National Comfort Institute, Inc.

hvactoday.com JULY 2025

HIGH-PERFORMANCE HVAC TODAY™

If You Don't Measure, You're Just Guessing!™

Taking the Step-By-Step PATH to High Performance

ALSO IN THIS ISSUE:

- Go Beyond Silver Bullets with Non-Invasive Refrigerant-Side Testing
- Efficiency at a Crossroad: Changes Start Now!
- Navigating the HVAC Regulatory Landscape

T·E·C
THE ENERGY CONSERVATORY

TrueFlow

Download on the App Store

GET IT ON Google Play

Digital TrueFlow® Grid

NCI™
National Comfort Institute, Inc.

Workflows built into the TrueFlow app!

National Comfort Institute, Inc.

JULY 2025 VOLUME 9 NUMBER 7

HIGH-PERFORMANCE HVAC TODAY™

6

COVER STORY:

Step-by-Step PATH to High-Performance HVAC™

NCI's David Richardson simplifies and breaks down the process for becoming a High-Performance HVAC Contractor.

12

TECHNICAL:

Beyond Silver Bullets with Non-Invasive Refrigerant-side Testing

Why are training and certification so important BEFORE you do refrigerant testing? Jeff Sturgeon explains.

16

MANAGEMENT:

Efficiency at a Crossroad: Changes Start Now!

With the U.S. embroiled in the electrification movement, new heat pumps and other tech are in the spotlight.

20

MANAGEMENT:

Navigating the HVAC Regulatory Landscape

All kinds of legislative and regulatory changes at the federal, state, and local levels are afoot. HARDI's VP of Government Affairs Alex Ayers explains what is happening.

DEPARTMENTS

By Mike Weil

The Second Trump Presidency: 150+ Days and Counting

Mike Weil is editor-in-chief and director of communications and publications at National Comfort Institute, Inc. Contact him at ncilink.com/ContactMe.

I've been in the HVAC industry long enough to know that politics can often ripple through our businesses in ways we never imagined. During President Trump's second term's first 150-plus days in office, those ripples felt more like waves — and for contractors in the **High-Performance HVAC™** sector, they came fast and from multiple directions.

While I don't pretend to be a political expert, I do pay close attention to policy changes that potentially impact contractors' bottom lines. During that early stretch of the Trump administration, a lot was happening — some of it promising, some of it concerning.

TARIFFS: THE IMMEDIATE SQUEEZE

One of the first things that hit our industry was the implementation of tariffs on imported goods, including HVAC components. These weren't minor price adjustments — some analysts warned we could see equipment costs jump by as much as 20 to 40%. That's not just a margin-eater; that's a business-changer.

HVAC contractors started feeling the pressure in the supply chain almost immediately. Delays, brand switches, and shortages — it was a continuation of the issues that stemmed from COVID-19 shutdowns, creating a logistical scramble.

The good news is that several contractors I've spoken to say many homeowners are favoring and buying more system upgrades once shown the benefits and savings created by high-performance systems.

THE HVAC REBATE FREEZE

The administration's decision to pause disbursements under the **Inflation Reduction Act** — particularly rebates related to HVAC energy upgrades — certainly added more uncertainty.

We all know that rebates are often the tipping point in a sale. When those were frozen, it undermined homeowner confidence in government-backed energy programs altogether.

A NEW FOCUS ON SKILLED TRADES

One bright spot came in the form of an executive order that highlighted the **importance of skilled trades and workforce development**. For High-Performance HVAC businesses, this wasn't just political lip service — it aligned with this industry's everyday reality.

There is an ongoing **shortage of technicians**. The fact is, contractors need talent. Real talent. Not just people who can carry tools, but techs who understand airflow, diagnostics, and real-world system performance. The government is finally shining a light on the skilled labor gap.

One significant opportunity from this re-focus is that you can now reframe your recruiting messages. You can double down on internships, training programs, and high-performance technician roles.

I believe, for the first time in decades, we will see more young people — who usually overlook the trades — express interest in HVAC careers.

DEREGULATION: LESS PAPER, MORE PERFORMANCE?

There is also the move toward regulatory relief. Now, I know not every regulation is bad — some help set standards that elevate our industry. But others can feel like bureaucratic anchors.

Anything that lets contractors spend more time focused on working on the business and less time on paperwork is worth paying attention to. Still, deregulation comes with responsibility.

Read the rest of this column at **ncilink.com/0725TW2**

Written by HVAC Professionals for HVAC Professionals

PARTNER Highlights

FLEXIBLE DAIKIN FIT DELIVERS SOLUTIONS

Daikin will exhibit at **National Comfort Institute's (NCI) High-Performance HVAC Summit**. Be sure to visit their booth to see how they have merged the best of ducted HVAC with advanced ductless technology.

They will showcase their split-system **Daikin FIT** inverter units. This equipment requires just 4-in. of clearance. It is compact, lightweight, and quiet.

When matched with a ducted gas furnace, heat pump, or dual fuel capabilities, Daikin FIT delivers efficiencies up 10.0 HSPF2, 11 EER2, and 21.0 SEER2.

The outdoor inverter-driven, side-discharge Daikin FIT is as quiet as 55 dBa. Inside, sound pressure levels operate as quietly as 45 dBa.

Their small footprint makes handling these lightweight units easier and allows more to be carried on service trucks. They can use existing line sets, connecting up to 100 ft. of pipe (for typical installations).

Plus, the Daikin FIT uses low-GWP R-32 refrigerant, which is easy to top off. You can clean and reuse R-32 on-site, or reclaim and recycle it.

Other features include Blue Fin coating to protect the outdoor coil (1000+ hour salt-spray rated); advanced water-shedding drain pan; hot start technology to prevent cold drafts; Intelligent Defrost Mode; and Daikin Inside Intelligence for diagnostics.

The Daikin FIT is controlled by **Daikin ONE+** or **Daikin ONE touch smart thermostats** — offering full, two-way communications with Daikin HVAC systems. The FIT is compatible with the **Daikin One IAQ ecosystem**, featuring optional air cleaner modules, humidifiers, dehumidifiers, ultraviolet air purifiers, and fresh-air ventilation accessory systems.

Learn more about the Daikin FIT, including its warranties and other features during Summit 2025 in Austin, TX, from September 9-12. **Register today**.

By David Richardson

Taking a Step-by-Step Approach *to High-Performance HVAC™*

Adding High-Performance HVAC™ to a company can be challenging. It's easy to get lost in all the options and to know when to do what. Years ago, we introduced the ***PATH to Performance series*** that outlined the sequential steps to apply the four pillars of air-side performance.

As companies reviewed how they applied pressure, airflow, temperature, and heat (Btus) in their daily procedures, it still seemed like something was missing — like things didn't click.

A step-by-step approach to gradually integrating these tests into the company was lacking. Contractors needed a plan that starts with the end in mind and gets everyone in the company on the same page. This prevents having to try and add the pieces in a vacuum where no one understands how they apply.

The PATH to Performance does have a learning curve. It requires training and setting up ways for your techs to buy into this much better way of doing things.

As you'll see, STEP is an acronym for the pieces needed to unify your company on the PATH (**P**ressure, **A**irflow, **T**emperature, **H**eat). If you've struggled with this problem, I hope the following four steps help you identify what might be missing and connect the dots.

SHOW

Before you add High-Performance HVAC to your company, it's a good idea to internalize ***why*** you want to do it. Show yourself before you show others.

If ***you*** don't believe it, no one else will. You need to develop a clear belief about what is possible soon so you can share a broader vision for everyone in the company to work towards. You must paint a big picture that is easy for everyone to understand, with no room for misinterpretation.

After sharing the big picture with everyone, get their feedback and see how they think they can help. Each person with a role within the company must understand their place within the overall picture. As you work through this step, there are **two words your employees cannot hear — *more work***. If they hear more responsibilities added to their day, you'll get a lot of pushback before you ever start.

Instead, show them how High-Performance HVAC makes everyone's lives easier and is a series of minor changes made gradually. Remind them there's a *PATH to High Performance* for a reason. If you try to do everything at once, you'll get frustrated and end up doing nothing. Focus on showing and applying one principle at a time. Then, slowly add the others.

At first, you will lead the charge and be the "*Chief Airhead*," the one who serves as the point person. There will be times when it feels like you're dragging everyone along as you begin this endeavor.

This feeling is 100% normal because it takes a lot of energy to start anything new. It's your job

to maintain the unity of the group and make small adjustments to realign everyone.

Once everything is up and running, you may want to assign the Chief Airhead role to someone else who shares your vision and has the respect of others in the company.

As you make progress, beware of the inevitable first obstacle. It will usually involve someone who doesn't buy into what you're trying to achieve, and they will infect others with their negative attitude.

That obstacle often causes many companies to give up and revert to old habits. Don't let that happen to you and your team. Rally everyone and once again show them your conviction that High-Performance HVAC will succeed in your company.

TEACH

Once you have shown everyone in the company your vision for what they can accomplish with High-Performance HVAC, it's time to teach them. For most, this will involve sending key staff to **NCI (National Comfort Institute)** training.

Then they can share what they learned with the rest of the company. Or you can bring NCI training to your location where everyone hears the message from the same source. Neither approach is right or wrong. It's just a matter of choosing what works best for you.

However, it's not enough to teach your staff once. Everyone on your staff requires ongoing refresher training, and you'll need to bring new employees up to speed.

A great example of this is when a technician who has already been through an NCI class teaches others in the company to measure static pressure. While the skill is specific, there is a pattern you can repeat for all the other skills needed, such as airflow and temperature testing.

The key is to remove the fear as you teach and master the subject.

For example, let's say you have a senior technician who attended NCI training and is mentoring a younger technician on how to measure static pressure properly.

The first teaching step would start with the senior tech showing the younger tech how to measure from start to finish. They provide an example for younger techs to follow, so they perform the task as you would want it done. A senior tech explains each step as they work, then transitions testing to younger techs.

The cornerstone of High-Performance HVAC™ is conducting static pressure testing.

Next, the senior tech supports and supervises the younger tech as they work at their own pace. It's essential to be patient and remember that everyone learns at a different pace.

At this point, the technician takes personal ownership of the skills they're learning. After a few repetitions, they're ready to test on their own and strengthen their skills. You'll want to reinforce any new skill by regularly asking how the tests fit into their daily work and what they're discovering.

The accountability continues to build strength and good habits. Soon, this younger generation of techs will be confident enough to teach others, and the teaching culture will grow.

EQUIP

Now that you've shown your staff the High-Performance HVAC vision for your company and taught them how to get the measurements, it's time to equip them for the field.

Since the PATH to High Performance begins with testing, you must equip your technicians with the proper test instruments to gather the necessary readings.

Initially, this may involve using a manometer for static pressures and wireless psychrometers for temperatures. These test instruments are enough to get most technicians started.

As skills continue to improve, you may want to add a **TEC Digital TrueFlow® Grid** for technicians who are more adept at selling. This test instrument helps them measure fan airflow directly, taking much of the guesswork out of estimating fan airflow using a fan table.

You'll have to decide whether you provide the tools or suggest a list of instruments for your technicians to buy. The key is to start small and don't overload them with a ton of tools all at once.

Once your technicians are gathering measurements in the field, you'll need to equip your salespeople to discuss the test results.

NCI offers various forms, such as the Blood Pressure to Static Pressure Table, which make technical topics easy to understand and relatable to customers. Be sure to equip every salesperson with this information.

Additionally, consider providing them with NCI pamphlets that explain the differences between High-Performance HVAC and other systems. This information will help them explain to customers how your company differs from other HVAC companies.

You also need to equip your installers to handle installations in a slightly different manner. The devil is in the details when it comes to installing equipment to ensure it performs correctly. While installation tools remain the same, their techniques will change as they begin to understand the importance of static pressure and airflow.

The installers will replace old installation practices, such as leaving excess flexible ducts, making sharp turns, or using restrictive fittings, with slight changes in their approach to improve system performance. These changes are subtle and easy to apply but may take time to implement. Remember, it's hard to break old habits.

Finally, don't forget to equip your staff with apps to make their job easier. For example, **measureQuick** and the **TrueFlow app** from TEC make measurements easy and streamline the work. Technicians using the ***NCI AirMaxx Quick Test*** in measureQuick or ***NCI workflows*** in the TrueFlow app can quickly generate a visual, third-party report that customers can easily understand. As you equip your team, ensure that you're making their lives easier so they can succeed.

PROMOTE

Now it's time to introduce High-Performance HVAC to your customers. You'll need to show them why it's essential, teach them about their HVAC system differently than your competitors, and help them understand there is more to HVAC than the equipment.

Most homeowners are accustomed to repairing their existing equipment

Static Pressure/Blood Pressure Table

	Hypotension (Low)	Normal	Pre-Hypertension	Hypertension (HBP) Stage 1	Hypertension (HBP) Stage 2	Hypertension (HBP) Stage 3
Blood Pressure	90/60	120/80	121/81 to 139/89	140/90 to 159/99	160/100 to 179/109	Exceeds 180/110 Emergency Care Needed!
Equipment Rated Static Pressure	.23 or less	.30	.31 to .35	.36 to .40	.41 to .45	.46 or above
	.38 or less	.50	.51 to .58	.59 to .66	.67 to .74	.75 or above
	.60 or less	.80	.81 to .93	.94 to 1.05	1.06 to 1.19	1.20 or above

Note: The above table is a combination of the categories suggested by the American Heart Association and NCI's Total External Static Pressure (TESP) Budgets. The table helps visualize the relationship between the equipment's TESP measurement and the Blood Pressure of a normal human being.

or purchasing a replacement if necessary. Show your customers how you do things differently — adding static pressure measurements is the first step in demonstrating that the HVAC system is more than just the equipment.

Your approach uncovers invisible issues with the duct system and serves as a great lead-in to discuss comfort, indoor air quality (IAQ), and other ongoing problems.

As you roll out your high-performance approach, start with existing customers because you already have a relationship with them. They trust you and will appreciate how you are improving what you do.

Then, you can transition to new customers after you're comfortable with the process. Be prepared for tough customer questions that may arise, like, "Why haven't you guys done this before?"

Ensure that every technician and salesperson knows how to answer those tough questions. Everyone in the company should have a similar reply.

Let's say a technician is on a no-cooling call for an existing customer. While there, they discover a bad compressor, and the customer needs new equipment. Not stopping there, the technician measures static pressure and finds issues with the return duct system.

That tech points out to the homeowner that this may have contributed to the compressor failure. The customer admits to having ongoing issues and wants to investigate the matter further.

Then the technician passes testing and measurement information to the salesperson and lets them know the customer wants further investigating the return duct problems.

Once the salesperson arrives, they interview the customer and mention the technician's findings. The salesperson references the technician's measurements from their AirMaxx report and then compares them to blood pressure readings using *NCI's Static Pressure to Blood Pressure Table*.

The customer immediately sees the problem and wants to prevent their new investment from premature failure, so they opt for an Air Upgrade™ to protect their new equipment.

Next, the salesperson takes numerous photos and measurements of the problem areas for the installers and then lays out a detailed scope of work to address the return duct issues.

The installers quickly correct these issues during the equipment replacement and then meet with the testing technician to test the system and prove to the customer that their problems have been resolved. This customer is now a raving fan and will promote your skills and results to their friends and family.

ONE DEGREE AT A TIME

A concept we talk about in our Path to Performance Coaching sessions is the **One Degree Principle**. This principle describes how it takes adding one degree of heat at a time until the water boils and releases an extreme amount of energy.

It's only by consistently applying energy that you eventually reach the boiling point where the conversion from water to steam takes place.

Gaining momentum with High-Performance HVAC is similar — it doesn't happen all at once. But by continually adding skills and practicing, your company will speed up in ways you never could have imagined.

Sometimes, it's hard to see this change happen while you're going through the motions. However, if you set monthly goals and then break those goals down into weekly milestones, you'll see those slight changes taking place. This helps everyone stay on the path to get the results you want. If things get off track, you'll see it and be able to realign.

From this information, you can set daily alignments from your weekly milestones to keep your staff moving in the right direction instead of drifting. Life happens, so be prepared to adjust.

Your plans will rarely go as outlined. The key is to keep moving forward, step by step, and adapt as you encounter challenges. NCI

David Richardson is the vice president of training for National Comfort Institute. He joined the organization in 2010 as a curriculum developer and trainer. He has been involved in **High-Performance HVAC™** contracting since 2001. Besides holding all NCI certifications, David has held certifications as a HERS rater, BPI building analyst, and is a BPI field and written exam proctor. To reach him with questions or comments, go to ncilink.com/contactme.

By Mike Weil

NCI 2025 High-Performance Summit: **Special Events You Cannot Miss!**

National Comfort Institute's 2025 High-Performance Summit has much more than the HVAC Industry's best technical breakout sessions. It's an entire experience that includes tremendous networking opportunities as well and a number of special events that you cannot miss!

Contractors new to Summit will benefit from the **Orientation and First Timer's** meeting on Tuesday, September 9th at 5:15 pm. There, Nick Guarino and the NCI staff will discuss what to expect and how to get the most out of Summit in general and NCI membership in particular.

This is followed by the **Welcome Party** at 6 pm. Hosted by NCI's Platinum Sponsor ***Daikin Comfort Technologies***, this is the kick-off event that is a great ice-breaker where you can re-connect with old friends, and make new ones. There is food, drink, and music to help get Summit off on the right foot.

REGISTER NOW! – GoToSummit.com

Bring your entire team!

Reserve your room now to get the special NCI rate

$175 per night *(including resort fees)*

ncilink.com/2025hotel

3001 Kalahari Blvd., Round Rock, TX 78665

Summit 2025

National Comfort Institute, Inc.

Additional Special Events

- **IDEA Meeting —** Contractor-only closed door event for trading ideas, brainstorming, and winning cash prizes.

- **Tradeshow —** Learn about the latest tools and tech that will help you as you Navigate your PATH to High-Performance.

- **High-Performance Town —** Here is an opportunity to solve some typical system issues with live equipment in a hands-on environment.

- **Awards Banquet —** Celebrate the success of fellow High-Performance HVAC™ contractors and learn about what they do to make a difference.

- **Podcast Center —** Live during the entire event industry influencers, contractors, and NCI Instructors interview and discuss key industry issues and more. See it while it is happening live.

Summit is the only event where the High-Performance HVAC Industry meets. Don't miss this tremendous opportunity to mix and mingle with some of the best contractors in the HVAC Industry.

Register today, book your rooms, and get ready for the ***BEST Summit event yet***. We look forward to seeing you and your team there.

SEPTEMBER 9 – 12, 2025 • GoToSummit.com • 800 633-7058

By Jeff Sturgeon

Moving Beyond Silver Bullets with *Non-Invasive Refrigerant-side Testing*

Over the last four decades, I have seen the same recurring issues and shortcuts plaguing our industry despite having more supporting standards than many other trades combined. It seems we still chase band-aid fixes and silver bullets that result in very inefficient and poorly performing installed systems.

On the other hand, many contractors have devoted their lives and careers to try and change the consumer outlook of the HVAC industry. It's an uphill battle. One main reason is there are more companies focused on chasing bigger profits without regard for the damage to the industry.

By the way — these issues aren't just the responsibility of contractors. We also need to consider manufacturers and other entities that choose to rely on embedded fault diagnostics rather than educating the industry on testing and diagnostics that lay the groundwork for highly comfortable, efficient, safe, and healthy indoor environments.

I see so many companies and technicians following a pathway set by state code officials. Several states require third-party HERS raters to follow behind HVAC contractors to perform minimal tests that confirm if the job meets state code requirements.

MINIMAL REQUIREMENTS MEAN MINIMAL COMFORT

A HERS rater performs ***minimal*** tests to indicate whether the project meets the ***minimum code requirements***. If it passes, many contractors and technicians view this as a success and assume the system will meet the performance and efficiencies stated by the manufacturer.

A minimum code compliance assumption is dangerous, and many projects fall into the category of "***being the worst job that could be done that is legal***."

For decades, National Comfort Institute (NCI) has been training and certifying HVAC professionals to become experts on proper static pressure profiles and airflow requirements for systems. They began by developing a class focused on the three mass fluid flows of an HVAC system: outdoor air, indoor air, and refrigerant flow.

GO BEYOND CHARGING THE SYSTEM

The NCI approach enables technicians to have more performance and diagnostic information than just subcooling and total superheat measurements taken at the outdoor unit. Even though the values at the outdoor unit are important, you can't ***see*** anything beyond the information on the display of the charging manifold.

Regarding charging manifolds, it is crucial to have accurate digital charging manifolds. Analog manifolds are inaccurate. During NCI training, we discuss related problems when using analog manifolds on today's high-efficiency systems.

At NCI's Southern California training center, we have been offering a **refrigerant-side performance class** as part of our **utility program**

training, and the conclusion is consistently the same. Most students realize that they have not been following best practices when it comes to charging, troubleshooting, and assessing the performance of refrigerant systems.

We teach students to remember that manifolds are not called '***checking gauges***'; they are called '***charging gauges***.' By examining only the manifold readings, students become aware that its information alone doesn't reveal what is happening with the entire system.

A common after-class discussion theme is about them realizing they have been charging systems wrong. Many ask me why our industry doesn't follow the tests and procedures taught in the class.

My response is that our industry — especially in the residential realm — has been chasing shortcuts and silver bullets for decades in a quest to be competitive and more profitable.

Many contractors assume this is the goal. However, cutting corners and following shortcuts only increase customer complaints, callbacks, and greatly reduce customer referrals. Even worse, they lead to very negative social media posts about your company that are nearly impossible to reverse.

WHAT YOU DON'T KNOW, YOU CAN LEARN

After contractors implement what they learn in class, the feedback we receive is incredible. It varies by contractor, but the resounding result is that they can more easily pinpoint what is going on in the system and correct it.

Compare that to not measuring and just following previous methods that don't make them aware of any issues.

Students come to understand that chasing industry rules-of-thumb, silver bullets, and shortcuts often ends up focusing on symptoms rather than the root causes of the problems they see in the field.

Over the past 42 years, as an air conditioning technician who began in the commercial and industrial refrigeration sector, I have also been influenced by these shortcuts. Only through a painful learning curve did I steer myself back to the standards and what I learned in trade school.

COMPANY CULTURE IS THE DRIVER

Technicians are often driven to take shortcuts due to the management culture within the company. In my days as a service manager, I also made this mistake. Our culture was to "***get out there, solve the problem that got the phone to ring, invoice it, then go to the next job and repeat.***"

I learned that if you don't allow technicians to apply what they learn in training classes, there will be no benefit or development for that technician. This situation arises when companies have cultures that make change too difficult, preventing them from implementing procedures that foster new skills.

I find that this often leads to the *deflation* of the technician who has just learned new diagnostic tests that can help him and the company.

Because it's never implemented or supported, the tech reverts to a status quo outlook, which sometimes leaves them seeking other employment opportunities. I think this also leads to a lack of confidence and a return to old habits.

AH HA MOMENTS!

For NCI students in Southern California, one of the most critical components of training is what we refer to as "Field Coaching." This coaching approach enables NCI trainers to work with students in the field, at customers' homes, and in their businesses.

Field coaching is where we get to see the big **'aha' moments** as service managers and technicians learn to perform the tests taught in the classroom and develop the confidence necessary to uncover issues they couldn't pinpoint in the past.

A few months ago, I was asked to meet a contractor on a job site. During a maintenance call, the tech noticed that the system was not maintaining a correct entering compressor superheat. The technician prescribed replacing the thermal expansion valve (TXV).

The customer didn't understand what replacing the TXV meant and

decided to get a second opinion. They called a company their daughter was familiar with. That company sent one of its technicians, who was also NCI certified, and they discovered that the ductwork was a contributing factor to the high superheat issue during operation.

A CASE STUDY

Upon arrival, I found that the technician had already pumped down the system and replaced the TXV. After evacuating the system and recharging it with refrigerant, the technician started the system and allowed it to stabilize. He was confident it was ready to test.

After running for about 10 minutes, we found the problem still existed. Instantly, the tech's confidence was shattered.

Fortunately, he replaced the TXV with an adjustable version and a tee on the outlet of the evaporator coil. This allowed us to see the operating superheat and make slight adjustments to tune it to the manufacturer's specifications.

The tech had never adjusted a TXV before because he was ***wrongly*** taught that you didn't need to adjust or couldn't adjust them. **Note:** there are non-adjustable TXVs, it may be wise not to use them.

After adjusting the TXV, we returned to the diagnostic forms and completed the temperature measurements necessary to calculate the target suction and liquid line temperatures. We then compared them to the actual temps of the line sets, and that is when we discovered the underlying issue.

DISCOVERING THE REAL PROBLEM

During the original installation, the line sets were not piped through the attic. Instead, they were installed under the concrete foundation, which is not a bad thing unless you encounter what we found.

The line set temperature changes, according to industry standards, shouldn't be greater than five degrees. Our measurements showed a 14 to 16-degree temperature increase in the suction line, which would make it impossible to control compressor superheat.

This issue raised several more questions, including:

- Is there a slab leak
- Is this issue being caused by the sprinklers?

Whatever the cause, it was obvious that the line set needed to be relocated and properly insulated, started up, and tested. Doing these things helped to rebuild the first tech's confidence and set the stage for the second tech's findings to be considered by the homeowner.

Ultimately, the homeowner had the first company relocate and replace the line set. Since the ductwork was old and showing signs of age, the homeowner had the second company replace it. The job turned out better than expected, and both companies used it as a learning experience.

The bottom line is that state and federal codes are ***NOT*** the basis of comfort excellence. They are minimum standards. It truly requires training, certification, and practice to effectively integrate testing and measurement into your service and installation teams.

These procedures and processes are all part of what we call the High-Performance HVAC approach, which prioritizes the customer's comfort, energy efficiency, and health needs.

Oh, and in the case of our above-mentioned case study, teamwork to solve invisible problems that make customers very happy also builds confidence in your techs and ultimately leads to profitable work. NCI

Jeff Sturgeon is the Southern California Training Center Manager/Instructor for **National Comfort Institute (NCI)**. He has over 40 years of experience in residential and commercial HVAC and refrigeration fields. Jeff works with hundreds of contractors and their field personnel to help ensure the successful implementation of Southern California Edison's Workforce Education and Training programs. He can be reached at ncilink.com/ContactMe.

By Adam Mufich

Efficiency At a Crossroad: *Changes Start NOW!*

It's not news that the government is pushing increased efficiency and decarbonization with the introduction of the bipartisan AIM Act. New mandates and more stringent ratings, including SEER2, are forcing the residential market to sell a "greener," more environmentally-friendly solution.

When I first came into the industry at the end of the 1990s, the minimum efficiency for straight cooling in the Midwest was 10 SEER. The 2025 minimum efficiency is 13.4 SEER2.

A few years ago, I owned a residential HVAC company in the western suburbs of Chicago, and the local electric utility company contacted my distributor. The utility saw that one of that distributor's contractors was listed on a third-party contractor locator site that specializes in installing heat pumps.

That was my company.

Federal and state rebates push the electrification movement forward. But will it work over the long haul?

The utility wanted to connect with me to learn how I became comfortable installing heat pumps when not many other contractors were doing so.

My answer to them was, "I am using the skills that I have learned from the Air Conditioning Contractors of America (ACCA) in residential system design."

I added that I felt the reason so many contractors didn't do this is that they believe the misconception that heat pumps don't work in cold climates.

REBATES AND HEAT PUMPS

Fast forward to when the utility company introduced rebates of several thousand dollars on select heat pumps, which are now flying off the shelves.

The utility went through the rebate money much faster than originally planned, and to keep the program active, they had to drastically reduce the total rebate amount.

Why were heat pumps collecting dust in warehouses all around Chicago one year, and then suddenly selling themselves the next?

It is the proverbial carrot being dangled in front of homeowners across the country. Everyone wants to take advantage of potentially getting something for nothing.

REBATE REQUIREMENTS AND CERTIFICATIONS

On January 1st, 2024, contractors had to complete several training modules to become "heat pump" certified in order to offer rebates/tax

Heat pump technology is changing the old bias that they don't work in cold weather. Still, many contractors don't believe it.

credits. This is on top of the "***Energy Efficiency Installer certification***" that is currently required in Illinois.

Their goal is an attempt to increase heat pump installation quality throughout the state. It wouldn't surprise me if the government closely monitors the energy consumed and compares it to the taxpayers' total investment in the program. They will quickly find that these high-end systems do not perform at their rated efficiency.

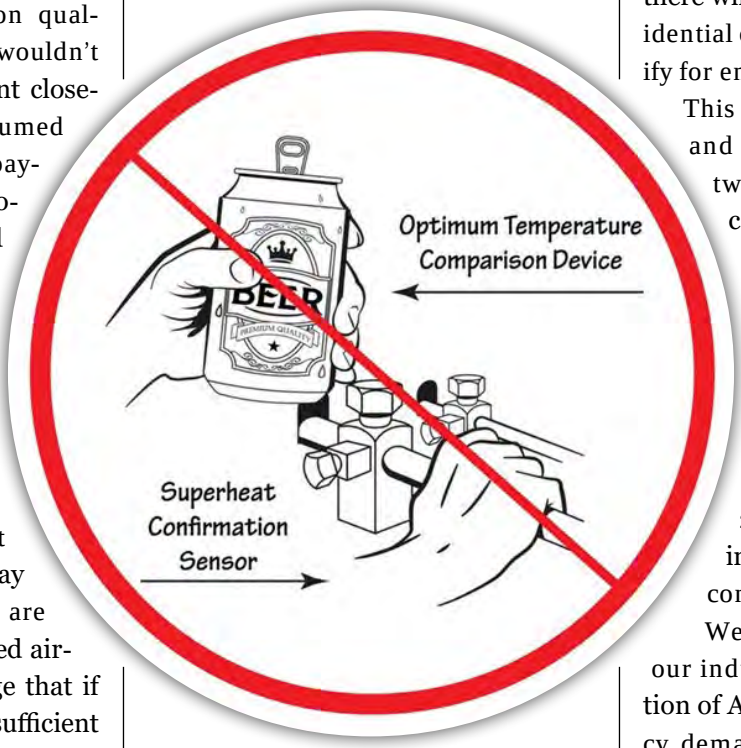
National Comfort Institute has found that the average residential system delivers 57% of its rated capacity. In my experience, it would be conservative to say that nine out of 10 systems are oversized and lack the required airflow. It is common knowledge that if a system is running with insufficient airflow, it will have reduced efficiency and a lack of capacity.

OTHER BEST PRACTICES

Contractors may eventually be required to prove efficiency in order to qualify for these types of programs. If this sounds far-fetched, the technology already exists thanks to tools like **measureQuick®** and National Comfort Institute's workflows. These tools will provide third-party verification to prove to your customers and the powers that be that the system that you installed is operating at the proper capacity and efficiency.

The measureQuick app enhances the functionality of smart tools and will guide users to commission a system to run at its peak performance. It can generate a digital report you can send to customers or save as a historical reference noting how the system was operating on day one.

The report includes Btu output as well as operating efficiency.



Graphic courtesy of HVAC School, 2025.

ACCA's Quality Assurance program takes it one step further and verifies that the best sizing practices were followed. It requires you to perform a Manual J load calculation and verifies that the system you install meets the Manual S sizing guidelines.

WHAT IF YOU DON'T QUALIFY?

If my predictions become reality, there will be a massive number of residential contractors who will not qualify for energy rebates and tax credits. This could disrupt the industry and create a clear distinction between contractors who can and can't prove efficiency to their customers.

Two of the biggest factors holding back our industry are a lack of education and an unwillingness to change. One thing that I have learned over the past 20+ years in HVAC — and life in general — is that "the only constant is change."

We are at a major crossroads in our industry, watching the introduction of A2L refrigerants, new efficiency demands, and the impending future of electrification. We will need

to deal with all these issues while also navigating a skilled labor shortage.

Previously accepted industry standards like refrigerant charging to "beer can cold" and sizing HVAC equipment using rule-of-thumb methods will no longer cut it. These old-time approaches will only get you so far.

It is true that quite a few of us are stuck in our old ways. We need to learn to adapt and change. There will be contractors who thrive, while others will be left behind.

We might not be able to individually control the future of residential HVAC, but each of us can make an effort to master our craft and take pride in what we do. Our trade needs to collectively prepare and embrace the education necessary to do so. NCI

Adam Mufich serves the HVAC industry as a curriculum developer and instructor for **National Comfort Institute, Inc.** (NCI). NCI specializes in training that focuses on improving, measuring, and verifying HVAC and building performance. If you're an HVAC contractor or technician interested in learning more about air sealing benefits, contact Adam at **ncilink.com/ContactMe**. NCI's website, **www.nationalcomfortinstitute.com,** is full of free information to help you improve your professionalism and strengthen your company.

ComfortMaxx

measureQuick

Apple App Store

ncilink.com/mQappiOS

Google Play

ncilink.com/mQappDroid

NCI™
National Comfort Institute, Inc.

ComfortMaxx™

Powered by measureQuick®

Take your Testing & Diagnostics to A New Level

ComfortMaxx helps you diagnose performance issues and verify system efficiency, turning testing into a proactive business tool. With it, you can:

- Deliver high-quality installations backed by data-driven insights
- Identify and resolve comfort and energy efficiency problems competitors miss
- Reduce callbacks and ensure consistent installation standards
- Establish baselines that help generate profitable leads for system upgrades.

Only $10 per month per user!

Call 800 633-7058 • Download the measureQuick app to Get Started Now!

By Alex Ayers

Navigating the HVACR *Regulatory Landscape: Stability Ahead*

The past few years have been challenging for HVACR distributors and contractors. Constant regulatory changes have impacted nearly every aspect of the business, from refrigerants and energy efficiency standards to labor and trade policy, all of which have undergone significant shifts.

For many in the industry, it often feels as though the regulatory ground is constantly shifting beneath their feet.

But there is reason for cautious optimism. As we look ahead to the next few years, we anticipate a slowdown in the regulatory pace. While the current turbulence persists, we can see the path to clearer air as we complete the HFC transition, and deadlines to phase out the manufacture of certain equipment efficiencies approach.

STABILITY FOR NOW

We should be entering a time of stability. A stable regulatory landscape is a welcome change for our industry; distributors and contractors can focus on improving business operations and customer satisfaction, while OEMs can conduct the necessary research and development needed to innovate new technologies.

However, as we refocus on the core business of selling and servicing HVACR equipment, we must not be complacent about what I call two existing wildcards.

AND THE WILD CARDS ARE ...

With a stable federal approach to regulation, the opportunity for state-level action remains significant. Driven by historical and political motivations, states such as California, New York, and Washington are progressing further than the federal government in terms of HFC policies and emissions reductions.

HARDI and the rest of the HVACR industry oppose state-level actions that create a patchwork of regulations to follow. Allowing a product to be legal in one state and prohibited in another complicates compliance and heightens uncertainty.

As an industry, we will continue to engage with states on how to shape policies that incentivize behavior rather than prohibiting specific classes of equipment.

In addition to state-level action, there is growing uncertainty on the international front as tariff policies become political bargaining tools that affect both domestic manufacturing and foreign relations. We anticipate that tariffs will play a significant role in the federal government's policy agenda for the coming years.

Fortunately, an emerging consensus is forming across the HVACR supply chain, indicating that the regulatory cycle is shifting toward a period of greater stability.

REFRIGERANT TRANSITION

The key refrigerant transition rules under the AIM Act are mostly finalized. The industry is deeply engaged in adopting A2L refrigerants despite ongoing issues with refrigerant availability.

While the Environmental Protection Agency (EPA) is currently reconsidering aspects of the **Technology Transition Rule**, which sets the schedule for changing to new refrigerants used by equipment, we believe these changes are minor.

They fix issues like a loophole allowing condensing unit "chop and drop" changes of R-410A equipment long after the rest of the industry has moved to new refrigerants.

Today, more than 50% of central systems installed use A2L refrigerants, and manufacturers and distributors expect the transition across all sectors of the HVACR industry to continue normalizing over the next 12 to 24 months.

We expect any changes caused by EPA's reconsideration announcement to be minimal; the statutory and regulatory timelines make changes to anything other than supermarket refrigeration difficult.

ENERGY EFFICIENCY

Regarding energy efficiency, the most significant Department of Energy (DOE) rule makings have already taken effect or are scheduled for future compliance dates.

There are few indications that another round of efficiency rules will be proposed in the near term, partly because the industry has already realized the most achievable gains through recent regulatory changes.

While we expect no new significant energy efficiency changes, we might see rollbacks of some rules, such as the consumer furnace rule, which requires manufacturers to achieve a minimum efficiency of 95% on all furnaces by late 2028.

The U.S. District Court of Appeals is considering litigation that could overturn that rule.

CHANGES IN HOW REGULATIONS ARE WRITTEN

A period of regulatory certainty also enables us to collaborate more effectively with Congress on the development of regulations.

One of HARDI's priorities is to ensure that no future regulations use the installation date for compliance. Installation date requirements complicate the supply chain, leading to higher consumer costs.

During this time, we also have the opportunity to reform how the DOE determines whether energy efficiency regulations are necessary and whether they genuinely benefit consumers.

Eliminating regulations that exist just for the sake of regulating would be a significant victory for the HVACR industry.

In short, the core areas of the HVACR business — what refrigerants can be used, what equipment can be sold, and how efficient it must be — are entering a phase of reduced regulatory action.

The result is that distributors and contractors will soon be able to focus more on delivering products and services to customers and less on keeping up with new compliance mandates.

The HVACR industry is resilient. The past few years have tested that resilience with an unprecedented wave of regulatory changes. However, the outlook is brightening. As refrigerant and efficiency transitions near completion, the sector can anticipate a period of greater regulatory stability. NCI

Alex Ayers is vice president of government affairs for **HARDI**, a trade association comprised of 550 wholesale companies, nearly 300 manufacturing associates, and almost 100 manufacturer representatives. HARDI members represent an estimated 70% of the dollar value of HVACR products sold through distribution. Alex has spent more than a decade lobbying, publishing papers, and testifying in various policy areas, including taxes, energy, environment, agriculture, and economics. To reach him, go to **ncilink.com/ContactMe**.

NCI LAUNCHES PODCASTING CHANNEL

Recently, National Comfort Institute (NCI) launched its first podcasting channel. The idea is to challenge the status quo and explore ideas with leading experts to improve HVAC through measurements, not guesswork.

The **High-Performance HVAC Podcast channel** is one link in a new chain that is under the HVAC Today umbrella.

This upgrade to the magazine's website will also contain future features and benefits designed to promote the advantages of taking a high-performance approach to your work and managing your companies.

Currently the channel contains five audio podcasts that include:

- **Training the Next Generation of HVAC Technicians:** Recorded live at AHR Expo 2025.

Adam Mufich and Dominick Guarino talk with Bryan and Leilani Orr to get the inside scoop on the **GRIT Foundation,** a new non-profit organization dedicated to educating young people about careers in skilled trades including HVAC, electrical, plumbing, and carpentry.

- **HVAC Diagnostic Workflows and Training Paths:** Recorded live at AHR Expo 2025.

Adam Mufich and Dominick Guarino of National Comfort Institute talk with Steve Rogers and Chris Hughes of **The Energy Conservatory** about the Air Upgrade™ process and how that has changed the path of airflow testing. Testing is at the center of it.

- **Navigating High-Performance Heat Pump Retrofits:** Recorded live at the AHR Expo 2025.

NCI's David Richardson brings together some champions of heat pump retrofits to talk about their experiences with them — including a teaser for a new upcoming NCI class!

- **You Are the Brand:** Recorded live at AHR Expo 2025

Chuck Worley from **Worley Home Services** tells his story of successes and failures in building HVAC companies over nearly three decades. He shares his experiences on the path to High-Performance HVAC and his NCI training. Chuck then delves into how being noticed and remembered through great branding can put your business on the top of new and existing customers' minds.

- **Transition to A2L and Beyond:** Recorded live at AHR Expo 2025

NCI's Adam Mufich and Craig Migliaccio of **AC Service Tech, LLC** discuss the challenges and opportunities with A2L refrigerants. This podcast explores how contractors can stay on top of this rapidly changing area. Craig also shares numerous insights published in his new book, ***"2nd Edition Refrigerant Charging and Service Procedures for Air."***

You can find our High-Performance HVAC Podcast wherever you get your podcasts.

NEW NCI PARTNER SEITRON OFFERS STUDENTS DISCOUNTS

Designed by technicians – for technicians, Seitron Americas has been manufacturing combustion analyzers and HVAC testing instruments since 1981.

National Comfort Institute, Inc. (NCI) has been revolutionizing the HVAC industry since 1994 with their concept of "High-Performance HVAC" – where you measure performance and don't guess.

Seitron and NCI have teamed up to create the first combustion analyzer and personal carbon monoxide (CO) monitors of their kind! Sietron has implemented many new features, capabilities and the fastest service turn-around in the market, usually within only one or two business days.

Introducing the **NOVO** – the first analyzer of it's kind that implements a new PRO/Combustion Assistant Mode. This mode allows the user to select the fuel type, then the equipment being tested, and then have an easy guide on screen of where the combustion results should be, all based on NCI-recommended ranges!

As a result of this partnership, Seitron and NCI are happy to announce that ***all NCI students qualify for discounts from Seitron!*** NCI Members get an even better discount. Be sure to ask NCI about becoming a member today. Call **800/633-7058** to learn more about membership.

Visit **Seitron Americas** website for a full offering of instruments and to get free demos, training, and more.

Advertiser Index

To Subscribe to High-Performance HVAC Today:

ONLINE: Visit HVACToday.com/subscribe for a FREE digital subscription.

PRINT: 1 year/$72; single copy $7. Canada: 1 year/$92; single copy $9. Payable in advance with U.S. funds. Prepaid subscriptions may be sent to: High-Performance HVAC Today, PO Box 2053, Morristown,TN 37816. Phone toll free: 800-633-7058; or visit HVACToday.com/subscribe to order online.

NCI National Comfort Institute, Inc.

HIGH-PERFORMANCE HVAC TODAY™

Publisher
Dominick Guarino

Editor-in-Chief
Mike Weil

Art Director
Judy Marquardt

Online Development Director
Brian Roseman

Circulation Manager
Andrea Begany-Garsed

Go to ncilink.com/ContactMe with your comments and questions.

By Dominick Guarino

Welcome to a New Era of Sharing and *Collaboration In Our Industry*

Dominick Guarino is publisher of ***High-Performance HVAC Today*** magazine and CEO of National Comfort Institute, Inc. He can be reached at ncilink.com/ContactMe.

Over the past decade, a very special community of individuals and companies with a passion for improving the industry has emerged. They openly share knowledge with others — and welcome anyone with a desire to improve into their mostly digital circles.

This community isn't necessarily organized into formal groups. While some may be affiliated with industry groups and associations, they also stand alone in their quest towards excellence.

What makes them stand out is their burning desire to constantly learn and share their knowledge. They do this very publicly, and often directly mentor their brothers and sisters in HVAC.

Interestingly, in the 1980s and 90s our industry fostered a similar spirit. Forward-thinking contractors like Doc Rusk, Ron Smith, Tom McCart, and many others openly shared their knowledge and experience with fellow HVAC professionals.

We saw a noticeable shift away from this open sharing in the late 90s that continued into the early 2000s.

It's great to see that over the past several years this trend is reversing. With advances in social media, channels like YouTube, and podcasting platforms, we're experiencing a resurgence of this sharing and collaboration.

AN INDUSTRY RENAISSANCE

Listed below are some of the top individuals and organizations who are passionate about helping techs and contractors take their skills to the next level of performance.

While this is by no means a comprehensive directory (it would take several pages to recognize so many great people), the following are people who I know personally, and can tell you they are the real deal. They invest heavily in researching their content:

- **Bryan Orr,** Kalos Services**,** HVAC School**,** HVACR Symposium
- **Chris Hughes**, TEC, **Michael Cianfrocco,** HVAC Grapevine Podcast — appear on many podcasts and channels
- **Jim Bergmann,** measureQuick® — appears on many podcasts and channels
- **Craig Migliaccio,** AC Service Tech YouTube Channel
- **Ty Brannaman,** Love2HVAC YouTube Channel and GRIT Foundation
- **Jeremy Begley,** HVAC 2 Home Performance YouTube Channel
- **Bill Spohn**, and **Eric Keiser** Trutech Tools Podcast
- **Adam Mufich, David Richardson, Dominick Guarino**, National Comfort Institute (NCI) — The High-Performance HVAC Podcast — frequent industry authors
- **Dustin Cole**, Cole Air — appears on many podcasts and channels
- **Jennifer Manzo** – HVA-Chicks Coalition and Radio Show
- **Tim Destasio,** Tim Destasio HVAC YouTube Channel

A word of caution: Over the past few years there has been a proliferation of HVAC podcasters and YouTubers.

Some are great, but many are mercenaries who just regurgitate content with little or no experience just to get clicks and money from advertisers. Be careful to not inadvertently disseminate bad information within your organization.

It's never too late to get plugged into a new, legitimate online community.

Take some time each day to explore and decide which people you want to follow and learn from. The upside can be exponential for you and your company!

CUTTING-EDGE TRAINING

No NCI Membership Required!

From The Industry Leader In High-Performance HVAC™ Contracting

Think you know airflow? Think you know carbon monoxide safety? Think you know how to solve your customer's comfort issues? Be sure. Don't guess. Find the training and expertise you need from the National Comfort Institute (NCI). Only at NCI will you find certification courses like Duct System Optimization and Combustion and Carbon Monoxide Safety, taught by leaders and innovators in the HVAC industry. Find out why NCI says, *"If You Don't Measure, You're Just Guessing!™"* Visit the link below or call **800-633-7058** to find classes near you.

UPCOMING NCI TRAINING: JULY - SEPTEMBER 2025

PUBLIC LIVE TRAINING

Combustion Performance and Carbon Monoxide Safety
August 12-14: Grand Rapids, MI
August 26-28: Livonia, MI
September 16-18: Centennial, CO
September 23-25: Eagan, MN
September 23-25: Valley View, OH
September 30 - October 2: Lakewood, NJ

Residential HVAC System Performance and Air Balancing
August 12-14: Lewisville, TX
August 19-21: Mentor, OH
September 16-18: White Plains, NY
September 30 - October 2: Somerville, MA

Airflow Testing & Diagnostics
September 16: Austin, TX

Commercial Air Balancing
August 19-21: Glen Burnie, MD
September 16-18: Roswell, GA

PUBLIC LIVE TRAINING *(cont.)*

Duct System Optimization and Residential Air Balancing
August 26-28: Denver, CO
September 23-25: Richmond, VA

PUBLIC ONLINE LIVE TRAINING

Commercial HVAC System Performance - *ONLINE LIVE*
Part 1: July 1-2 • ***Part 2:*** July 8-9

Airflow Testing and Diagnostics - *ONLINE LIVE*
July 29-30

Combustion Performance and Carbon Monoxide Safety Recertification - *ONLINE LIVE*
August 5-6

Residential HVAC System Performance - *ONLINE LIVE*
Part 1: August 26-27:
Part 2: September 2-3

SUMMIT 2025
September 9-12
Round Rock, Texas
GoToSummit.com

*SCE SPONSORED LIVE TRAINING
ncilink.com/SCESchedule

Commercial Air Balancing
August 19-21: Anaheim, CA

Airflow Testing & Diagnostics
September 16: Anaheim, CA

Refrigerant-Side Performance
September 17-18: Anaheim, CA

Commercial System Performance
September 23-24: Anaheim, CA

NCI National Comfort Institute, Inc.

**NCI training sponsored/subsidized by Southern California Edison (SCE) for qualified local contractors.*

Visit NCIlink.com/ClassSchedule to view the latest schedule.