimately, four valves were adjusted in order to raise and balance the system temperatures; no new parts were needed.

The cost of at least one service call was avoided, and the senior residents were not put at risk from an unnecessary site visit by an outside contractor. The owner's return on his investment in the ReMO service was drastically shortened by this single event, proving there is more than just energy savings to be had.



While low temperatures are a comfort issue, they can also cause a serious health issue as the Legionella bacteria can grow in low water temperatures. Legionnaire's Disease can be deadly on its own, but would also create a dangerous 'underlying condition' for anyone exposed to the Coronavirus. Seniors are especially vulnerable to both of these respiratory diseases. Photo: usmslab.com

NEWSLETTER CONTRIBUTORS: MICHELLE MORAN, JESSICA DARLING, JUSTIN IOVENITTI, LAUREN BEACH, FRANK STONE, REBECCA ANSOLABEHERE, JONAH DECOLA, ASHLEY WISSE, TOM CHASE, MARTY DAVEY, ED CONNELLY.

Climate Mitigation or Adaptation?

BY TOM CHASE, SENIOR PROJECT MANAGER

What motivates New Ecology staff to do the work that we do? At a recent retreat, we were asked to reflect upon this very topic. Not surprisingly, one of the most cited responses was climate change.

Outside view, Cambridge, MA

In my own climate activism journey, I've long debated whether I should focus my efforts on mitigation—reducing greenhouse gas emissions, or adaptation—preparing for the worst. I once assumed that these were different pathways and different building techniques. What I've learned in my work at NEI is that mitigation and adaptation very often go hand in hand, and that reducing emissions and preparing for climate change at the same time is often the best way forward.

The risks if we fail to mitigate and adapt to climate change are well-known and innumerable. Allow me to share one example, which hits very close to home - my home, to be exact.

In July 2019, I measured the indoor temperature and humidity daily in my apartment in Cambridge, MA. My home is on the top floor of a wood-framed triple decker, built in 1907. The windows are original single-paned, lead-painted, wood-framed; there's no insulation in the wall or roof cavities, and there is no active ventilation (although natural ventilation isn't lacking in an old and drafty house). We don't have central A/C, but we do have one window unit to keep the bedroom below 80° F on summer nights. Far from being an outlier, this home is normal for my street. I've lived in four similar homes in this area, all with the same characteristics.

Last July, I compared the measured temperature and humidity levels in my home against the NOAA heat index, which combines heat and humidity measurements into a "feels like temperature." My apartment crossed the extreme caution or danger thresholds for 19 days out of the 31 days in July. The highest heat index was 111o F. This may not be shocking to the NEI staff in Baltimore and Wilmington, but it is somewhat alarming to see in Cambridge, MA. It is predicted that between 2030 and 2050, Cambridge will have transitioned into the present-day Baltimore Climate Zone. Nearly half of all housing units in Cambridge are experiencing similar heat indices to mine without adequate A/C to maintain safe habitability.

NWS Heat Index

Temperature (°F)

Relative Humidity (%)	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
55	81	84	86	89	93	97	101	106	112	117	124	130	137			
60	82	84	88	91	95	100	105	110	116	123	129	137				
65	82	85	89	93	98	103	108	114	121	128	136					
70	83	86	90	95	100	105	112	119	126	134						
75	84	88	92	97	103	109	116	124	132							
80	84	89	94	100	106	113	121	129								
85	85	90	96	102	110	117	126	135								
90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127										
100	87	95	103	112	121	132										

Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

Caution | Extreme Caution | Danger | Extreme Danger

So, what can we do to try to combat this situation? In the short term, for existing buildings, we need to add air conditioning to buildings in a way that is equitable, affordable, and energy efficient, focusing first on buildings that house seniors, infants, and individuals with respiratory and cardiac health conditions. At a time when sheltering in place has become paramount to contain a global pandemic, and with summer just around the corner, the need for safe occupancy temperatures in our buildings is all the more pressing.

For new construction buildings, we need to plan for extreme heat and passive survivability. NEI is working

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WHO WE ARE

Founded in 1999, New Ecology, Inc. (NEI), is an innovative, mission-driven non-profit. We are nationally known for our community-focused work advancing sustainable practices, reducing fossil fuel use, creating clean energy, eliminating pollution, promoting resiliency and enduring healthy environments in which to live, work, and thrive.

on the construction and certification of a 98-unit, affordable, Passive House building in Cambridge, MA. Not only will the building have radically low energy use and emissions, it will also be adapted to future climates, allowing residents to continue to survive and thrive indoors. Even during an extended power outage in the middle of winter or summer, the building will stay habitable for four days or longer during a cold snap or heat wave.

Elsewhere in the Northeast, New Ecology has completed numerous rehab projects that both reduce emissions and incorporate resilience to climate change, all while improving quality of life for residents. We have many more projects in the works that follow the same model. We are learning that it is not a toss up between mitigation and adaptation, it's about incorporating both. This ensures a healthier, more sustainable, and resilient future in this ambiguous climate.

Delaware State Housing Authority Climate Risk and Resiliency Assessments

In 2019, New Ecology, Inc. (NEI) was selected by the Delaware State Housing Authority (DSHA) to conduct a first-in-the-nation, comprehensive Risk Analysis and Resiliency Assessment of the state-assisted affordable housing portfolio of 215 funded properties. NEI partnered with Linnean Solutions to provide complementary skills and capabilities. Both NEI and Linnean Solutions (collectively "NEI") are national experts in resiliency planning and assessments for affordable housing. The team has deep experience working with affordable housing with deferred capital needs, limited operating resources, many-layered regulatory requirements, and low-income residents who are vulnerable, even without the climate-related risks of flooding, extreme heat, or power outages. The NEI team provided DSHA with a well-founded methodology, analytic capability, and a comprehensive toolkit, involving agency staff and related stakeholders along the way.

Site assessment after rain event: below-grade apartments frequently experience moisture issues.

Evaluating Risk and Vulnerability: The team compiled existing property and climate hazard data sources, and created new data sets and GIS maps to overlay and array the challenges posed by a changing climate to this Delaware housing portfolio. Using a property scoring method, informed by the team's research, properties were prioritized according to their vulnerability and to provide initial recommendations of mitigation strategies.

Customized Resiliency Assessment Tool: NEI customized an on-site assessment tool, based on models already deployed throughout the northeast, to deliver to DSHA a Delaware-specific tool that guides a user to perform a resiliency assessment of a property and generate recommendations to address defined hazards.

Findings of Site Assessments: NEI performed 18 on-site assessments, using the resiliency assessment tool, focusing on the properties that are most vulnerable and likely to pursue refinancing soon, so the findings could inform capital upgrades. The

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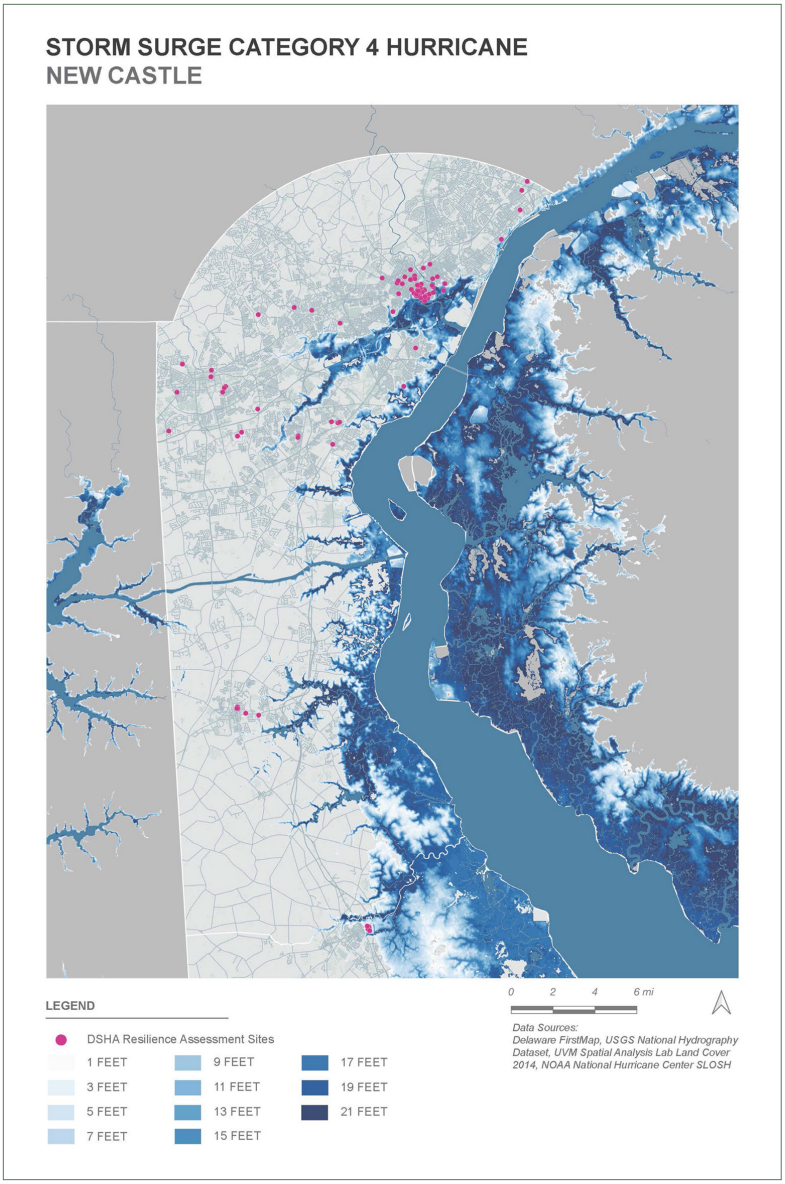
A common sight in coastal communities: crawl space with dehumidifier.

most commonly recommended resilience measures were emergency management plan training for property staff, potable water storage, and moisture management in below grade apartments.

Resilience Guidance Added to DSHA Design and Construction Standards and Housing Policies: To support resiliency best practices at DSHA-supported properties, NEI is performing a comprehensive review, with stakeholder input, regarding DSHA's standards and policies. The team recommends that DSHA incentivize resilient design, as it does sustainable design, in its future Qualified Allocation Plan for awarding Federal low-income housing tax credits.

Equipping DSHA to Continue Resilience Assessments: DSHA staff were presented a user-friendly version of the resilience tool to continue the process of addressing resilience measures that should be incorporated into the scope of work for a property refinancing.

Upcoming Work: NEI is currently organizing a virtual emergency management training event for DSHA staff. After completion of the Risk and Resilience Program final report, NEI will be presenting our findings at the bi-annual DE Governor's Conference on Housing, scheduled for October, 2020.



HAPPY EARTH DAY!

Wednesday, April 22 marked the 50th anniversary of Earth Day! Although we were unable to celebrate together, NEI staff members marked the momentous occasion in small, individual ways. Nature hikes, outdoor trash cleanup, and public garden work were some of the activities staff participated in to show our love and appreciation of the Earth. This, combined with our ongoing mission to address global environmental issues and making the built environment more efficient, healthy, durable, and resilient made for a very happy anniversary. How did you celebrate?

Justin at the Coba Ruins, Yucatan.

LET'S TALK

New Ecology is eager to work with partners who are interested in learning more about our work and how we can help you to achieve your project's goals. We have worked on hundreds of projects for owners in market sectors including housing, office, retail, education, healthcare, government, arts, and nonprofit.

Our passion and commitment is best demonstrated by the fact that we have been at the leading edge of community-based sustainable development since 1999.

At the same time, our reach, approach and successful model have helped us attract and retain a talented staff known for its desire to make advances in a new and growing field.

Interested in learning more? Contact info@newecology.org or call 617-557-1700.

NEW ECOLOGY
Community-Based Sustainable Development

BOSTON | PROVIDENCE
BALTIMORE | WILMINGTON

15 Court Square, Suite 420
Boston, MA 02108
www.newecology.org
617-557-1700

Staff Profile

Name: Justin Iovenitti
Title: Energy Engineer

What does your job entail? I am responsible for figuring out how to improve existing buildings. We look at energy performance, thermal comfort, resilience, durability, and indoor environmental quality. I perform on-site walkthroughs, diagnostic testing, and energy analysis. I share our findings with clients in written reports. As the sole engineer in the mid-Atlantic, I focus on projects in Maryland, Delaware, and DC.

What is the most inspiring/interesting part of your job? I worked on new construction projects for much of my career before joining NEI. During design and construction phases, we generally have good documentation. With existing buildings, however, the information is hit or miss. It becomes a puzzle to unpack what is going on in the building – why the energy or water use profile is the way it is, why maintenance staff have changed things, or why tenants are hot/cold. It is a real challenge. I also enjoy being able help tenants and owners conserve resources.

What is a challenge that people in this industry face that you would like to solve? In terms of something that gets a lot less attention, it would be building operations. I worked in commissioning previously, and despite all the best efforts of the architects, design engineers, and contractors, a building can get off-track quickly if the operations staff is not understanding of the systems installed and how they are intended to operate. There are tremendous amounts of unrealized energy savings in buildings simply from optimizing schedules, setpoints, etc.

Justin and family visit Mt. Vesuvius

What do you like to do outside of work? I enjoy going to concerts, traveling, visiting restaurants and breweries, attempting to garden, and college football (Go Hokies).

Favorite movie/TV show/Band? I'm more of a music person. My favorite band is Radiohead, but I'm also a huge fan of Neil Young, The Smiths, The Band, Jason Isbell, Sturgill Simpson and Local Natives, among others.

What are you doing to keep happy and healthy in quarantine? A lot of walking outdoors! My wife and kids and I have made countless laps around the neighborhood so far. We've done a lot of work to prep our garden as well.

What is advice you would give to somebody looking to start in this industry? I studied and practiced architecture for quite a while, so I took a very circuitous route to my current position. My education and early professional training didn't deal with energy efficiency at all. But, they did teach me about problem solving and organization –two skills I use a lot. If you can learn transferrable skills like these, you can succeed in a bunch of different industries. It helps to be curious, too. Try to find workplaces that prioritize learning. I've been very fortunate to have worked with supervisors who were not concerned with what I did or did not know, but whether it was something I could learn over time.