

# NORA Initiates a Large Scale 100% Renewable Heating Fuel Field Study

**N**ORA, in partnership with Chevron and nine liquid heating fuel wholesale/retail distributors across three States, has embarked in the first of its kind, large scale field study on the use of 100% renewable heating fuels in homes.

The field test will have homes running on either 80% renewable diesel blended with 20% biodiesel (RD80/BD20), or 50% renewable diesel/50% biodiesel (RD50/BD50).

These test site homes will be monitored through both a heating season and an off season to determine the fuels suitability for use in the home heating market.

Retail Marketers participating in the study:

**Massachusetts**

Broco Energy  
Cubby Oil & Energy  
Noonan Energy Corp.

**Pennsylvania**

Rhoads Energy Corp.  
Moyer Heating Fuels  
Wilson Oil & Propane  
Oehlert Bros. Incorporated  
D.E Duffy & Sons, Inc.  
Shipley Energy

**ICM: Michael, why do you think this field study is important for the liquid fuel heating industry?**



**Michael Devine**  
President  
NORA

**Devine:** The liquid heating industry now has an option to provide not only traditional heating oil, but also a domestically produced renewable energy. This additional option provides the 4,000 plus retail liquid fuel heating companies with the opportunity to deliver a fuel that they feel offers an additional option for their customers, whether they are residential, commercial, government or the like.

The more products that a liquid heating marketer can deliver, the more services that they can deliver—the more solid the company is and the more valuable your company is in your marketplace.

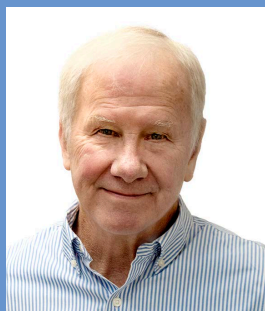
From NORA's perspective, we're evaluating fuels and we're evaluating equipment. We're working on ways in which the retail heating fuel distributor can offer more products and more services to their customers in a safe and secure manner.

**ICM: Michael, you have a history with renewable fuels and with renewable diesel and biodiesel blends in California. Is there anything from that experience that can be applied to home heating?**

**Devine:** Yes, in my previous position at World Energy, I had the opportunity to help develop a transportation market in California where we introduced blends of 80% renewable diesel with 20% biodiesel and the program was very successful. The practical experience showed that it works, and it works really well, and in many cases the transportation carriers found it to be a superior fuel to conventional diesel.

The lessons learned alerted us to the opportunity to do the same thing in the heating oil industry and see if we could provide another fuel for retail heating oil distributors to deliver.

**ICM: Tom, as the director of Research for NORA, you must have been deeply involved in the planning and execution of this study. What are your goals for this project?**



**Dr. Tom Butcher**  
Director of Research  
NORA

**Butcher:** At the top level, we want to demonstrate that these blends can be successfully used in existing residential heating equipment, and we certainly want to identify any adjustments that the equipment may require, or any other concerns that may come up.

**ICM: This study is in real homes, with real people and real-life situations. What kind of lab work has led you to the point where you feel comfortable that you can do this in a large quantity of homes?**

**Butcher:** We have a long history of research on biodiesel, renewable diesel and various blends in the lab. We know the basic combustion characteristics of these fuels. We've done a lot of looking at transitions, changing from a baseline fuel to one of these blends at any blend level or ratio. We know that there's minimal impact on the heating equipment during that transition.

We've done a lot of long-term testing in our lab with different equipment, looking at the response of flame sensors for example, combustion stability and, elastomers and pumps. These are good fuels and we're optimistic that things are going to go well in this field study.

**ICM: How many homes are in the study set?**

**Butcher:** It's changing a bit as we go, but right now there are a total of 133 sites, primarily in Massachusetts and Pennsylvania, and one in New Hampshire. Of these, 28 use RD50/BD50 and 105 use RD80/BD20.

We've divided those into what we call Level One sites and Level Two sites. The Level One sites are our detailed study sites and there are 33 of those;

we're making regular visits, we're measuring combustion efficiency and we're carefully inspecting burner heads and we are taking fuel samples for analysis at the balance of the sites, which are Level Two, for which evaluation is based on service records and service history and the feedback that we get from the participating marketers.

**ICM: Are you taking these sites "as is"? Are they being prepared in any way?**

**Butcher:** No changes, and that's a deliberate decision on our part. If these fuels get used broadly, it's not practical to have a lot of investment in the preparation of these sites.

What we have done is to visit all the sites to be sure that we can get access for fuel sampling, for inspection and to make sure there are no technical or mechanical problems that need to be addressed, regardless of the fuel they're burning.

In some cases, we changed the primary control only to make it easier for us to get information on operating history and CAD cell resistance.

**ICM: What about on-site storage, is it a mixture of indoor and outdoor? Are you avoiding outdoor storage?**

**Butcher:** The cold flow characteristics are good, but we are still concerned about outdoor storage. We're focused strictly on indoor storage so that we can put the emphasis on the equipment itself, the burners and appliances, and not have to worry about the outdoor storage question yet.

**ICM: What kind of heating systems are you looking at in the study?**

**Butcher:** That's a great question and one that we've spent a lot of time thinking about. We have a good mix of boilers and furnaces included in the set. We have some stand-alone water heaters there, as well.

We wanted to get good representation from the most common manufacturers within the industry. We think we've done a good job of achieving this—of getting great representation from all the different corners of the industry that could be affected by this going forward.

**ICM: This appears to be a broad-scale operation. What were the logistics of putting it together? What are the challenges and what is your timeline?**



**Butcher:** The first step was the lab testing on these fuels. Next, we reached out to fuel marketers and asked them for a list of potential candidate sites. They did their homework and came up with a great selection.

We did combustion testing and inspections of the field sites because we wanted to know the environment into which we are going to be putting these fuels. We also took tank samples and found that the fuel quality was quite good.

One of the things that we did not do in this project was to empty and clean the tank. We are delivering this fuel on top of possibly decades of pre-existing oil use. There could be sludge at the bottom of the tanks or leftover fuel at any level—high or low—in the tanks. Again, that was a deliberate decision so that the tests were done in as realistic a way as possible.

Our next plan will be to visit again next Fall. One of the things that we're really interested in, as part of this and any field study we do with biofuels, is how they hold up over the Summer when there is not much fuel turnover. Our experience tells us that they hold up well, but we want to pay attention to that.

**ICM:** *Jason, can you tell us how Chevron got involved in this project, what its contribution is and what you hope to accomplish?*



**Lawrence:** The project is something that Michael Devine and I have talked about for some time, and in January of this past year, at the Clean Fuels Alliance America conference, Michael suggested an RD80/B20 study in heating oil, and I took the idea back to Chevron leadership.

There have been studies on RD80/B50 in transportation, with good results, and there was an interest in extending it into heating oil.

A request was made to NORA to proceed with the trial with Chevron being the supplier of renewable diesel and biodiesel. An RD50/B50 blend study was also of interest. Chevron sees an opportunity to transition to a 100% renewable fuel wherever heating oil is used.

**ICM:** *You are providing two different fuels to various locations in three States. How do you manage that?*

**Lawrence:** Our partner in Massachusetts, Broco Oil, with whom Chevron has had a long-standing relationship, has a terminal facility where they currently receive and store both renewable diesel and biodiesel. We send, by rail, the biodiesel and renewable diesel; Broco Oil has set up blending apparatus at its terminal where it can blend either RD80/B20 or RD50/B50.

In Pennsylvania, Rhoads Energy offered a site in Strasburg, PA, where we could bring in pre-blended RD80/B20 on rail cars that was blended in our Geismar, LA location.

Our job is to produce the best fuel possible for both biodiesel and renewable diesel and get it into the hands of the retail marketers and let them do what they do best.

We believe upon a successful study, this is going to be a game changer for the heating oil industry.

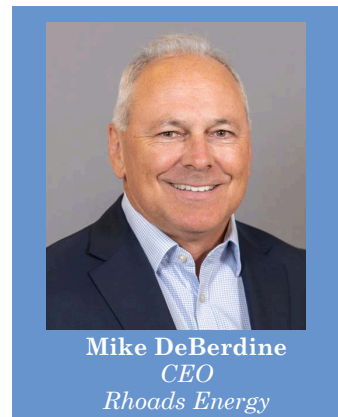
**ICM:** *Biodiesel has had a presence in the liquid heating fuel market in the Northeast for decades now. Renewable diesel, not so much. Can you comment on the availability of renewable diesel in the Northeast to complement biodiesel?*

**Lawrence:** I would say that renewable diesel is available and plentiful. However, one of the biggest challenges we have on the East Coast is with public policy.

We are working behind the scenes with our corporate affairs and government affairs teams to continue to press forward for legislative efforts that are similar to those in California and the West Coast. I know there is legislation pending and conversations happening throughout several States here in the

Northeast and Mid-Atlantic to adopt, or at least plan to adopt, either a low carbon fuel standard or a clean heat standard, which would then include incentives and credits for both biodiesel and renewable diesel.

**ICM:** *Mike, what attracted Rhoads Energy to this initiative?*



**DeBerdine:** Our industry needs to continue to focus on being forward thinking and not waiting to be legislated into our policies. I also think that if we have the technology with two great products—renewable diesel and biodiesel—we need to be proactive as leaders in the energy space and do it without being legislated as to when to do it and how to do it.

**ICM:** *As we understand it, your company will be receiving the fuel from Chevron, storing and blending RD80/B20 to deliver to your customers, as well as providing fuels to other retailers in Pennsylvania?*

**DeBerdine:** That's right, we are working with a good group of retailers here in Pennsylvania who, along with Rhoads, will be delivering the RD80/B20 fuel to homeowners and monitoring their systems, as well. Ohlert



Brothers is a terminal receiving fuel for this study, also. Additionally, we had the opportunity to work with the Strasburg Railroad, who have been a fantastic partner. They are looking to generate new business opportunities and saw the big picture of where this could lead us all.

**ICM: Have you had to do anything different at your terminal to receive and blend these fuels?**

**DeBerdine:** We're using common carriers for the product that have pumps on their trucks already, and we're using the head pressure off of the rail cars; actually, I think we just bought some extra hoses. Both Rhoads and Ohlert have dedicated tanks.

We had an off-road diesel fuel tank that we switched over to a renewable diesel fuel blend—that product is being isolated there for control purposes. Steve Ohlert has done the same thing with the dedicated tank on his property; both of us are using below-ground tanks.

The other marketers come in when they need the fuel to serve the 145 customers in the test.

**ICM: We just talked about your position as the receiver, blender and distributor of the fuel, but you're also one of the retailers whose customers are in the study. What have you seen so far?**

**DeBerdine:** NORA gave us some guidelines as to what they were looking for and we assembled a good sample of 21 accounts. One of our Level 1 sites was very excited to hear how this works and excited to be included in this test. We have not had a single fuel-related issue. We only had one service call, and it was not fuel related.



**ICM: Did you have any issues within your company concerning project buy-in?**

**DeBerdine:** No, we didn't have any issues internally. We're moving aggressively into biofuel infrastructure at our company. We share it with the team and with the techs. We have videos we send out to our entire company to keep them updated.

**ICM: Why these specific blends: RD80/B20 and RD50/B50?**

**Devine:** I think strategically these two blends each offer very important commercial considerations. ASTM recognizes B20 as conforming to ASTM 396 as does renewable diesel. An 80% renewable diesel/20% biodiesel mix is a conforming fuel to ASTM 396, the same standard as petroleum heating oil. We would have a conforming 100% renewable liquid fuel that we could utilize immediately.

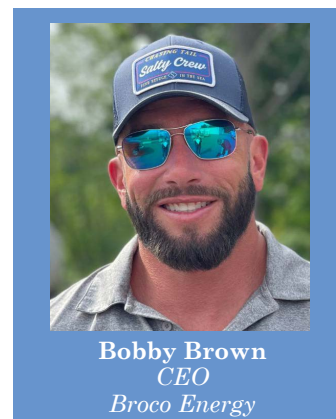
The oil burner manufacturers, equipment manufacturers, NORA and Clean Fuels Alliance America are working to have B50 as an ASTM conforming fuel. The work that we're doing in this study is going to provide valuable field data as that balloting commences. Ideally, what we want to be able to do at NORA is to move to where B100 is a conforming heating fuel for ASTM. As renewable diesel is already a conforming fuel for heating oil, any combination, any blend will also be conforming and work well within our equipment.

**ICM: Pennsylvania testing is using RD80/B20 and the Massachusetts sites are using RD50/B50. Why is that?**

**Lawrence:** We wanted to make sure that we were doing a 50/50 blend for the reasons Michael Devine mentioned

earlier. We also wanted to ensure that that blend was going to work with Broco's current existing terminal infrastructure. We all wanted to see how that blend would work in the existing heating oil market.

**ICM: Bobby, your company, Broco Energy, is the distribution point for Massachusetts. You will be receiving the fuels, blending to RD50/B50 and delivering to your customers. What brought you to this project?**



**Brown:** When we started the company in 2007, we wanted to promote a fuel that was friendly to the environment. With that, we started to deliver biodiesel blends and now our customer base is getting B40. We added a blending system, and we added B100 storage. With our storage and blending capabilities, we are also supplying other retailers who are part of the NORA study.

**ICM: How many customers do you have in this field study and how did they react to being part of it?**

**Brown:** Fifteen. They were all on board. I told them that this is a way for them to keep their options on fuel choice open and not be beholden to a utility...and it's a lower-carbon renewable fueling solution. They were all in and they trust us. It's exactly what the state of Massachusetts is looking for.

**ICM: What has your experience been with servicing these homes?**

**Brown:** We haven't had any burner service calls. We've done checkups just to make sure that the nozzles aren't getting glazed over and we are going to check on some heat exchangers in May and June. Before the study, we made sure the system was up-to-par,



and post-study, we expect the system to be clean. These are very, very good products.

**ICM:** *What is the estimated completion time for this project?*

**Butcher:** We expect to wrap up by Spring 2026 and that is when the reporting moves to top of our list. As we go through the entire year, it is important that we document in detail, which includes the data, inspections, understanding of what the equipment really looks like and service history. It's important to us that these fuels work well, but also that we're able to formally document it.

**ICM:** *You have this complex study involving many people, with documented results expected by next Spring; what comes after that?*

**Lawrence:** Our expectation is to shed light on the practical use of 100% renewable liquid heating fuels. I think it's going to be helpful for us to use what we find in this study to have conversations within State houses and legislatures for the advocacy of renew-

able liquid heating fuel. We then plan to make commercially available blends of renewable diesel and biodiesel across the spectrum of fuels, whether it's 80/20, 50/50 or 100% renewable direct replacements. I think that it's going to open some doors and help the heating oil market as we move into the future.

**DeBerdine:** As a retailer, I would echo what Jason said. Our company and the Pennsylvania Petroleum Association have been working at the State level on a low carbon fuel standard bill. Ideally, I would be much more in favor of advocating for a national standard as opposed to a state-by-state approach. However, we'll take what we get. Mostly, we have to get it to market in a way that the consumer can embrace.

**ICM:** *Michael, what do you see as the next step for NORA and for the industry?*

**Devine:** From NORA's perspective, this project reaffirmed the cooperation and the altruistic nature of our industry.

We had a lot of questions as we began

to lay this out. The biggest concern was whether we would have enough sites to test. It was ambitious to think about 150 sites. It was ambitious that people would let us into their homes three or four times to do sampling and testing. It was ambitious that Chevron would be offering this fuel at the same price as heating oil when there was going to be an increased cost for them. It was ambitious to think that Rhoads Energy and Broco Oil were going to set aside tank space in their very valuable infrastructure.

It took all these parties to come to the table altruistically to try to lift the industry. NORA receives the least amount of credit. It's the industry and these partners that stepped up to say this is important and this is how we going to pitch in and be part of this.

What this means to the heating oil industry is additional energy choice; that we have more products to deliver to the consumer. We think these are very dynamic fuels and that they can be well positioned for the future. [ICM](#)