

NORA Board Meeting

May 19, 2020

By Zoom

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Meeting ID: 272 023 804

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One tap mobile

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Please Mute Phone or Computer When not Talking

- I. Introduction – Chairman Rick Bologna and President John Huber
- II. Approval of Minutes
- III. Financial Information – Treasurer Eric Degesero
  - a. Review of 2019 Internal Financials
    - i. Likely Changes Post Audit
  - b. 2020 Budget and Amendments
  - c. Status of Audit
  - d. March Financials
- IV. Research and Development – Director of Laboratory Dr. Thomas Butcher
  - a. Review of Lab Operations - COVID
  - b. Research Review
  - c. Biodiesel Service
  - d. U.S. -EURO Technical Conference
- V. Education and Training Activities John Levey
  - a. Tank Book
  - b. Silver Book
  - c. Revision of Certification Exams
  - d. Gold Program Updates
- VI. Energy Efficiency – Rebates and Evaluation of Effectiveness
- VII. Executive Committee and Officers
- VIII. Old Business -
- IX. New Business -
- X. Adjournment

Minutes  
Board of Directors  
National Oilheat Research Alliance  
September 17, 2019  
12:00PM-2:00PM

I. Introduction – Chairman Charles Uglietto and President John Huber

Mr. Charles Uglietto called the meeting to order at 12:04 pm EST and directed Mr. John Huber to call the roll. Mr. Huber called the roll and the following members of the Board are present.

Greg Anderson Peter Aziz Rick Bologna Peter Buotte Al Breda Greg Childs Randy Groft Mike Estes Scott Hacker Susan Hammond Allison Heaney	Michael Januario Joe Kennan Quincy Longacre Steve McCracken John McCusker Matt Mehan John Miles Ted Noonan Ed Scott Daniel Singer Charlie Uglietto
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II. Approval of Minutes

A motion to approve the minutes from the May 21, 2019 board meeting was made by Ms. Allison Heaney, seconded by Mr. Mike Estes and approved by voice.

III. Financial Report – Treasurer Eric Degesero

The first item in the packet is the finalized audit for 2018. At the Board meeting in May, the draft was presented, which matched our internal financial statements. We reviewed the year-end financial statements at that time. Thus, this final audit merely reflects the finalization of a draft product that we saw earlier.

The management letter is a separate document.

On page 1, there are two described deficiencies. The first involves classifications of rebate programs. Essentially, some of the rebates were incorrectly classified and not corrected prior to sending the accounting records for audit, and this required two adjustments during the audit. The payments John received for NAORE were not

properly classified. John when lobbying is paid by NAORE. At the end of the year, he sent a bill to NAORE, which then reimbursed NORA. In previous years, John has simply lowered his income to accommodate that change. The accounting firm did not directly link those accounts. Management will more carefully review these items prior to next audit.

On the second page, there is a note on changing accounting standards. Essentially legal expenses had been allocated to accounts. This is no longer appropriate and needs to be adjusted prior to the next audit.

Under significant deficiency there are two items. Generally, when NORA has contracts for research, NORA pays on a task basis, after review of a report. A couple of projects had work done in 2018, but no report or invoice submitted. To ensure accrual is accommodated, NORA will need to contact vendors at end of year to assess their status. However, this will mainly result in a shift in the liabilities on the balance sheet from obligated under contract to contracts payable.

Another separate document is a banking resolution. NORA has had a lockbox for several years with PNC bank that flows the money from deposits to Merrill Lynch. PNC is cancelling this service at year end. Going forward, the plan is to have checks sent to the NORA offices and they will be delivered to the accounting firm where they will be deposited in a Bank of America account that will then flow into the Merrill Lynch Account. The attached resolution must be approved by the Board. A motion was duly made and seconded. It was then approved unanimously.

Another item of business. Under the revised statute NORA must set up an escrow account for the funds that cannot be spent until 2028. John has been working with counsel and the Bank to do this. It has been a little slow because this is an unusual escrow account, there are not two parties with conditions of release. The conditions of release are in the statute. It is currently under review by Merrill Lynch counsel's office and we hope to set this up soon.

Turning to the financials. These are as of July 31st, and thus include the first two quarters of collections.

We will start with the Statement of Activities. As noted, collections revenue does not include the escrow funds. Thus, the total revenue required for the year, net of refunds is essentially \$9.2 million.

Last year, the total budget for year was \$9.4 million. At year end we were essentially short by \$100K.

Currently, as of June 30th, we had collected \$5.866 million. After deducting refunds, the net is 5.358 million. Last year at this time we had a net collection number of \$5.277 million. So, we are slightly ahead of last year, and have an easier goal to reach. We were on pace to make budget last year, but Q4 of 2018 was what caused the shortage last year. At year end mid-Atlantic was off by 5 percent and New England was off by 3 percent. Thus, if we continue this path, we should be able to make budget. However, we also held back 5 percent from state accounts in consumer education to help accommodate the issue. At the last meeting of the Executive Committee there was discussion of this holdback. One thought was to not release it and use it as a safety account for education and training. Essentially, it will become a balancing fund to ensure that we do not overspend in consumer education and employee training. Any comments on this issue for future guidance would be appreciated.

On the revenue side, you will see a substantial contribution in July of 225K. this is a contract with NBB. Most of that is destined for research and development at the lab. However, nearly half has been determined to be used for support of UL approval for Babington.

The program expense is the next item. For each of these categories, our statement assumes the money is vested to states on January 1st, and therefore is spent. The balance sheet however will give a truer picture of those expenditures.

Consumer education. NORA has spent 128K, and has 141K remaining. Thus, we are close to budget. Any savings in this fund can also be used to ensure that we do not overspend in the consumer education area.

Research and Development is a little below budget for the central office. This is largely the lab in NY, and part of John Huber's salary, and Richard Sweetser. This also is the funds for outside projects, which Richard Sweetser will report on during the R and D report.

As to the Office unallocated expenses, most of everything is under budget. The annual report is high, but that will not accrue additional costs as the year goes by.

Now turning to the statement of financial position. Our total current assets are up by approximately 1.8 million. This is largely attributed to the large increase in the research and development not yet obligated shown under net assets. Additionally, the escrow account which describes money that cannot be spent also affects that number.

The other item of interest is the state balances. As of July 30, the state rebate allocations had fallen from \$8.494M to \$7.343. Again, this is a good trend that the states are spending down their balances.

However, there is a big impact from the escrow as the state allocation in 2019 was lower than previous years. The most significant item is the research and development account. This has nearly \$6 million in it. We were disappointed in the submissions for the PON that Rich will describe, and the research subcommittee recommended that we not fund any of the submissions. John Huber and the research team will be meeting to develop a plan for those funds in October, which he will share with Executive Committee and the Board next spring.

Motion to accept this report was made by Mr. Peter Boutte, seconded by Mr. Al Breda and approved by voice.

#### IV. Research and Development – Director of Laboratory Dr. Thomas Butcher

##### a. Review of Lab Operations and Projects

Dr. Tom Butcher reviewed the projects taking place at the NORA lab. Tankless Coil Project – Conference Paper Abstract accepted for ASHRAE Annual Meeting. June 2020.

Copper Paper – In review, to be submitted to Energy and Fuels Journal.

Fuels in a Renewable Future – Seminar Proposed for ASHRAE Winter Meeting, Feb. 2020.

Work on integrating Babington burner with SMTI Heat Pump ongoing;

Proposal submitted to NYSERDA has been funded (cost share with NORA). Kickoff meeting in Plainview planned.

Dr. Butcher discussed the topics that are being worked on internally. He discussed the following project:

- Cycle testing of legacy pumps with No. 2 oil and B20 (B50 and B100 planned)
- Cycle testing of newly constructed Suntec pumps with No. 2 oil, B20 and B100
- Combustion testing on various biodiesel blends
- Transition testing from low to high (and vice versa) biodiesel blends on different burners

- Purpose of these tests is to provide information to those who chose to use biodiesel blends

#### b. Review of Outside Projects and Project Opportunity Notice

Mr. Sweetser discussed that NORA is seeking proposals to support the development, demonstration, and commercialization of Oilheat. There are different categories in which a proposal can be submitted.

Category A: Ability to go to 100% Low carbon liquid fuel (LCFW). Seeking fuels, components, and burners for NORA testing commercialization

Category B: Biofuel blending, terminal storage, on-site storage & delivery

Category C: Modeling and report demonstrating LCFW appliances are superior than electric heat pumps for residential applications

Category D: Assessing the biofuel fuel supply and delivery infrastructure capabilities in 2030 and 2050

Category E: Demonstrate and field test the integration of latest generation smart thermostats in boiler applications versus the demand, assuming B50 in 2030 and B100 in 2050

Category F: Demonstrate and field test self-diagnostic burners and or appliances that provide trend analysis, component approaching failure and troubleshooting failure analysis.

Category G: Develop an analytical economic optimization model and report covering the sizing and operation of adding a cold climate heat pump to a non-condensing boiler

Category H: Develop advanced heating technologies including LCLF heat pumps focusing on efficiency and zero net carbon

Category I: Develop off-grid or grid failure heating systems that can operate in absence of power using batteries, generators or other means

Mr. Sweetser discussed the outside project listed below:

- Adams
- Babbington (two projects)

- Beckett B20/R80
- Novatio

Mr. Sweetser indicated that none of the proposals were accepted. A motion was made and seconded that NORA should reach out to the manufacturers and try to help them develop meaningful projects and that we should then evaluate said proposals, and hopefully be able to fund them. After some discussion, this motion was adopted.

## V. Education and Training Activities John Levey

### a. Tank Book

Mr. Huber indicated that NORA was making good progress on the Tank Book, with the goal of having it completed by next Board meeting.

### b. Silver Book

Mr. Huber stated that the manual, originally released in 2008, is the textbook for the NORA Silver Certification program and contains more than 360 pages of detailed descriptions, procedures and troubleshooting on all topics relating to oil heating. The seventeen chapters are clearly illustrated with hundreds of color illustrations, photos, diagrams and charts. While this book is widely used by companies, technicians, colleges, trades schools etc., this manual is currently undergoing a much-needed update. Mr. Farrell stated that the revisions are currently underway.

### c. Revision of Certification Exams

Mr. Huber discussed the revisions that are being made to the exams in order to make sure the security of NORA test is at the highest level. He also stated that NORA is currently operating at a 90% online testing rate and that paper test are becoming obsolete. The goal is to eliminate paper testing in 2020.

## VI. Energy Efficiency

Mr. Huber discussed that the focus on energy efficiency is with the rebate program and getting next generation equipment.

## VII. Executive Committee and Officers

Officers and Executive Committee Proposed 2020	
Immediate Past Chairperson	– Charlie Uglietto
Chairman	- Rick Bologna
First Vice-Chairman	-
Second Vice-Chairman	-
Treasurer	- Eric DeGesero
President	- John Huber
Executive Committee	
John McCusker	Global
Mario Bouchard	Granby Industries
Steve Clark	Genessee Fuel
Charles Uglietto	Cubby Oil
Michael Estes	Estes Oil Burner Service
Matt Meehan	Mirabito Fuels
Matt Cota	Vermont Fuel Dealers Association
Rick Bologna	Westmore Fuels

Motion to accept new 2020 members and officers was made by Ms. Allison Heaney seconded by Mr. Mike Januario and approved by voice.

## VIII. Old Business – Messaging Our Story

There continues to be concerns that the public is unaware of the efforts and successes of the industry in improving its product.

## IX. New Business - Reforms to Statute

Mr. Huber discussed that one of the things that NORA is tasked with doing is revising the statute. He stated that the goal of the executive committee to make reforms to the statute if it makes sense and increases the productivity of NORA.

## X. Adjournment



Meeting was called for adjournment at 2:00 p.m.

National Oilheat Research Alliance  
Statement of Activities  
For the Twelve Months Ending December 31, 2019

	December 2019	YTD 2019	2019 Budget	Remaining	YTD 2018
<b>INCOME</b>					
<b>Collections and Assessments</b>					
Collections	\$3,026,619.08	\$10,377,402.51	\$7,446,757.00	(\$2,930,645.51)	\$10,686,398.34
Remittance Accrual	0.00	0.00	0.00	0.00	0.00
Escrow		(1,740,893.00)			
Refunds	(382,414.04)	(1,271,785.96)	0.00	1,271,785.96	(1,444,746.43)
Collection Costs	(9,004.82)	(103,181.62)	(100,000.00)	3,181.62	(88,592.75)
<b>Net Collections</b>	<b>2,635,200.22</b>	<b>7,261,541.93</b>	<b>7,346,757.00</b>	<b>(1,655,677.93)</b>	<b>9,153,059.16</b>
<b>In Kind Contributions</b>					
Sales Revenue	0.00	5,250.72	0.00	(5,250.72)	6,462.28
Other Revenue (Grants, etc)	3,564.00	253,680.04	0.00	(253,680.04)	260,247.75
<b>Total Income</b>	<b>2,638,764.22</b>	<b>7,520,472.69</b>	<b>7,346,757.00</b>	<b>(1,914,608.69)</b>	<b>9,419,769.19</b>
<b>PROGRAM EXPENSES</b>					
<b>Consumer Education and Training (Max. 30%)</b>	<b>34,475.83</b>	<b>2,060,366.01</b>	<b>2,107,333.56</b>	<b>46,967.55</b>	<b>2,802,330.67</b>
Education and Training (Central)	34,475.83	223,032.45	270,000.00	46,967.55	338,845.39
Education and Training (States)	0.00	1,837,333.56	1,837,333.56	0.00	2,463,485.28
<b>Research Development and Demonstration (Min. 30%)</b>	<b>122,345.14</b>	<b>1,847,305.43</b>	<b>2,204,025.67</b>	<b>356,720.24</b>	<b>1,883,572.91</b>
Research Development and Demonstration (Central)	122,345.14	1,293,279.76	1,650,000.00	356,720.24	1,169,665.51
Research Development and Demonstration (States)	0.00	554,025.67	554,025.67	0.00	713,907.40
<b>Home Energy Efficiency Program (Min. 15%)</b>	<b>6,321.24</b>	<b>1,097,985.22</b>	<b>1,102,010.92</b>	<b>4,025.70</b>	<b>1,406,459.93</b>
Home Energy Efficiency Program (Central)	6,321.24	70,974.30	75,000.00	4,025.70	79,737.30
Home Energy Efficiency Program (States)	0.00	1,027,010.92	1,027,010.92	0.00	1,326,722.63
<b>Total Central</b>	<b>163,142.21</b>	<b>1,587,286.51</b>	<b>1,995,000.00</b>	<b>407,713.49</b>	<b>1,588,248.20</b>
<b>Total States</b>	<b>0.00</b>	<b>3,418,370.15</b>	<b>3,418,370.15</b>	<b>0.00</b>	<b>4,504,115.31</b>
<b>State Rebates</b>	<b>(447,366.09)</b>	<b>1,618,085.09</b>	<b>1,618,085.09</b>	<b>0.00</b>	<b>1,942,500.79</b>
<b>Old Grant Advertising</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Office Unallocated Expenses</b>					
Salaries and Consulting (Admin)	9,579.67	103,804.22	100,000.00	(3,804.22)	117,874.86
Accounting (Admin)	3,146.82	38,059.16	30,000.00	(8,059.16)	31,360.42
Insurance (Admin)	19,261.75	37,222.11	18,000.00	(19,222.11)	12,479.22
Taxes	71.31	1,879.30	3,000.00	1,120.70	2,539.81
Postage	0.00	582.44	500.00	(82.44)	1,210.00
Web Pages	1,092.61	20,816.31	30,000.00	9,183.69	15,972.26
Annual Report	1,266.04	38,397.23	45,000.00	6,602.77	51,415.63
Rent and Telephone	1,487.99	18,547.49	24,000.00	5,452.51	17,271.29
Travel	0.00	627.44	1,000.00	372.56	624.86
Meeting Expenses	0.00	0.00	2,000.00	2,000.00	0.00
Office Supplies	15.54	1,786.53	2,000.00	213.47	1,258.23
Dues & Memberships	13.13	204.37	100.00	(104.37)	200.00
Bank Fees	587.12	6,433.40	6,000.00	(433.40)	5,879.41
Legal Expense	1,653.17	19,896.10	5,000.00	(14,896.10)	96,000.00
Professional Fees	165.00	2,685.50	3,000.00	314.50	5,290.25
Misc Expense	0.00	1,045.92	1,000.00	(45.92)	0.00
Advertising Expense	0.00	0.00	1,000.00	1,000.00	0.00
Fixed Assets <\$1,000	0.00	0.00	1,000.00	1,000.00	0.00
Equipment Maintenance	0.00	0.00	5,000.00	5,000.00	0.00
Bad Debts	0.00	0.00	1,000.00	1,000.00	0.00
<b>Total Unallocated Expenses</b>	<b>38,340.15</b>	<b>291,987.52</b>	<b>278,600.00</b>	<b>(13,387.52)</b>	<b>359,376.24</b>
<b>Other Expenses/(Income)</b>					
Cost of Goods Sold	175.83	5,595.44	0.00	(5,595.44)	4,908.10
Interest Expense	0.00	0.00	0.00	0.00	0.00
Interest	(2,684.04)	(68,717.32)	(60,000.00)	8,717.32	(69,289.51)
<b>Total Other Expenses/(Income)</b>	<b>(2,508.21)</b>	<b>(63,121.88)</b>	<b>(60,000.00)</b>	<b>3,121.88</b>	<b>(64,381.41)</b>
<b>Net Revenue/(Expense)</b>	<b>2,887,156.16</b>	<b>667,865.30</b>	<b>96,701.76</b>	<b>(2,312,056.54)</b>	<b>1,089,910.06</b>

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National Oilheat Research Alliance  
Statement of Financial Position  
December 31, 2019

	2019	2018	
<b>ASSETS</b>			
<b>CURRENT ASSETS:</b>			
Cash and Cash Equivalents	\$9,156,851.78	\$9,151,549.73	55000
Bank of America - Escrow account	1,741,894.70	0.00	
Accounts Receivable	42,608.57	65,237.87	
Assessments and Other Receivables	2,966,129.01	3,086,323.40	
Security Deposit	24,514.18	21,146.10	
Prepaid Assets	105,183.34	147,240.93	
Total Current Assets	14,037,181.58	12,471,498.03	
<b>PROPERTY AND EQUIPMENT</b>			
Office Furniture and Equipment	78,836.98	66,849.15	
Website	45,450.00	45,450.00	
Computer Equipment	3,819.34	3,819.34	
Less: Accumulated Depreciation	(71,442.24)	(60,581.34)	
Less: Accumulative Amortization (Web Site)	(45,449.99)	(38,559.99)	
Total Property and Equipment	11,214.09	16,977.16	
<b>TOTAL ASSETS</b>	<b>\$14,048,395.67</b>	<b>\$12,488,475.19</b>	
<b>LIABILITIES AND NET ASSETS</b>			
<b>CURRENT LIABILITIES:</b>			
State Rebate Obligations 2014	35,340.42	37,652.73	
State Rebate Obligations 2015	199,304.94	295,920.21	
State Rebate Obligations 2016	322,676.69	392,349.58	
State Rebate Obligations 2017	436,975.86	981,961.92	
State Rebate Obligations 2018	1,028,595.51	3,365,458.40	
State Rebate Obligations 2019	2,252,317.31	0.00	
Total Grants Payable	4,275,210.73	5,073,342.84	
Accrued Salaries & Benefits	7,653.85	57,797.86	
Reserve for BIO Diesel Testing	764.35	764.35	
Refunds Reserve	114,242.97	0.00	
Accounts Payable	969,330.33	1,029,541.00	
Contracts Payable	0.00	3,143.00	
Accrued Expenses	24,094.52	75,545.52	
Total Current Liabilities	\$5,391,296.75	\$6,240,134.57	
<b>NET ASSETS:</b>			
Unrestricted Net Assets	562,588.86	(447,133.49)	
Pre-2014 Reauthorization Net Assets	55,933.05	55,933.05	
National Spending Not Yet Incurred			
Research, Development, and Demonstration - net yet obligated	5,330,959.68	5,048,553.78	
Research, Development, and Demonstration - obligated under contract	127,884.00	366,580.00	
Heating Oil Efficiency and Upgrade - net yet obligated	119,137.85	123,039.95	
Consumer Education, Safety, and Training - net yet obligated	51,837.18	11,457.27	
Net Income (Loss)	2,408,758.30	1,089,910.06	
Total Net Assets	8,657,098.92	6,248,340.62	
<b>TOTAL LIABILITIES AND NET ASSETS</b>	<b>\$14,048,395.67</b>	<b>\$12,488,475.19</b>	

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National Oilheat Research Alliance  
Statement of Activities

	2020	2021	2020 revised releasing balance
<b>INCOME</b>			
<b>Collections and Assessments</b>			
Collections	\$ 8,912,020.50	\$ 8,644,659.89	\$ 8,127,762.70
Remittance Accrual			\$ -
Refunds			\$ -
Escrow	\$ 2,228,005.13	\$ 2,161,164.97	\$ 2,006,940.67
Collection Costs	\$ (90,000.00)	\$ (90,000.00)	\$ (90,000.00)
			\$ -
<b>Net Collections</b>	\$ 6,594,015.38	\$ 6,393,494.91	\$ 6,030,822.02
			\$ -
<b>In Kind Contributions</b>			\$ -
Sales Revenue			\$ -
Other Revenue (Grants, etc)	\$ 100,000.00	\$ 100,000.00	\$ 100,000.00
			\$ -
<b>Total Income</b>	\$ 6,694,015.38	\$ 6,493,494.91	\$ 6,130,822.02
			\$ -
			\$ -
			\$ -
			\$ -
<b>PROGRAM EXPENSES</b>			
<b>Consumer Education and Training (Max. 30%)</b>	\$ 2,008,204.61	\$ 1,918,048.47	\$ 1,836,246.61
Education and Training (Central)	\$ 280,000.00	\$ 280,000.00	\$ 270,000.00
Education and Training (States)	\$ 1,728,204.61	\$ 1,638,048.47	\$ 1,566,246.61
			\$ -
<b>Research Development and Demonstration (Min. 30%)</b>	\$ 2,078,204.61	\$ 2,018,048.47	\$ 2,278,204.00
Research Development and Demonstration (Central)	\$ 1,270,000.00	\$ 1,270,000.00	\$ 1,270,000.00
Research Development and Demonstration (States)	\$ 808,204.61	\$ 748,048.47	\$ 1,008,204.00
<b>Home Energy Efficiency Program (Min. 15%)</b>	\$ 989,102.31	\$ 959,024.24	\$ 918,123.30
Home Energy Efficiency Program (Central)	\$ 60,000.00	\$ 60,000.00	\$ 60,000.00
Home Energy Efficiency Program (States)	\$ 929,102.31	\$ 899,024.24	\$ 858,123.30
			\$ -
<b>Total Program Expenses</b>	\$ 5,075,511.53	\$ 4,895,121.19	\$ 5,032,573.91
<b>Total States</b>			\$ -
			\$ -
<b>State Rebates</b>	\$ 1,287,003.84	\$ 1,255,128.73	\$ 1,190,488.67
			\$ -
			\$ -
			\$ -
<b>State Comparative Informational</b>	\$ 4,752,515.38	\$ -	\$ 4,623,062.58
			\$ -
			\$ -
<b>Office Unallocated Expenses</b>			
Salaries and Consulting (Admin)	\$ 165,000.00	\$ 169,950.00	\$ 154,994.40
Accounting (Admin)	\$ 35,000.00	\$ 36,050.00	\$ 32,877.60
Insurance (Admin)	\$ 15,000.00	\$ 15,450.00	\$ 14,090.40
Taxes	\$ 3,000.00	\$ 3,090.00	\$ 2,818.08
Postage	\$ 1,500.00	\$ 1,545.00	\$ 1,409.04
Web Pages	\$ 15,000.00	\$ 15,450.00	\$ 14,090.40
Annual Report	\$ 45,000.00	\$ 46,350.00	\$ 42,271.20
Rent and Telephone	\$ 20,000.00	\$ 20,600.00	\$ 18,787.20
Travel	\$ 1,000.00	\$ 1,030.00	\$ 939.36
Meeting Expenses	\$ 3,000.00	\$ 3,090.00	\$ 2,818.08
Office Supplies	\$ 1,000.00	\$ 1,030.00	\$ 939.36
Dues & Memberships	\$ 1,000.00	\$ 1,030.00	\$ 939.36
Bank Fees	\$ 6,000.00	\$ 6,180.00	\$ 5,636.16
Legal Expense	\$ 75,000.00	\$ 77,250.00	\$ 70,452.00
Equipment Consulting	\$ 5,000.00	\$ 5,150.00	\$ 4,696.80
Misc Expense			\$ -
Advertising Expense			\$ -
Fixed Assets <\$1,000			\$ -
Equipment Maintenance			\$ -
Bad Debts			\$ -
			\$ -
<b>Total Unallocated Expenses (7 Percent Cap)</b>	\$ 391,500.00	\$ 403,245.00	\$ 367,759.44
			\$ -
<b>Other Expenses/(Income)</b>			\$ -
Cost of Goods Sold			\$ -
Interest Expense			\$ -
Interest	\$ 60,000.00	\$ 60,000.00	\$ 60,000.00
			\$ -
<b>Total Other Expenses/(Income)</b>	\$ (60,000.00)		\$ 60,000.00
		\$ -	
<b>Net Revenue/(Expense)</b>			\$ (400,000.00)

National Oilheat Research Alliance  
For the Five Months Ending May 31, 2020

	Budget 2014	Budget 2015	Budget 2016	Budget 2017	Budget 2018	Budget 2019	Budget 2020	Total Budget	Actual 2014	Actual 2015	Actual 2016	Actual 2017	Actual 2018	Actual 2019	Actual 2020	Total Actual	Remaining	endor Name
CT 14 E&T	\$116,634.40							\$116,634.40		\$116,634.40						\$116,634.40		
CT 15 E&T		227,946.61						227,946.61		190,577.89	37,368.72					227,946.61		
CT 16 E&T			256,780.56					256,780.56			256,780.56					256,780.56		
CT 17 E&T				269,293.83				269,293.83			269,293.83					269,293.83		
CT 18 E&T					303,065.71			303,065.71			5,045.00	264,248.83	273,198.74	1,807.04		303,065.71		
CT 19 E&T						189,428.28		189,428.28				28,059.93		130,795.94	16,634.14	147,430.08	41,998.20	
CT 20 E&T							166,808.24	166,808.24								166,808.24		
TOTAL CT	116,634.40	227,946.61	256,780.56	269,293.83	303,065.71	189,428.28	166,808.24	1,529,957.63		307,212.29	299,194.28	292,308.76	273,198.74	132,602.98	16,634.14	1,321,151.19	208,806.44	
CT 14 R&C	23,177.73							23,177.73			23,177.73					23,177.73		
CT 15 R&D		68,833.01						68,833.01			3,318.64	28,883.18	3,346.33	33,284.86		68,833.01		
CT 16 R&D			61,194.59					61,194.59						3,947.03	12,646.61	16,593.64	44,600.95	
CT 17 R&D				63,497.08				63,497.08								63,497.08		
CT 18 R&D					87,827.13			87,827.13								87,827.13		
CT 19 R&D						57,120.19		57,120.19								57,120.19		
CT 20 R&D							107,272.91	107,272.91							27,500.00	27,500.00	79,772.91	
TOTAL CT	23,177.73	68,833.01	61,194.59	63,497.08	87,827.13	57,120.19	107,272.91	468,922.64			26,496.37	28,883.18	3,346.33	37,231.89	40,146.61	136,104.38	332,818.26	
CT 14 EE	62,991.10							62,991.10		46,620.38	16,370.72					62,991.10		
CT 15 EE		118,657.03						118,657.03			91,120.34	27,536.69				118,657.03		
CT 16 EE			134,909.87					134,909.87				134,909.87				134,909.87		
CT 17 EE				140,331.97				140,331.97					140,331.97			140,331.97		
CT 18 EE					163,217.51			163,217.51						163,217.51		163,217.51		
CT 19 EE						105,885.10		105,885.10						105,885.10		105,885.10		
CT 20 EE							91,945.91	91,945.91							173,336.09	173,336.09	(81,390.18)	
TOTAL CT	62,991.10	118,657.03	134,909.87	140,331.97	163,217.51	105,885.10	91,945.91	817,938.49		46,620.38	107,491.06	162,446.56	140,331.97	269,102.61	173,336.09	899,328.67	(81,390.18)	
CT 14 REB	84,766.95							84,766.95			84,766.95					84,766.95		
CT 15 REBATE		164,494.99						164,494.99			110,626.04	53,868.95				164,494.99		
CT 16 REBATE			213,059.19					213,059.19				75,945.56	137,113.63			213,059.19		
CT 17 REBATE				206,788.12				206,788.12					96,168.87	110,619.25		206,788.12		
CT 18 REBATE					238,972.43			238,972.43						83,077.47		83,077.47	155,894.96	
CT 19 REBATE						166,825.00		166,825.00						350.00		350.00	166,475.00	
CT 20 REBATE							126,398.80	126,398.80								126,398.80		
TOTAL CT	84,766.95	164,494.99	213,059.19	206,788.12	238,972.43	166,825.00	126,398.80	1,201,305.48			195,392.99	129,814.51	233,282.50	194,046.72		752,536.72	448,768.76	
DC 14 E&T	985.31							985.31									985.31	
DC 15 E&T		1,925.62						1,925.62									1,925.62	
DC 16 E&T			1,271.60					1,271.60									1,271.60	
DC 17 E&T				1,657.92				1,657.92									1,657.92	
DC 18 E&T					782.14			782.14									782.14	
DC 19 E&T						583.20		583.20									583.20	
DC 20 E&T							1,567.75	1,567.75									1,567.75	
TOTAL DC	985.31	1,925.62	1,271.60	1,657.92	782.14	583.20	1,567.75	8,773.54									8,773.54	
DC 14 R&I	195.80							195.80					195.80			195.80		
DC 15 R&D		581.48						581.48					288.12			288.12	293.36	
DC 16 R&D			303.04					303.04								303.04		
DC 17 R&D				390.92				390.92								390.92		
DC 18 R&D					226.66			226.66								226.66		
DC 19 R&D						175.86		175.86								175.86		
DC 20 R&D							1,008.20	1,008.20								1,008.20		
TOTAL DC	195.80	581.48	303.04	390.92	226.66	175.86	1,008.20	2,881.96					483.92			483.92	2,398.04	
DC 14 EE	532.13							532.13									532.13	
DC 15 EE		1,002.38						1,002.38									1,002.38	
DC 16 EE			668.09					668.09									668.09	
DC 17 EE				863.96				863.96									863.96	
DC 18 EE					421.22			421.22									421.22	
DC 19 EE						325.99		325.99									325.99	
DC 20 EE							864.14	864.14									864.14	
TOTAL DC	532.13	1,002.38	668.09	863.96	421.22	325.99	864.14	4,677.91									4,677.91	
DC 14 REB	716.08							716.08					716.08			716.08		
DC 15 REBATE		1,389.60						1,389.60								1,389.60		
DC 16 REBATE			1,055.09					1,055.09								1,055.09		
DC 17 REBATE				1,273.10				1,273.10								1,273.10		
DC 18 REBATE					616.73			616.73								616.73		
DC 19 REBATE						513.61		513.61								513.61		
DC 20 REBATE							1,187.96	1,187.96								1,187.96		
TOTAL DC	716.08	1,389.60	1,055.09	1,273.10	616.73	513.61	1,187.96	6,752.17					716.08			716.08	6,036.09	
DE 14 E&T	10,282.37							10,282.37		10,282.37						10,282.37		
DE 15 E&T		20,095.20						20,095.20		2,470.11	17,625.09					20,095.20		
DE 16 E&T			15,879.15					15,879.15			1,010.45	14,868.70				15,879.15		
DE 17 E&T				14,447.60				14,447.60				971.02	13,476.58			14,447.60		
DE 18 E&T					15,391.64			15,391.64					6,353.42			6,353.42	9,038.22	
DE 19 E&T						9,370.36		9,370.36								9,370.36		
DE 20 E&T							6,741.31	6,741.31								6,741.31		
TOTAL DE	10,282.37	20,095.20	15,879.15	14,447.60	15,391.64	9,370.36	6,741.31	92,207.63		12,752.48	18,635.54	15,839.72	19,830.00			67,057.74	25,149.89	
DE 14 R&C	2,043.29							2,043.29					2,043.29			2,043.29		
DE 15 R&D		6,068.15						6,068.15					56.71	500.00		556.71	5,511.44	
DE 16 R&D			3,784.24					3,784.24								3,784.24		
DE 17 R&D				3,406.62				3,406.62								3,406.62		
DE 18 R&D					4,460.43			4,460.43								4,460.43		
DE 19 R&D						2,825.54		2,825.54								2,825.54		
DE 20 R&D							4,335.28	4,335.28							200.00	200.00	4,135.28	
TOTAL DE	2,043.29	6,068.15	3,784.24	3,406.62	4,460.43	2,825.54	4,335.28	26,923.55					2,100.00	500.00	200.00	2,800.00	24,123.55	
DE 14 EE	5,553.14							5,553.14		2,510.44	3,042.70					5,553.14		
DE 15 EE		10,460.51						10,460.51			5,354.24					10,460.51		
DE 16 EE			8,342.74					8,342.74				5,106.27				8,342.74		
DE 17 EE				7,528.80				7,528.80					400.00	1,000.00		1,400.00	6,128.80	
DE 18 EE					8,289.24			8,289.24								8,289.24		
DE 19 EE						5,237.77		5,237.77								5,237.77		
DE 20 EE							3,715.86	3,715.86							200.00	200.00	3,515.86	
TOTAL DE	5,553.14	10,460.51	8,342.74	7,528.80	8,289.24	5,237.77	3,715.86	49,128.06		2,510.44	8,396.94	13,449.01	400.00	1,000.00	200.00	25,956.39	23,171.67	

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KY 18 REBATE					27,073.63			27,073.63			10,891.34		10,891.34	16,182.29	
KY 19 REBATE						15,533.66		15,533.66						15,533.66	
KY 20 REBATE							10,216.44	10,216.44						10,216.44	
TOTAL KY	14,968.76	29,047.71	22,572.81	24,370.81	27,073.63	15,533.66	10,216.44	143,783.82	14,968.76	51,247.99	23,926.50	816.84	10,891.34	101,851.43	41,932.39
MA 14 E&T	138,514.41							138,514.41						138,514.41	
MA 15 E&T		270,703.73						270,703.73	138,514.41					270,703.73	
MA 16 E&T			301,645.43					301,645.43	59,543.18	201,516.92	9,643.63			301,645.43	
MA 17 E&T				286,820.44				286,820.44			116,696.35	170,124.09		286,820.44	
MA 18 E&T					312,427.69			312,427.69				285,950.99	26,476.70	312,427.69	
MA 19 E&T						208,720.20		208,720.20				197,881.02	10,839.19	208,720.21	(0.01)
MA 20 E&T							178,096.01	178,096.01				97,314.95		97,314.95	80,781.06
TOTAL MA	138,514.41	270,703.73	301,645.43	286,820.44	312,427.69	208,720.20	178,096.01	1,696,927.91	198,057.59	201,516.92	427,985.41	456,075.08	224,357.72	1,616,146.86	80,781.05
MA 14 R&D	27,525.30							27,525.30						27,525.30	
MA 15 R&D		81,744.37						81,744.37	24,539.52	2,985.78				81,744.37	
MA 16 R&D			71,886.55					71,886.55	1,230.20	80,514.17				71,886.55	
MA 17 R&D				67,629.70				67,629.70			31,553.04	40,333.51	7,435.66	67,629.70	
MA 18 R&D					90,540.19			90,540.19				60,194.04	90,540.19	90,540.19	
MA 19 R&D						62,937.48		62,937.48				20,151.88	26,500.00	46,651.88	16,285.60
MA 20 R&D							114,531.97	114,531.97					2,068.76	2,068.76	112,463.21
TOTAL MA	27,525.30	81,744.37	71,886.55	67,629.70	90,540.19	62,937.48	114,531.97	516,795.56	25,769.72	83,499.95	31,553.04	100,527.55	118,127.73	388,046.75	128,748.81
MA 14 EE	74,806.66							74,806.66	69,076.57	5,730.09				74,806.66	
MA 15 EE		140,914.14						140,914.14		68,127.19	72,786.95			140,914.14	
MA 16 EE			158,481.41					158,481.41			158,481.41			158,481.41	
MA 17 EE				149,465.28				149,465.28			70,926.72	78,538.56		149,465.28	
MA 18 EE					168,259.45			168,259.45				168,259.45		168,259.45	
MA 19 EE						116,668.74		116,668.74					116,668.74	116,668.74	
MA 20 EE							98,167.81	98,167.81					34,440.00	34,440.00	63,727.81
TOTAL MA	74,806.66	140,914.14	158,481.41	149,465.28	168,259.45	116,668.74	98,167.81	906,763.49	69,076.57	73,857.28	302,195.08	246,798.01	116,668.74	843,035.68	63,727.81
MA 14 REI	100,667.12							100,667.12						100,667.12	
MA 15 REBATE		195,350.17						195,350.17		100,667.12				195,350.17	
MA 16 REBATE			250,285.04					250,285.04		100,801.33	94,548.84			250,285.04	
MA 17 REBATE				220,246.63				220,246.63			250,285.04			220,246.63	
MA 18 REBATE					246,354.51			246,354.51				220,246.63		246,354.51	
MA 19 REBATE						183,814.94		183,814.94				83,721.12	162,633.39	53,547.87	130,267.07
MA 20 REBATE							134,952.10	134,952.10					53,547.87	53,547.87	134,952.10
TOTAL MA	100,667.12	195,350.17	250,285.04	220,246.63	246,354.51	183,814.94	134,952.10	1,331,670.51		201,468.45	344,833.88	303,967.75	216,181.26	1,066,451.34	265,219.17
MD 14 E&T	37,071.13							37,071.13	41,165.68	(4,094.55)				37,071.13	
MD 15 E&T		72,449.46						72,449.46	67,231.81	5,217.65				72,449.46	
MD 16 E&T			84,888.96					84,888.96		84,888.96				84,888.96	
MD 17 E&T				73,895.93				73,895.93			70,000.56	895.37	3,000.00	73,895.93	
MD 18 E&T					78,648.03			78,648.03			41,440.52	37,207.51		78,648.03	
MD 19 E&T						63,387.74		63,387.74				41,835.49	2,000.00	43,835.49	19,552.25
MD 20 E&T							48,756.92	48,756.92					49,930.00	49,930.00	(1,173.08)
TOTAL MC	37,071.13	72,449.46	84,888.96	73,895.93	78,648.03	63,387.74	48,756.92	459,098.17	41,165.68	63,137.26	90,106.61	70,000.56	42,335.89	82,043.00	51,930.00
MD 14 R&D	7,366.70							7,366.70	1,700.00					7,366.70	
MD 15 R&D		21,877.56						21,877.56		643.30	277.78	20,956.48		21,877.56	
MD 16 R&D			20,230.29					20,230.29				8,943.52	11,286.77	20,230.29	
MD 17 R&D				17,424.00				17,424.00					17,424.00	17,424.00	
MD 18 R&D					22,791.86			22,791.86				2,700.00	16,789.23	22,489.23	302.63
MD 19 R&D						19,113.93		19,113.93						19,113.93	
MD 20 R&D							31,355.14	31,355.14						31,355.14	
TOTAL MC	7,366.70	21,877.56	20,230.29	17,424.00	22,791.86	19,113.93	31,355.14	140,159.48	1,700.00		6,310.00	277.78	32,600.00	45,500.00	89,387.78
MD 14 EE	20,020.79							20,020.79	15,400.00	4,620.79				20,020.79	
MD 15 EE		37,713.38						37,713.38		1,087.81	36,625.57			37,713.38	
MD 16 EE			44,599.79					44,599.79			44,599.79			44,599.79	
MD 17 EE				38,507.98				38,507.98			27,257.98	11,250.00		38,507.98	
MD 18 EE					42,356.28			42,356.28				42,356.28		42,356.28	
MD 19 EE						35,431.97		35,431.97					35,431.97	35,431.97	
MD 20 EE							26,875.17	26,875.17					35,600.00	35,600.00	(8,724.83)
TOTAL MC	20,020.79	37,713.38	44,599.79	38,507.98	42,356.28	35,431.97	26,875.17	245,505.36	15,400.00	5,708.60	81,225.36	27,257.98	53,606.28	35,431.97	254,230.19
MD 14 REI	26,941.92							26,941.92						26,941.92	
MD 15 REBATE		52,282.30						52,282.30			52,282.30			52,282.30	
MD 16 REBATE			70,435.13					70,435.13			70,435.13			70,435.13	
MD 17 REBATE				56,743.97				56,743.97				56,743.97		56,743.97	
MD 18 REBATE					62,015.30			62,015.30				54,143.72	7,871.58	62,015.30	
MD 19 REBATE						55,824.08		55,824.08					53,696.45	53,696.45	2,127.63
MD 20 REBATE							36,945.51	36,945.51						36,945.51	
TOTAL MC	26,941.92	52,282.30	70,435.13	56,743.97	62,015.30	55,824.08	36,945.51	361,188.21	26,941.92	122,717.43	56,743.97	54,143.72	61,568.03	322,115.07	39,073.14
ME 14 E&T	70,733.00							70,733.00	38,206.01	32,526.99				70,733.00	
ME 15 E&T		138,236.06						138,236.06			138,236.06			138,236.06	
ME 16 E&T			153,735.76					153,735.76		49,749.34	103,986.42			153,735.76	
ME 17 E&T				175,502.84				175,502.84			132,782.06	42,720.78		175,502.84	
ME 18 E&T					168,096.18			168,096.18				165,084.97		168,096.18	
ME 19 E&T						121,630.96		121,630.96					3,011.21	121,630.96	
ME 20 E&T							106,606.77	106,606.77					16,337.96	16,337.96	89,768.81
TOTAL ME	70,733.00	138,236.06	153,735.76	175,502.84	168,096.18	121,630.96	106,606.77	934,541.57	38,206.01	220,512.39	236,768.48	207,805.75	140,980.13	844,772.76	89,768.81
ME 14 R&D	14,055.92							14,055.92						14,055.92	
ME 15 R&D		41,743.13						41,743.13			24,644.38	17,098.75		41,743.13	
ME 16 R&D			36,637.49					36,637.49			8,816.10	27,821.39		36,637.49	
ME 17 R&D				41,382.00				41,382.00				41,382.00		41,382.00	
ME 18 R&D					48,713.55			48,713.55				48,713.55		48,713.55	
ME 19 R&D						36,676.59		36,676.59					36,676.59	36,676.59	
ME 20 R&D							68,557.87	68,557.87				2,585.08	38,643.05	41,228.13	27,329.74
TOTAL ME	14,055.92	41,743.13	36,637.49	41,382.00	48,713.55	36,676.59	68,557.87	287,766.55	14,055.92	24,644.38	25,914.85	117,916.94	39,261.67	38,643.05	260,436.81
ME 14 EE	38,200.35							38,200.35	26,410.67	11,789.68				38,200.35	
ME 15 EE		71,958.43						71,958.43		715.80	71,242.63			71,958.43	
ME 16 EE			80,771.19					80,771.19			56,569.65	24,201.54		80,771.19	
ME 17 EE				91,456.46				91,456.46				91,456.46		91,456.46	
ME 18 EE					90,529.01			90,529.01				60,511.73	30,017.28	90,529.01	
ME 19 EE						67,988.30		67,988.30					67,988.30	67,988.30	
ME 20 EE							58,762.42</								





NH 14 REB	43,732.04							43,732.04									43,732.04	
NH 15 REBATE		84,864.47						84,864.47									84,864.47	
NH 16 REBATE			87,552.60					87,552.60									87,552.60	
NH 17 REBATE				82,024.14				82,024.14									82,024.14	
NH 18 REBATE					86,809.85			86,809.85									86,809.85	
NH 19 REBATE						71,357.74		71,357.74									71,357.74	
NH 20 REBATE							51,201.02	51,201.02										51,201.02
TOTAL NH	43,732.04	84,864.47	87,552.60	82,024.14	86,809.85	71,357.74	51,201.02	507,541.86					237,389.50	147,593.60	71,357.74		456,340.84	51,201.02
NJ 14 E&T	106,379.25							106,379.25	76,697.13	29,682.12							106,379.25	
NJ 15 E&T		207,900.82						207,900.82		180,244.43	27,656.39						207,900.82	
NJ 16 E&T			183,364.89					183,364.89			183,364.89						183,364.89	
NJ 17 E&T				138,081.18				138,081.18			10,819.12	92,288.81	34,973.25				138,081.18	
NJ 18 E&T					142,181.51			142,181.51				96,139.46		46,042.05			142,181.51	
NJ 19 E&T						151,211.91		151,211.91						76,775.95			151,211.91	
NJ 20 E&T							130,593.29	130,593.29									130,593.29	
TOTAL NJ	106,379.25	207,900.82	183,364.89	138,081.18	142,181.51	151,211.91	130,593.29	1,059,712.85	76,697.13	209,926.55	221,840.40	92,288.81	131,112.71	122,818.00			854,683.60	205,029.25
NJ 14 R&D	21,139.47							21,139.47		21,139.47							21,139.47	
NJ 15 R&D		62,779.79						62,779.79			25,000.00	37,779.79					62,779.79	
NJ 16 R&D			43,698.55					43,698.55			29,885.41	13,620.21	192.93				43,698.55	
NJ 17 R&D				32,558.31				32,558.31				24,807.07	7,751.24				32,558.31	
NJ 18 R&D					41,203.59			41,203.59					41,203.59				41,203.59	
NJ 19 R&D						45,596.43		45,596.43					9,205.84				45,596.43	36,390.59
NJ 20 R&D							83,983.39	83,983.39									83,983.39	
TOTAL NJ	21,139.47	62,779.79	43,698.55	32,558.31	41,203.59	45,596.43	83,983.39	330,959.53		21,139.47	54,885.41	51,400.00	25,000.00	58,160.67			210,585.55	120,373.98
NJ 14 EE	57,451.61							57,451.61		57,451.61							57,451.61	
NJ 15 EE		108,222.25						108,222.25		85,832.49	22,389.76						108,222.25	
NJ 16 EE			96,338.03					96,338.03			25,418.91	70,919.12					96,338.03	
NJ 17 EE				71,955.62				71,955.62				59,542.90	12,412.72				71,955.62	
NJ 18 EE					76,572.54			76,572.54					76,572.54				76,572.54	
NJ 19 EE						84,523.22		84,523.22				19,929.27		64,593.95			84,523.22	
NJ 20 EE							71,983.97	71,983.97						33,132.30	13,550.00		46,682.30	25,301.67
TOTAL NJ	57,451.61	108,222.25	96,338.03	71,955.62	76,572.54	84,523.22	71,983.97	567,047.24		143,284.10	47,808.67	130,462.02	108,914.53	97,726.25	13,550.00		541,745.57	25,301.67
NJ 14 REB	77,312.48							77,312.48		77,312.48							77,312.48	
NJ 15 REBATE		150,029.18						150,029.18			144,129.18	5,900.00					150,029.18	
NJ 16 REBATE			152,143.82					152,143.82				152,143.82					152,143.82	
NJ 17 REBATE				106,031.20				106,031.20					106,031.20				106,031.20	
NJ 18 REBATE					112,112.52			112,112.52					112,112.52				112,112.52	
NJ 19 REBATE						133,168.75		133,168.75						133,168.75			133,168.75	
NJ 20 REBATE							98,956.96	98,956.96									98,956.96	
TOTAL NJ	77,312.48	150,029.18	152,143.82	106,031.20	112,112.52	133,168.75	98,956.96	829,754.91		77,312.48	144,129.18	158,043.82	218,143.72	133,168.75			730,797.95	98,956.96
NV 14 E&T	598.47							598.47									598.47	
NV 15 E&T		1,169.61						1,169.61									1,169.61	
NV 16 E&T			418.70					418.70									418.70	
NV 17 E&T				947.38				947.38									947.38	
NV 18 E&T					646.97			646.97									646.97	
NV 19 E&T							470.32	470.32									470.32	
NV 20 E&T																		
TOTAL NV	598.47	1,169.61	418.70	947.38	646.97		470.32	4,251.45										4,251.45
NV 14 R&I	118.93							118.93									118.93	
NV 15 R&D		353.19						353.19									353.19	
NV 16 R&D			99.78					99.78									99.78	
NV 17 R&D				223.38				223.38									223.38	
NV 18 R&D					187.49			187.49									187.49	
NV 19 R&D						227.15		227.15									227.15	
NV 20 R&D							302.46	302.46									302.46	
TOTAL NV	118.93	353.19	99.78	223.38	187.49	227.15	302.46	1,512.38										1,512.38
NV 14 EE	323.21							323.21									323.21	
NV 15 EE		608.84						608.84									608.84	
NV 16 EE			219.98					219.98									219.98	
NV 17 EE				493.69				493.69									493.69	
NV 18 EE					348.43			348.43									348.43	
NV 19 EE						421.08		421.08									421.08	
NV 20 EE							259.25	259.25									259.25	
TOTAL NV	323.21	608.84	219.98	493.69	348.43	421.08	259.25	2,674.48										2,674.48
NV 14 REB	434.95							434.95									434.95	
NV 15 REBATE		844.04						844.04									844.04	
NV 16 REBATE			347.41					347.41									347.41	
NV 17 REBATE				727.49				727.49									727.49	
NV 18 REBATE					510.14			510.14									510.14	
NV 19 REBATE						663.42		663.42					562.05				663.42	
NV 20 REBATE							356.39	356.39									356.39	
TOTAL NV	434.95	844.04	347.41	727.49	510.14	663.42	356.39	3,883.84						562.05			562.05	3,321.79
NYOHA 14	82,431.97							82,431.97	22,767.05	59,664.92							82,431.97	
NYOHA 15 E&T		146,546.55						146,546.55		63,985.22	82,561.33						146,546.55	
NYOHA 16 E&T			138,579.36					138,579.36			138,494.20	1,298.54					139,792.74	(1,213.38)
NYOHA 17 E&T				139,130.41				139,130.41			31,311.39	106,987.47					138,298.86	831.55
NYOHA 18 E&T					144,084.38			144,084.38				123,982.19					144,084.38	
NYOHA 19 E&T						108,927.54		108,927.54				20,102.19	6,742.73	90,313.31	4,696.36		101,752.40	7,175.14
NYOHA 20 E&T													4,919.00		4,919.00			(4,919.00)
TOTAL NYI	82,431.97	146,546.55	138,579.36	139,130.41	144,084.38	108,927.54		759,700.21	22,767.05	123,650.14	252,366.92	128,388.20	130,724.92	90,313.31	9,615.36		757,825.90	1,874.31
NYOHA 14	16,380.71							16,380.71		6,390.96	9,365.17	624.58					16,380.71	
NYOHA 15 R&D		49,167.90		4,915.26				54,083.16			14,989.94	34,177.96					49,167.90	4,915.26
NYOHA 16 R&D			36,693.42		3,669.34			40,362.76				36,693.42					36,693.42	3,669.34
NYOHA 17 R&D				32,805.71				32,805.71									20,639.14	12,166.57
NYOHA 18 R&D					41,755.04			41,755.04					18,689.14	1,950.00			43,149.37	(1,394.33)
NYOHA 19 R&D						32,842.21		32,842.21									32,842.21	
TOTAL NYI	16,380.71	49,167.90	36,693.42	41,390.31	41,755.04	32,842.21		218,229.59		6,390.96	24,355.11	71,495.96	18,689.14	555.67			121,486.84	96,742.75
NYOHA 14	49,016.65							53,514.75	13,357.50	31,161.05							49,016.65	4,498.10
NYOHA 15 EE		84,757.55		4,498.10				93,230.67			35,194.43	4,498.10					84,757.55	8,473.12
NYOHA 16 EE			80,894.49		8,473.12			88,983.94				80,894.49</						

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OHILI 14 R	50,938.66			3,467.48			54,406.14	47,349.77		3,588.89		50,938.66	3,467.48
OHILI 15 REBATE		102,423.64		10,209.43			112,633.07		92,214.21	10,209.43		102,423.64	10,209.43
OHILI 16 REBATE			111,038.77	11,103.88			122,142.65		99,934.89	11,103.88		111,038.77	11,103.88
OHILI 17 REBATE				92,858.23			92,858.23			92,858.23		92,858.23	
OHILI 18 REBATE					98,747.87		98,747.87				68,622.24	30,125.63	98,747.87
OHILI 19 REBATE						83,368.70	83,368.70				79,091.43		79,091.43
TOTAL OH	50,938.66	102,423.64	111,038.77	117,639.02	98,747.87	83,368.70	564,156.66	47,349.77	192,149.10	117,760.43	68,622.24	109,217.06	535,098.60
ESPA 14 E!	25,946.48						25,946.48		25,946.48				25,946.48
ESPA 15 E&T		50,708.15					50,708.15		45,906.39	4,801.76			50,708.15
ESPA 16 E&T			47,965.87				47,965.87		469.86	47,496.01			47,965.87
ESPA 17 E&T										3,780.00			3,780.00
TOTAL ESF	25,946.48	50,708.15	47,965.87				124,620.50	72,322.73	52,297.77	3,780.00			128,400.50
ESPA 14 Ri	5,156.03						5,156.03		5,156.03				5,156.03
ESPA 15 R&D				(15,312.33)			(15,312.33)						(15,312.33)
ESPA 16 R&D				(11,430.97)			(11,430.97)						(11,430.97)
TOTAL ESF	5,156.03			(26,743.30)			(21,587.27)		5,156.03				5,156.03
ESPA 14 EE				(14,012.76)			(14,012.76)						(14,012.76)
ESPA 15 EE				(26,396.00)			(26,396.00)						(26,396.00)
ESPA 16 EE				(25,200.77)			(25,200.77)						(25,200.77)
TOTAL ESPA EE				(65,609.53)			(65,609.53)						(65,609.53)
ESPA 14 Ri	6,428.72			(12,428.22)			(5,999.50)		6,428.72	(435.17)			5,993.55
ESPA 15 REBATE				(36,592.94)			(36,592.94)						(36,592.94)
ESPA 16 REBATE				(39,798.84)			(39,798.84)						(39,798.84)
TOTAL ESF	6,428.72			(88,820.00)			(82,391.28)		6,428.72	(435.17)			5,993.55
NYSEC 20 E&T							188,286.38	188,286.38				4,370.70	4,370.70
TOTAL NYSEC E&T							188,286.38	188,286.38				4,370.70	4,370.70
NYSEC 20 R&D							121,085.31	121,085.31					121,085.31
TOTAL NYSEC R&D							121,085.31	121,085.31					121,085.31
NYSEC 20 EE							103,784.82	103,784.82				11,019.00	11,019.00
TOTAL NYSEC EE							103,784.82	103,784.82				11,019.00	11,019.00
NYSEC 20 REBATE							142,673.85	142,673.85					142,673.85
TOTAL NYSEC REBATE							142,673.85	142,673.85					142,673.85
OH 14 E&T	35,311.81						35,311.81	35,311.81					35,311.81
OH 15 E&T		69,011.16					69,011.16	31,033.56	37,977.60				69,011.16
OH 16 E&T			73,734.81				73,734.81		48,697.18	25,037.63			73,734.81
OH 17 E&T				59,211.49			59,211.49			15,070.75	5,351.66		20,422.41
OH 18 E&T					66,084.91		66,084.91						66,084.91
OH 19 E&T						40,788.63	40,788.63						40,788.63
OH 20 E&T							43,896.91						43,896.91
TOTAL OH	35,311.81	69,011.16	73,734.81	59,211.49	66,084.91	40,788.63	43,896.91	388,039.72	66,345.37	86,674.78	40,108.38	5,351.66	198,480.19
OH 14 R&D	7,017.09						7,017.09	7,017.09					7,017.09
OH 15 R&D		20,754.20					20,754.20			570.00			20,754.20
OH 16 R&D			17,572.09				17,572.09						17,572.09
OH 17 R&D				13,961.54			13,961.54						13,961.54
OH 18 R&D					19,151.12		19,151.12						19,151.12
OH 19 R&D						12,299.40	12,299.40						12,299.40
OH 20 R&D							28,229.71						28,229.71
TOTAL OH	7,017.09	20,754.20	17,572.09	13,961.54	19,151.12	12,299.40	28,229.71	118,985.15	7,017.09	570.00			7,587.09
OH 14 EE	19,070.64						19,070.64		19,070.64				19,070.64
OH 15 EE		35,923.58					35,923.58						35,923.58
OH 16 EE			38,739.51				38,739.51						38,739.51
OH 17 EE				30,855.76			30,855.76						30,855.76
OH 18 EE					35,590.35		35,590.35						35,590.35
OH 19 EE						22,799.70	22,799.70						22,799.70
OH 20 EE							24,196.29						24,196.29
TOTAL OH	19,070.64	35,923.58	38,739.51	30,855.76	35,590.35	22,799.70	24,196.29	207,175.83		19,070.64			19,070.64
OH 14 REE	25,663.31						25,663.31	8,416.47	2,079.36	13,147.70			23,643.53
OH 15 REBATE		49,801.09					49,801.09						49,801.09
OH 16 REBATE			61,180.17				61,180.17						61,180.17
OH 17 REBATE				45,467.93			45,467.93						45,467.93
OH 18 REBATE					52,109.07		52,109.07						52,109.07
OH 19 REBATE						35,921.58	35,921.58						35,921.58
OH 20 REBATE							33,262.84						33,262.84
TOTAL OH	25,663.31	49,801.09	61,180.17	45,467.93	52,109.07	35,921.58	33,262.84	303,405.99	8,416.47	2,079.36	13,147.70		23,643.53
PA 14 E&T	168,801.05						168,801.05	168,801.05					168,801.05
PA 15 E&T		329,894.00					329,894.00	8,996.53	320,897.47				329,894.00
PA 16 E&T			341,369.79				341,369.79		6,384.31	318,550.61	16,434.87		341,369.79
PA 17 E&T				332,531.70			332,531.70			291,893.35	40,638.35		332,531.70
PA 18 E&T					330,391.50		330,391.50				240,258.54	24,800.00	265,058.54
PA 19 E&T						273,210.34	273,210.34						273,210.34
PA 20 E&T							210,391.60					2,796.00	207,595.60
TOTAL PA	168,801.05	329,894.00	341,369.79	332,531.70	330,391.50	273,210.34	210,391.60	1,986,589.98	177,797.58	327,281.78	318,550.61	308,328.22	280,896.89
PA 14 R&C	33,543.41						33,543.41		21,864.92	11,678.49			33,543.41
PA 15 R&D		99,211.29					99,211.29			89,131.13	10,080.16		99,211.29
PA 16 R&D			81,353.45				81,353.45				81,353.45		81,353.45
PA 17 R&D				78,408.01			78,408.01				2,384.04	51,044.94	59,741.48
PA 18 R&D					95,746.03		95,746.03					6,312.50	18,666.53
PA 19 R&D						82,383.83	82,383.83						95,746.03
PA 20 R&D							135,300.98					15,346.37	82,383.83
TOTAL PA	33,543.41	99,211.29	81,353.45	78,408.01	95,746.03	82,383.83	135,300.98	605,947.00	21,864.92	100,809.62	93,817.65	51,044.94	289,196.00
PA 14 EE	91,162.35						91,162.35		87,943.79	3,218.56			91,162.35
PA 15 EE		171,725.49					171,725.49			171,725.49			171,725.49
PA 16 EE			179,352.19				179,352.19			21,248.15	158,104.04		179,352.19
PA 17 EE				173,285.92			173,285.92				173,285.92		173,285.92
PA 18 EE					177,933.95		177,933.95					177,933.95	177,933.95
PA 19 EE						152,716.91	152,716.91				152,716.91		152,716.91
PA 20 EE							115,969.37					54,188.15	54,188.15

TOTAL PA	91,162.35	171,725.49	179,352.19	173,285.92	177,933.95	152,716.91	115,969.37	1,062,146.18		87,943.79	196,192.20	331,389.96	330,650.86	54,188.15	1,000,364.96	61,781.22	
PA 14 REB	122,676.94							122,676.94		75,110.06	47,566.88				122,676.94		
PA 15 REBATE		238,064.14						238,064.14			200,341.41	37,722.73			238,064.14		
PA 16 REBATE			283,245.63					283,245.63				283,245.63			283,245.63		
PA 17 REBATE				255,347.87				255,347.87				134,411.00	120,936.87		255,347.87		
PA 18 REBATE					260,519.28			260,519.28					221,139.09		221,139.09	39,380.19	
PA 19 REBATE						240,609.87		240,609.87							240,609.87		
PA 20 REBATE							159,424.05	159,424.05							159,424.05		
TOTAL PA	122,676.94	238,064.14	283,245.63	255,347.87	260,519.28	240,609.87	159,424.05	1,559,887.78		75,110.06	247,908.29	455,379.36	342,075.96		1,120,473.67	439,414.11	
RI 14 E&T	38,991.77							38,991.77	31,620.00	7,371.77					38,991.77		
RI 15 E&T		76,203.03						76,203.03		71,436.78					76,203.03		
RI 16 E&T			64,057.01					64,057.01		4,766.25	4,766.25				64,057.01		
RI 17 E&T				64,658.95				64,658.95			45,493.75	18,563.26			64,658.95		
RI 18 E&T					66,771.98			66,771.98				31,147.00	33,511.95		64,658.95		
RI 19 E&T						60,999.21		60,999.21				39,307.18	27,464.80		66,771.98		
RI 20 E&T							51,265.31	51,265.31					35,234.85	7,580.00	42,814.85	18,184.36	
														28,380.00	28,380.00	22,885.31	
TOTAL RI E	38,991.77	76,203.03	64,057.01	64,658.95	66,771.98	60,999.21	51,265.31	422,947.26	31,620.00	78,808.55	50,260.00	49,710.26	72,819.13	62,699.65	35,960.00	381,877.59	41,069.67
RI 14 R&D	7,748.36							7,748.36		7,748.36					7,748.36		
RI 15 R&D		22,917.06						22,917.06		42,016.54		(19,099.48)	19,099.48		42,016.54	(19,099.48)	
RI 16 R&D			15,265.73					15,265.73			2,164.81	13,100.92			15,265.73		
RI 17 R&D				15,246.00				15,246.00				475.00	10,965.60	3,805.40	15,246.00		
RI 18 R&D					19,350.23			19,350.23						18,644.45	18,644.45	705.78	
RI 19 R&D						18,393.70		18,393.70							18,393.70		
RI 20 R&D							32,968.27	32,968.27						9,395.23	9,395.23	23,573.04	
TOTAL RI F	7,748.36	22,917.06	15,265.73	15,246.00	19,350.23	18,393.70	32,968.27	131,889.35		49,764.90	2,164.81	(5,523.56)	30,065.08	22,449.85	9,395.23	108,316.31	23,573.04
RI 14 EE	21,058.06							21,058.06		21,058.06					21,058.06		
RI 15 EE		39,667.29						39,667.29		13,415.88					39,667.29		
RI 16 EE			33,654.90					33,654.90		5,417.50	26,251.41	28,237.40			33,654.90		
RI 17 EE				33,694.48				33,694.48			19,565.25	14,129.23			33,694.48		
RI 18 EE					35,960.38			35,960.38				35,960.38			35,960.38		
RI 19 EE						34,096.85		34,096.85					34,096.85		34,096.85		
RI 20 EE							28,257.81	28,257.81						6,905.00	6,905.00	21,352.81	
TOTAL RI E	21,058.06	39,667.29	33,654.90	33,694.48	35,960.38	34,096.85	28,257.81	226,389.77		34,473.94	31,668.91	47,802.65	50,089.61	34,096.85	6,905.00	205,036.96	21,352.81
RI 14 REB	28,337.77							28,337.77		28,337.77					28,337.77		
RI 15 REBATE		54,991.02						54,991.02			24,450.54	11,441.00			54,991.02	19,099.48	
RI 16 REBATE			53,150.19					53,150.19			135.19	53,015.00			53,150.19		
RI 17 REBATE				49,650.97				49,650.97					49,650.97		49,650.97		
RI 18 REBATE					52,650.84			52,650.84					33,934.72	18,716.12	52,650.84		
RI 19 REBATE						53,720.56		53,720.56						53,720.56	53,720.56		
RI 20 REBATE							38,846.25	38,846.25						18,824.91	18,824.91	20,021.34	
TOTAL RI F	28,337.77	54,991.02	53,150.19	49,650.97	52,650.84	53,720.56	38,846.25	331,347.60		28,337.77	24,585.73	64,456.00	83,585.69	91,261.59		292,226.78	39,120.82
SC 14 E&T	6,063.62							6,063.62				6,063.62			6,063.62		
SC 15 E&T		11,850.35						11,850.35				6,850.03	5,000.32		11,850.35		
SC 16 E&T			29,548.64					29,548.64					29,548.64		29,548.64		
SC 17 E&T				29,132.05				29,132.05				9,826.04		19,306.01	29,132.05		
SC 18 E&T					34,663.01			34,663.01					31,093.99	3,569.02	34,663.01		
SC 19 E&T						23,885.23		23,885.23						8,430.98	8,430.98	15,454.25	
SC 20 E&T							15,520.69	15,520.69							15,520.69		
TOTAL SC	6,063.62	11,850.35	29,548.64	29,132.05	34,663.01	23,885.23	15,520.69	150,663.59				12,913.65	44,375.00	50,400.00	12,000.00	119,688.65	30,974.94
SC 14 R&D	1,204.95							1,204.95						1,204.95	1,204.95		
SC 15 R&D		3,563.84						3,563.84						3,563.84	3,563.84		
SC 16 R&D			7,041.88					7,041.88						7,041.88	7,041.88		
SC 17 R&D				6,869.08				6,869.08						6,869.08	6,869.08		
SC 18 R&D					10,045.19			10,045.19						9,800.00	245.19	10,045.19	
SC 19 R&D						7,202.35		7,202.35						7,154.35	7,154.35	48.00	
SC 20 R&D							9,981.22	9,981.22						3,900.46	3,900.46	6,080.76	
TOTAL SC	1,204.95	3,563.84	7,041.88	6,869.08	10,045.19	7,202.35	9,981.22	45,908.51						28,479.75	11,300.00	39,779.75	6,128.76
SC 14 EE	3,274.74							3,274.74			3,274.74				3,274.74		
SC 15 EE		6,168.67						6,168.67			4,843.45	1,325.22			6,168.67		
SC 16 EE			15,524.55					15,524.55				10,068.01	5,456.54		15,524.55		
SC 17 EE				15,181.03				15,181.03					15,181.03		15,181.03		
SC 18 EE					18,667.93			18,667.93						13,500.00	13,500.00	5,167.93	
SC 19 EE						13,351.18		13,351.18							13,351.18		
SC 20 EE							8,555.12	8,555.12							8,555.12		
TOTAL SC	3,274.74	6,168.67	15,524.55	15,181.03	18,667.93	13,351.18	8,555.12	80,723.22			8,118.19	11,393.23	20,637.57	13,500.00		53,648.99	27,074.23
SC 14 REB	4,406.81							4,406.81			4,406.81				4,406.81		
SC 15 REBATE		8,551.67						8,551.67				8,551.67			8,551.67		
SC 16 REBATE			24,517.47					24,517.47				10,913.08	13,604.39		24,517.47		
SC 17 REBATE				22,370.25				22,370.25					4,778.29		4,778.29	17,591.96	
SC 18 REBATE					27,332.37			27,332.37							27,332.37		
SC 19 REBATE						21,035.16		21,035.16							21,035.16		
SC 20 REBATE							11,760.79	11,760.79							11,760.79		
TOTAL SC	4,406.81	8,551.67	24,517.47	22,370.25	27,332.37	21,035.16	11,760.79	119,974.52				4,406.81	19,464.75	18,382.68		42,254.24	77,720.28
VA 14 E&T	35,296.90							35,296.90		20,378.87	14,918.03				35,296.90		
VA 15 E&T		68,982.01						68,982.01			43,441.21	25,540.80			68,982.01		
VA 16 E&T			83,982.86					83,982.86				67,952.70	16,030.16		83,982.86		
VA 17 E&T				76,264.39				76,264.39					50,982.96	25,281.43	76,264.39		
VA 18 E&T					77,230.04			77,230.04						76,314.32	76,314.32	915.72	
VA 19 E&T						56,038.44		56,038.44							56,038.44		
VA 20 E&T							41,702.06	41,702.06							41,702.06		
TOTAL VA	35,296.90	68,982.01	83,982.86	76,264.39	77,230.04	56,038.44	41,702.06	439,496.70		20,378.87	58,359.24	93,493.50	67,013.12	101,595.75		340,840.48	98,656.22
VA 14 R&C	7,014.13							7,014.13			7,014.13				7,014.13		
VA 15 R&D		59,105.43						59,105.43			50,223.32	8,882.11			59,105.43		
VA 16 R&D			20,014.35					20,014.35				20,014.35			20,014.35		
VA 17 R&D				17,982.46				17,982.46					17,982.46		17,982.46		
VA 18 R&D					22,380.93			22,380.93					630.00	21,750.93	22,380.93		
VA 19 R&D						16,897.83		16,897.83						3,932.98	3,932.98	12,964.85	
VA 20 R&D																	

VA 20 EE							22,986.48	22,986.48						32,250.00	32,250.00	(9,263.52)
TOTAL VA	19,062.59	35,908.41	44,123.73	39,742.21	41,592.61	31,323.91	22,986.48	234,739.94	13,860.76	41,110.24	44,123.73	50,642.21	62,016.52	32,250.00	244,003.46	(9,263.52)
VA 14 REB	25,652.48							25,652.48	2,000.00	23,652.48					25,652.48	
VA 15 REBATE	49,780.06							49,780.06		9,191.59	40,588.47				49,780.06	
VA 16 REBATE		69,683.31						69,683.31			41,950.02	27,733.29			69,683.31	
VA 17 REBATE			58,562.69					58,562.69				40,169.94	18,392.75		58,562.69	
VA 18 REBATE				60,897.19				60,897.19					60,897.19		60,897.19	
VA 19 REBATE					49,351.72			49,351.72				9,889.11		9,889.11	39,462.61	
VA 20 REBATE						31,599.70		31,599.70							31,599.70	
TOTAL VA	25,652.48	49,780.06	69,683.31	58,562.69	60,897.19	49,351.72	31,599.70	345,527.15	2,000.00	32,844.07	82,538.49	67,903.23	89,179.05		274,464.84	71,062.31
VT 14 E&T	24,615.68							24,615.68	24,615.68						24,615.68	
VT 15 E&T		48,107.32						48,107.32	10,414.83	37,692.49					48,107.32	
VT 16 E&T			57,747.34					57,747.34		8,744.07	49,003.27				57,747.34	
VT 17 E&T				57,790.41				57,790.41			15,552.80				57,790.41	
VT 18 E&T					64,926.15			64,926.15			50,217.99	14,708.16			64,926.15	
VT 19 E&T						42,809.69		42,809.69				39,727.22			39,727.22	3,082.47
VT 20 E&T							36,528.50	36,528.50					10,280.73		10,280.73	26,247.77
TOTAL VT	24,615.68	48,107.32	57,747.34	57,790.41	64,926.15	42,809.69	36,528.50	332,525.09	35,030.51	46,436.56	91,240.88	65,770.79	54,435.38	10,280.73	303,194.85	29,330.24
VT 14 R&C	4,891.58							4,891.58	4,891.58						4,891.58	
VT 15 R&D		14,467.64						14,467.64		2,221.50	5,568.67	2,189.62	1,446.25		11,426.04	3,041.60
VT 16 R&D			13,762.04					13,762.04							13,762.04	
VT 17 R&D				13,626.46				13,626.46							13,626.46	
VT 18 R&D					18,815.32			18,815.32							18,815.32	
VT 19 R&D						12,908.83		12,908.83							12,908.83	
VT 20 R&D							23,491.15	23,491.15							23,491.15	
TOTAL VT	4,891.58	14,467.64	13,762.04	13,626.46	18,815.32	12,908.83	23,491.15	101,963.02	4,891.58	2,221.50	5,568.67	2,189.62	1,446.25		16,317.62	85,645.40
VT 14 EE	13,294.05							13,294.05	3,319.42	8,795.22	1,179.41				13,294.05	
VT 15 EE		25,042.14						25,042.14		1,646.66	23,395.48				25,042.14	
VT 16 EE			30,339.86					30,339.86				30,339.86			30,339.86	
VT 17 EE				30,115.22				30,115.22				30,115.22			30,115.22	
VT 18 EE					34,966.29			34,966.29					34,966.29		34,966.29	
VT 19 EE						23,929.42		23,929.42						4,103.19	23,929.42	
VT 20 EE							20,134.77	20,134.77							4,103.19	16,031.58
TOTAL VT	13,294.05	25,042.14	30,339.86	30,115.22	34,966.29	23,929.42	20,134.77	177,821.75	3,319.42	8,795.22	2,826.07	23,395.48	60,455.08	58,895.71	4,103.19	161,790.17
VT 14 REB	17,889.76							17,889.76		9,735.67	8,154.09				17,889.76	
VT 15 REBATE		34,716.08						34,716.08				9,262.52	25,453.56		34,716.08	
VT 16 REBATE			47,914.85					47,914.85					47,914.85		47,914.85	
VT 17 REBATE				44,376.69				44,376.69				13,217.93	31,158.76		44,376.69	
VT 18 REBATE					51,195.36			51,195.36					34,197.79		34,197.79	16,997.57
VT 19 REBATE						37,701.48		37,701.48							37,701.48	
VT 20 REBATE							27,679.44	27,679.44							27,679.44	
TOTAL VT	17,889.76	34,716.08	47,914.85	44,376.69	51,195.36	37,701.48	27,679.44	261,473.66	9,735.67	8,154.09	9,262.52	86,586.34	65,356.55		179,095.17	82,378.49
WA 14 E&	7,612.55							7,612.55	7,612.55						7,612.55	
WA 15 E&T		14,877.47						14,877.47	14,877.47						14,877.47	
WA 16 E&T			6,621.65					6,621.65	137.86	6,483.79					6,621.65	
WA 17 E&T				18,473.98				18,473.98			17,000.00				18,473.98	
WA 18 E&T					12,074.09			12,074.09					1,473.98		12,074.09	
WA 19 E&T						8,635.43		8,635.43					8,635.43		8,635.43	
WA 20 E&T							7,211.63	7,211.63							7,211.63	
TOTAL WA	7,612.55	14,877.47	6,621.65	18,473.98	12,074.09	8,635.43	7,211.63	75,506.80	22,627.88	6,483.79	17,000.00		22,183.50		68,295.17	7,211.63
WA 14 R&	1,512.75							1,512.75		1,512.75					1,512.75	
WA 15 R&D		4,474.20						4,474.20		3,470.94	1,003.26				4,474.20	
WA 16 R&D			1,578.04					1,578.04				1,578.04			1,578.04	
WA 17 R&D				4,356.00				4,356.00							4,356.00	
WA 18 R&D					3,499.02			3,499.02							3,499.02	
WA 19 R&D						2,603.93		2,603.93							2,603.93	
WA 20 R&D							4,637.74	4,637.74							4,637.74	
TOTAL WA	1,512.75	4,474.20	1,578.04	4,356.00	3,499.02	2,603.93	4,637.74	22,661.68		4,983.69	1,003.26	1,578.04			7,564.99	15,096.69
WA 14 EE	4,111.26							4,111.26			2,250.00				2,250.00	1,861.26
WA 15 EE		7,744.43						7,744.43							7,744.43	
WA 16 EE			3,478.94					3,478.94							3,478.94	
WA 17 EE				9,627.00				9,627.00							9,627.00	
WA 18 EE					6,502.56			6,502.56							6,502.56	
WA 19 EE						4,826.96		4,826.96							4,826.96	
WA 20 EE							3,975.11	3,975.11							3,975.11	
TOTAL WA	4,111.26	7,744.43	3,478.94	9,627.00	6,502.56	4,826.96	3,975.11	40,266.26			2,250.00				2,250.00	38,016.26
WA 14 REI	5,532.52							5,532.52	5,532.52						5,532.52	
WA 15 REBATE		10,736.15						10,736.15	372.12	5,746.74	4,617.29				10,736.15	
WA 16 REBATE			5,494.20					5,494.20			2,304.67	3,189.53			5,494.20	
WA 17 REBATE				14,185.99				14,185.99				126.97			126.97	14,059.02
WA 18 REBATE					9,520.63			9,520.63							9,520.63	
WA 19 REBATE						7,605.02		7,605.02							7,605.02	
WA 20 REBATE							5,464.61	5,464.61							5,464.61	
TOTAL WA	5,532.52	10,736.15	5,494.20	14,185.99	9,520.63	7,605.02	5,464.61	58,539.12		5,904.64	5,746.74	6,921.96	3,316.50		21,889.84	36,649.28
WI 14 E&T	23,325.39							23,325.39	3,350.00	19,975.39					23,325.39	
WI 15 E&T		45,585.65						45,585.65		45,585.65					45,585.65	
WI 16 E&T			64,076.10					64,076.10			55,690.20	7,765.94			64,076.10	
WI 17 E&T				41,921.73				41,921.73				41,921.73			41,921.73	
WI 18 E&T					57,065.89			57,065.89				33,431.85	23,634.04		57,065.89	
WI 19 E&T						41,707.29		41,707.29					41,289.90		41,289.90	417.39
WI 20 E&T							35,117.52	35,117.52							35,117.52	
TOTAL WI	23,325.39	45,585.65	64,076.10	41,921.73	57,065.89	41,707.29	35,117.52	308,799.57	3,350.00	66,181.00	55,690.20	83,119.52	64,923.94		273,264.66	35,534.91
WI 14 R&C	4,635.17							4,635.17				300.00			300.00	4,335.17
WI 15 R&D		13,709.28						13,709.28							13,709.28	
WI 16 R&D			15,270.28					15,270.28							15,270.28	
WI 17 R&D				9,884.77				9,884.77							9,884.77	
WI 18 R&D					16,537.45			16,537.45							16,537.45	
WI 19 R&D						12,576.42		12,576.42							12,576.42	
WI 20 R&D							22,583.77	22,583.77							22,583.77	
TOTAL WI	4,635.17	13,709.28	15,270.28	9,884.77	16,537.45	12,576.42	22,583.77	95,197.14				300.00			300.00	94,897.14
WI 14 EE	12,597.20							12,597.20		9,238.62	3,358.58				12,597.20	
WI 15 EE		23,729.49						23,729.49					23,729.49	300.00	24,029.49	(300.00)
WI 16 EE			33,664.93					33,664.93								

WI 18 EE					30,733.11			30,733.11							30,733.11
WI 19 EE						23,313.21		23,313.21				1,100.00		1,100.00	22,213.21
WI 20 EE							19,357.03	19,357.03				19,221.96		19,221.96	135.07
TOTAL WI	12,597.20	23,729.49	33,664.93	21,845.87	30,733.11	23,313.21	19,357.03	165,240.84		9,238.62	3,358.58	23,729.49	20,621.96	56,948.65	108,292.19
WI 14 REB	16,952.02							16,952.02			3,820.18	1,107.36	1,628.04	6,555.58	10,396.44
WI 15 REBATE		32,896.35						32,896.35							32,896.35
WI 16 REBATE			53,166.03					53,166.03							53,166.03
WI 17 REBATE				32,191.29				32,191.29							32,191.29
WI 18 REBATE					44,997.42			44,997.42							44,997.42
WI 19 REBATE						36,730.63		36,730.63							36,730.63
WI 20 REBATE							26,610.27	26,610.27							26,610.27
TOTAL WI	16,952.02	32,896.35	53,166.03	32,191.29	44,997.42	36,730.63	26,610.27	243,544.01			3,820.18	1,107.36	1,628.04	6,555.58	236,988.43
National Oilheat Research Alliance															

National Oilheat Research Alliance  
Statement of Activities  
For the Three Months Ending March 31, 2020

	March 2020	YTD 2020	2020 Budget	Remaining	YTD 2019
<b>INCOME</b>					
<b>Collections and Assessments</b>					
Collections	\$2,043,257.36	\$2,127,267.05	\$8,127,762.70	\$6,000,495.65	\$523,641.19
Remittance Accrual	0.00	0.00	(2,006,940.68)	(2,006,940.68)	0.00
Refunds	(96,608.23)	(60,395.20)	0.00	60,395.20	(52,844.14)
Collection Costs	(14,122.85)	(29,553.69)	(90,000.00)	(60,446.31)	(23,335.32)
<b>Net Collections</b>	<b>1,932,526.28</b>	<b>2,037,318.16</b>	<b>6,030,822.02</b>	<b>3,993,503.86</b>	<b>447,461.73</b>
<b>In Kind Contributions</b>					
Sales Revenue	0.00	224.80	0.00	(224.80)	0.00
Other Revenue (Grants, etc)	0.00	0.00	100,000.00	100,000.00	0.00
<b>Total Income</b>	<b>1,932,526.28</b>	<b>2,037,542.96</b>	<b>6,130,822.02</b>	<b>4,093,279.06</b>	<b>447,461.73</b>
<b>PROGRAM EXPENSES</b>					
<b>Consumer Education and Training (Max. 30%)</b>	<b>29,405.65</b>	<b>1,607,934.53</b>	<b>1,824,635.61</b>	<b>216,701.08</b>	<b>1,880,055.79</b>
Education and Training (Central)	29,405.65	53,298.92	270,000.00	216,701.08	42,722.23
Education and Training (States)	0.00	1,554,635.61	1,554,635.61	0.00	1,837,333.56
<b>Research Development and Demonstration (Min. 30%)</b>	<b>109,450.30</b>	<b>1,288,042.16</b>	<b>2,278,204.00</b>	<b>990,161.84</b>	<b>792,092.80</b>
Research Development and Demonstration (Central)	109,450.30	279,838.16	1,270,000.00	990,161.84	238,067.13
Research Development and Demonstration (States)	0.00	1,008,204.00	1,008,204.00	0.00	554,025.67
<b>Home Energy Efficiency Program (Min. 15%)</b>	<b>11,399.77</b>	<b>882,635.45</b>	<b>918,123.30</b>	<b>35,487.85</b>	<b>1,043,222.47</b>
Home Energy Efficiency Program (Central)	11,399.77	24,512.15	60,000.00	35,487.85	16,211.55
Home Energy Efficiency Program (States)	0.00	858,123.30	858,123.30	0.00	1,027,010.92
<b>Total Central</b>	<b>150,255.72</b>	<b>357,649.23</b>	<b>1,600,000.00</b>	<b>1,242,350.77</b>	<b>297,000.91</b>
<b>Total States</b>	<b>0.00</b>	<b>3,420,962.91</b>	<b>3,420,962.91</b>	<b>0.00</b>	<b>3,418,370.15</b>
<b>State Rebates</b>	<b>0.00</b>	<b>1,202,099.67</b>	<b>1,202,099.67</b>	<b>0.00</b>	<b>1,618,084.99</b>
<b>Old Grant Advertising</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Office Unallocated Expenses</b>					
Salaries and Consulting (Admin)	8,530.55	28,314.24	154,994.40	126,680.16	20,517.61
Accounting (Admin)	5,864.46	9,409.96	32,877.60	23,467.64	5,626.38
Insurance (Admin)	6,174.49	18,512.79	14,090.40	(4,422.39)	3,992.84
Taxes	1,715.08	2,157.16	2,818.08	660.92	666.04
Postage	0.00	0.00	1,409.04	1,409.04	0.00
Web Pages	565.11	1,535.33	14,090.40	12,555.07	8,962.82
Annual Report	2,599.23	6,496.95	42,271.20	35,774.25	5,003.27
Rent and Telephone	2,743.05	5,732.92	18,787.20	13,054.28	5,015.76
Travel	0.00	0.00	939.36	939.36	696.44
Meeting Expenses	0.00	0.00	2,818.08	2,818.08	0.00
Office Supplies	2.64	24.36	939.36	915.00	830.97
Dues & Memberships	13.13	39.39	939.36	899.97	139.98
Bank Fees	0.00	702.21	5,636.16	4,933.95	1,606.94
Legal Expense	1,653.17	4,959.51	70,452.00	65,492.49	3,200.00
Professional Fees	165.00	495.00	0.00	(495.00)	0.00
Misc Expense	0.00	0.00	0.00	0.00	0.00
Advertising Expense	0.00	0.00	0.00	0.00	0.00
Fixed Assets <\$1,000	0.00	0.00	0.00	0.00	0.00
Equipment Maintenance	225.00	225.00	4,696.80	4,471.80	0.00
Bad Debts	0.00	0.00	0.00	0.00	0.00
<b>Total Unallocated Expenses</b>	<b>30,250.91</b>	<b>78,604.82</b>	<b>367,759.44</b>	<b>289,154.62</b>	<b>56,259.05</b>
<b>Other Expenses/(Income)</b>					
Cost of Goods Sold	110.00	1,034.99	0.00	(1,034.99)	3,134.26
Interest Expense	0.00	0.00	0.00	0.00	0.00
Interest	(405.33)	(2,480.99)	(60,000.00)	(57,519.01)	(16,531.09)
<b>Total Other Expenses/(Income)</b>	<b>(295.33)</b>	<b>(1,446.00)</b>	<b>(60,000.00)</b>	<b>(58,554.00)</b>	<b>(13,396.83)</b>
<b>Net Revenue/(Expense)</b>	<b>1,752,314.98</b>	<b>(3,020,327.67)</b>	<b>(400,000.00)</b>	<b>2,620,327.67</b>	<b>(4,928,856.54)</b>

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See Accountants' Compilation Report

National Oilheat Research Alliance  
Statement of Financial Position  
March 31, 2020

	2020	2019
<b>ASSETS</b>		
<b>CURRENT ASSETS:</b>		
Cash and Cash Equivalents	\$10,158,916.05	\$10,532,847.33
Bank of America - Escrow account	1,741,894.70	0.00
Accounts Receivable	42,608.57	49,637.87
Assessments and Other Receivables	1,863,896.00	130,660.10
Security Deposit	24,514.18	21,146.10
Prepaid Assets	28,900.45	3,684.83
Total Current Assets	13,860,729.95	10,737,976.23
<b>PROPERTY AND EQUIPMENT</b>		
Office Furniture and Equipment	78,836.98	66,849.15
Website	45,450.00	45,450.00
Computer Equipment	3,819.34	3,819.34
Less: Accumulated Depreciation	(73,309.47)	(65,117.55)
Less: Accumulative Amortization (Web Site)	(45,449.99)	(40,832.49)
Total Property and Equipment	9,346.86	10,168.45
<b>TOTAL ASSETS</b>	<b>\$13,870,076.81</b>	<b>\$10,748,144.68</b>
<b>LIABILITIES AND NET ASSETS</b>		
<b>CURRENT LIABILITIES:</b>		
State Rebate Obligations 2014	33,712.38	20,122.04
State Rebate Obligations 2015	198,804.94	248,403.20
State Rebate Obligations 2016	282,530.08	374,965.50
State Rebate Obligations 2017	415,116.99	846,979.58
State Rebate Obligations 2018	999,987.03	3,149,198.06
State Rebate Obligations 2019	2,103,778.43	4,728,094.50
State Rebate Obligations 2020	4,038,069.50	0.00
Total Grants Payable	8,071,999.35	9,367,762.88
Accrued Salaries & Benefits	24,119.62	28,180.25
Reserve for BIO Diesel Testing	764.35	764.35
Refunds Reserve	64,946.85	0.00
Accounts Payable	39,557.02	67,919.69
Contracts Payable	0.00	(44,686.00)
Accrued Expenses	31,918.37	8,719.43
Total Current Liabilities	\$8,233,305.56	\$9,428,660.60
<b>NET ASSETS:</b>		
Unrestricted Net Assets	(1,283,281.22)	(5,979,806.52)
Pre-2014 Reauthorization Net Assets	55,933.05	55,933.05
National Spending Not Yet Incurred		
Research, Development, and Demonstration - net yet obligated	6,313,071.46	6,456,214.11
Research, Development, and Demonstration - obligated under contract	127,884.00	366,580.00
Heating Oil Efficiency and Upgrade - net yet obligated	154,625.70	181,828.40
Consumer Education, Safety, and Training - net yet obligated	268,538.26	238,735.04
Total Net Assets	5,636,771.25	1,319,484.08
<b>TOTAL LIABILITIES AND NET ASSETS</b>	<b>\$13,870,076.81</b>	<b>\$10,748,144.68</b>

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Report on NORA Internal R&D  
NORA Board of Directors  
May 19, 2020

T. Butcher, Neehad Islam, Ryan Kerr, John Levey, Bob O'Brien

# Technical Development of Ethyl Levulinate with Dead River Company and Biofine

- Planning for first production plant advancing. NORA providing technical support for commercialization activities;
- Seal materials (elastomers) remains an important concern. Silicon, Teflon, Aflas, and Teflon/graphite composites identified.
- Preparing for a technology demonstration event in Maine. Date TBD. NORA will do a live fire demo.
- First customers will be larger, commercial users. A fuel pump is needed for this. We have prototype custom Teflon composite lip seals being made.

# Fuel-Fired Heat Pump (SMTI)

- Work on integrating Babington burner with SMTI Heat Pump ongoing;
  - Target fuel is blend of petroleum/biodiesel/EL;
  - Next major step is conversion of all burner elastomers to EL compatible;
  - Lip seal being produced under EL/Biofine project will meet the need for this burner as well.
- 
- *General Note on Babington Burner* – we have the latest prototype in the NORA lab. Significant improvements have been made in packaging and control tuning. Some testing has been done in collaboration with Babington. Currently on hold

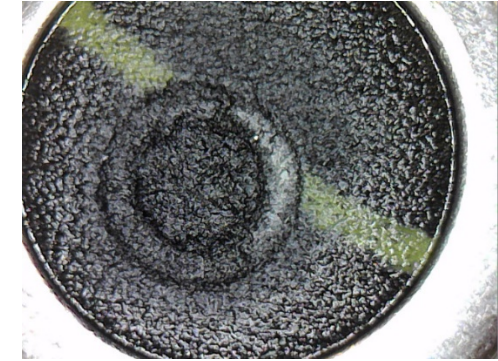
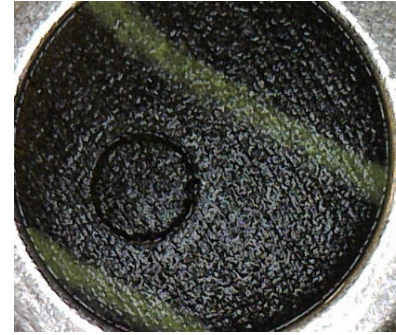
# Biodiesel – Legacy Pump Testing

- Purpose – to evaluate expected life of legacy pumps when operating with biodiesel blends at B20 and higher;
- Testing involves controlled cycling of pumps with inspection and on-burner performance tests at 100,000; 200,000; 350,000; and 500,000 cycles. (50 year equivalent);
- Focus on pressure regulator piston seal;
- First round of testing showed rapid fuel degradation;
- In a second round, fuel changed weekly.
- B0, B20, B50 completed;
- A second set of B0 started;
- B100 starting.

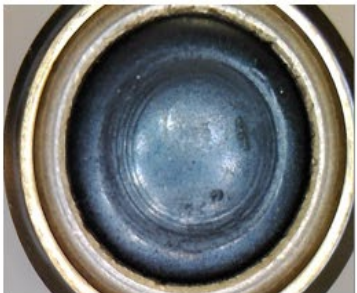


# Biodiesel – Legacy Pump Testing

- Regulator piston no significant difference;
- Diaphragm seal worn more with bio;
- All pumps performed perfectly in on-burner tests.



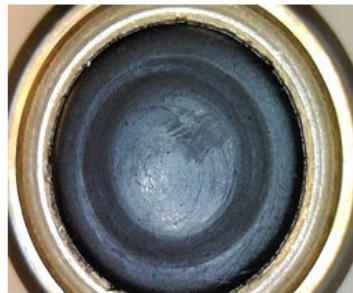
Diaphragm Seat (B0 – left, B20 right)



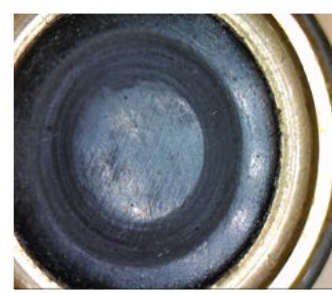
100 K



200 K



350 K



500 K

Regulator Piston – B50

# Next Generation Pumps

- Test stand with control and logging system has been built for this;
- First round of tests completed but manufacturer has decided to make some seal changes;
- We are on hold for the new pumps and this is delayed due to Virus situation.



# UL and Biodiesel

- Over the past few months there has been a strong level of activity on getting a test procedure to enable B20 burners, under UL 296 to be listed;
- Resolved issues include allowed elastomers and metals and required cloud point for the test fuel.
- This is expected to be completed and approved over the next ~ 6 weeks, enabling manufacturers to move forward with listing;
- Next step is what do we need to do for higher biodiesel blends.

# Field Tests – Higher Biodiesel Blends

- 11 homes at Cubby Oil under test with B50. Periodic visits from NORA staff for fuel sampling and inspection of burner head;
- This test will continue through the summer and into next fall;
- Test sites with B100 – 2 at Hart Home Comfort, 1 at TB home;
- Some site concerns with head coking – leading us to normal service and adjustments. Work in progress.





# Tank Heater Field Study

Presented by Ryan Kerr

With higher biodiesel blends, going to B100, there is a question about outdoor tanks and cloud point. Not all tanks can be moved indoors and we estimate some 10% of tanks will need another solution.

Commercial tank heaters are available which may help.

Goals of this project include evaluation of:

- how cold does fuel get in outdoor tanks?

- can commercially available heaters be a solution?

## Tests included:

Homes with and without installed tank heaters;

Tanks in enclosures;

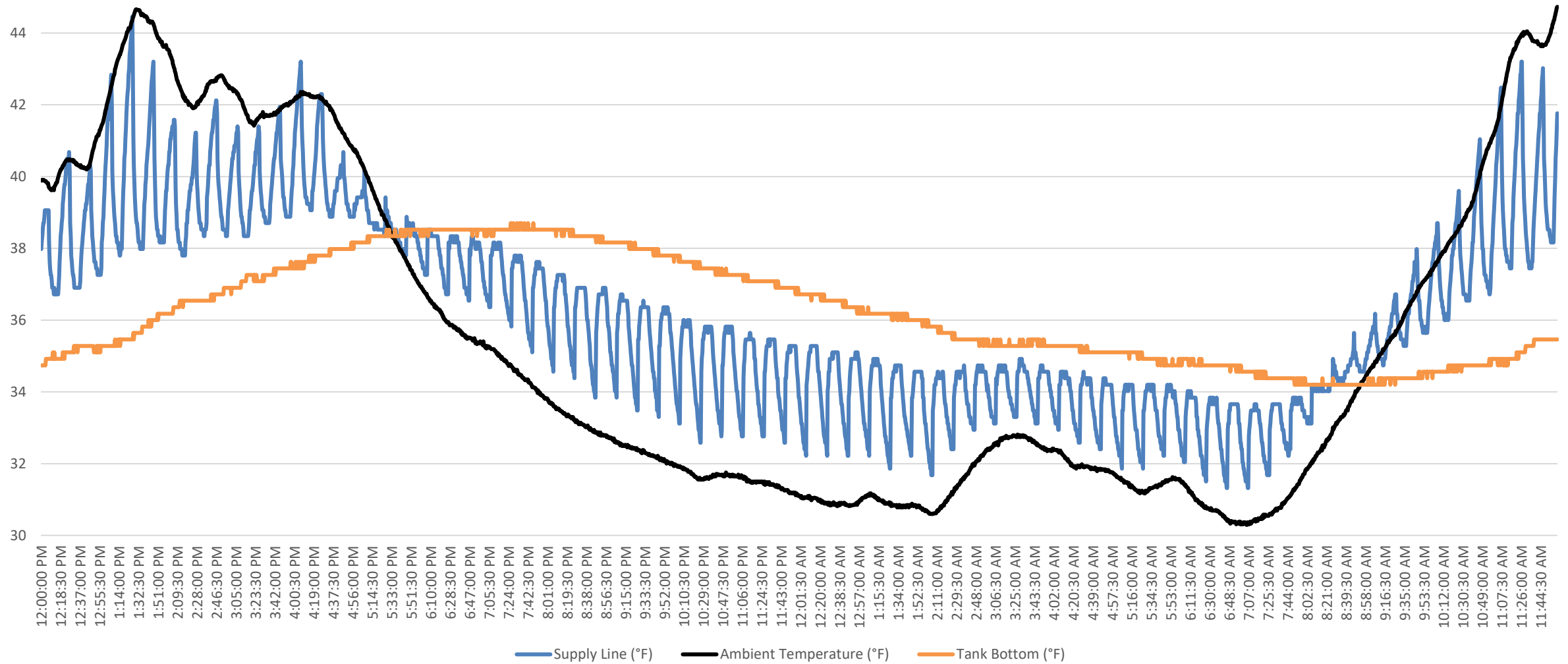
Dual tanks with a pump back-and-forth arrangement for special tests.

“Rod” heaters in-tank; “Dip tube” heaters; fuel line heaters



# Example Data

## Phase 4 - Dip Tube Heater 1-pipe



# Tank Study – Key Findings and Plans

- Without a heater the tank internal temperature lags the outdoor temperature by a few hours (only);
- The nominal 20 watt heaters used here were not effective enough for higher biodiesel blends;
- In-line heater found most effective;
- Looking into higher power heaters and concepts for insulated enclosures.

# Heat Pump Field Study

Presented by Neehad Islam

- Field tests of heat pumps integrated with hydronic heating;
- NYSERDA co-sponsored;
- Two years of field measurements completed;
- Report and best practices recommendations in progress.
- Goal is to understand how people are integrating heat pumps and hydronic heating in the field and how we can recommend improvements.



# Sites



Six sites across New York State;  
Detailed logging of  
system temperatures  
to enable  
understanding of  
operation.



## Key Findings from Heat Pump Field Study

- Many homes use the heat pump as a trim heater for a specific space (office, den, bedroom);
- One home had multiple heat pumps installed to enable complete conversion to electric heat;
- Control is manual and informal;
- Under cold conditions, hydronic heating used primarily;
- When heat pump is used switch over control can be done simply by different thermostat settings;
- Some sites did use both on cold days;
- Project report nearing completion.

# Conferences and Presentations

- NYSERDA Visit March 11 – detailed discussions on biodiesel as an option for decarbonizing buildings;
- Paper and presentation on tankless coil boiler project. Accepted for ASHRAE Summer Meeting, Converted to a Virtual Meeting. Neehad to present.
- Invited presentation to AOCS Conference. Ryan was planning to present but meeting cancelled. Editor of AOCS Magazine interviewed us for an article on our work.
- Abstract submitted to AIA Conference in September on Decarbonizing Buildings.
- International Oilheat Workshop being planned in collaboration with Eurofuels.



# Impact on Service by Biodiesel Blends in Heating Oil

The National Oilheat Research Alliance (NORA) has conducted periodic surveys to assess the impact and role that biofuels play in the marketplace. Many view low-carbon fuels as the best path for the industry as it reduces its environmental impact. Biodiesel is a low-carbon fuel that is available in most markets, is used widely and offers significant reduction of the amount of carbon dioxide released by heating appliances.

NORA has conducted ongoing research in this area and has found that the transition to higher blends of biodiesel can occur with low costs and little impact on the consumer. A number of retailers have been selling the higher blends of biodiesel.

To verify/validate the lab conclusions on biodiesel, NORA conducted a wide-ranging survey of retailers and service personnel. This latest survey, completed in December 2019 is summarized here.

NORA received 207 responses to the survey with 107 of those responses indicating that they sold biodiesel (**Figure 1**). The parties not selling biodiesel indicated their unwillingness/inability to sell was focused on the availability of the fuel and potential service concerns.

To understand the relative impacts of various blends of biodiesel, NORA asked for responses based upon three biodiesel blending groups: 1-10%, 11-25% and 26-90%.

The 1-10% group essentially captures the category of fuel

flowing into the market without disclosure. The second group, 11-25, captures parties who are actively blending, and are largely staying within manufacturer recommendations or ASTM listings. The third group, 26-90%, are aggressive blenders of the fuel who have taken significant steps in their operation to blend at high levels.

**Figure 2** shows the reported number of customers delivered to by each responding group.

NORA then asked a series of questions to identify maintenance issues related to:

Fuel storage issues

- Filter blockage
- Low temperature flow
- Tank or fuel line corrosion
- Pump leakage
- Pump seizing
- Nozzle fouling
- Heat exchanger fouling
- Operational efficiency
- Fuel Spray Angle

## B1-B11

**Figure 3** shows the responses of the low blenders, those blending B1-B10%. These respondents indicated they are selling the fuel to more than 182,000 customers. The goal

of the questions was to assess whether, in the opinion of the respondent, the addition of biodiesel affected service needs. The light green shading indicates that the respondent did not see the addition of biodiesel as affecting performance and this response is dominant. The most significant *no change* categories were: low temperature flow, heat exchanger fouling and angle of the fuel spray. Respondents indicated that the addition of biodiesel

Figure 1

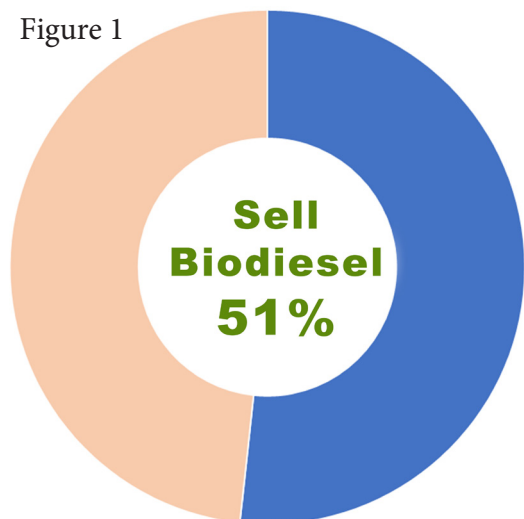


Figure 2

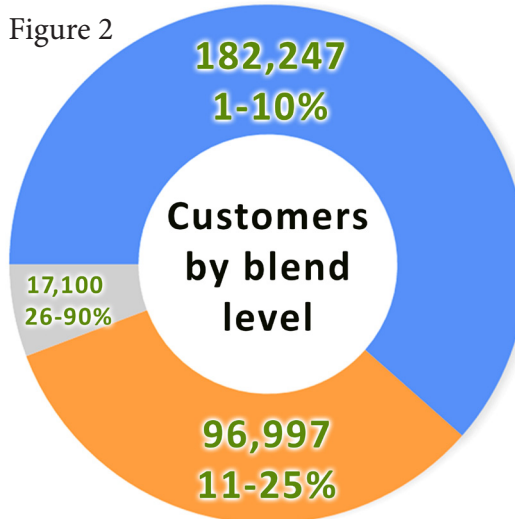
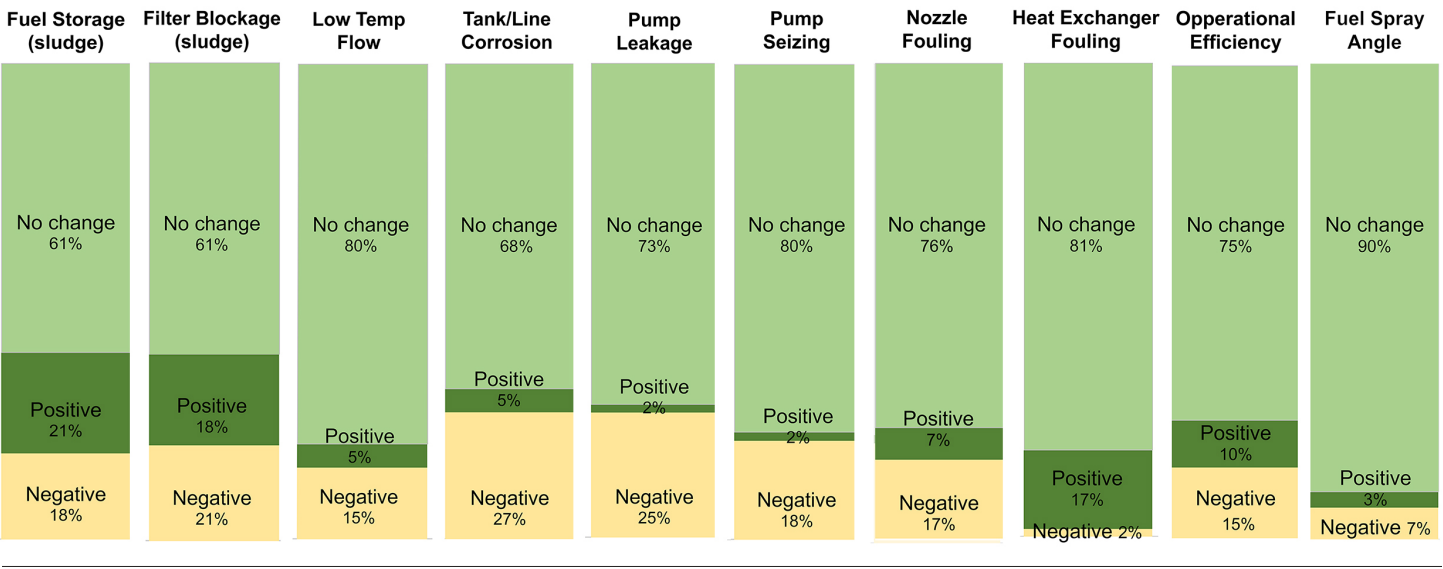


Figure 3

Biodiesel Blends from 1% through 10%



had a significant positive impact on fuel storage (sludge), filter blockage (sludge) and heat exchanger fouling. The two primary categories indicating concerns with biodiesel related to tank/line corrosion and pump seizing.

It should be noted that several respondents in this group identified as being compelled to use biodiesel as it was included in the fuel they purchased. Thus, some negative responses may reflect companies using the fuel involuntarily.

B11 through B25

The next group were moderate users of biodiesel, B11-B25 (Figure 4). This category was established to evaluate marketers who are actively using the fuel but are doing it within the guidelines of the fuel which has been specified

by ASTM. These respondents indicated they are selling the fuel to approximately 100,000 customers. This does not identify all customers as several respondents indicated “all” their customers were receiving the fuel but did not provide numeric values. Most of these customers had been receiving the high bio-blends for several years. Sixteen respondents indicated they had been selling those blends for over five years.

This category overall had higher overall positive remarks on service than the lower blend category. Contrary to the smaller blend level group, this group is committed to the fuel. Again, no change in service issues was the leading response. Six of the categories: low temperature flow, tank and line corrosion, heat exchanger fouling, operational efficiency and fuel spray angle all were above 90% positive rating.

Figure 4

Biodiesel Blends from 11% through 25%

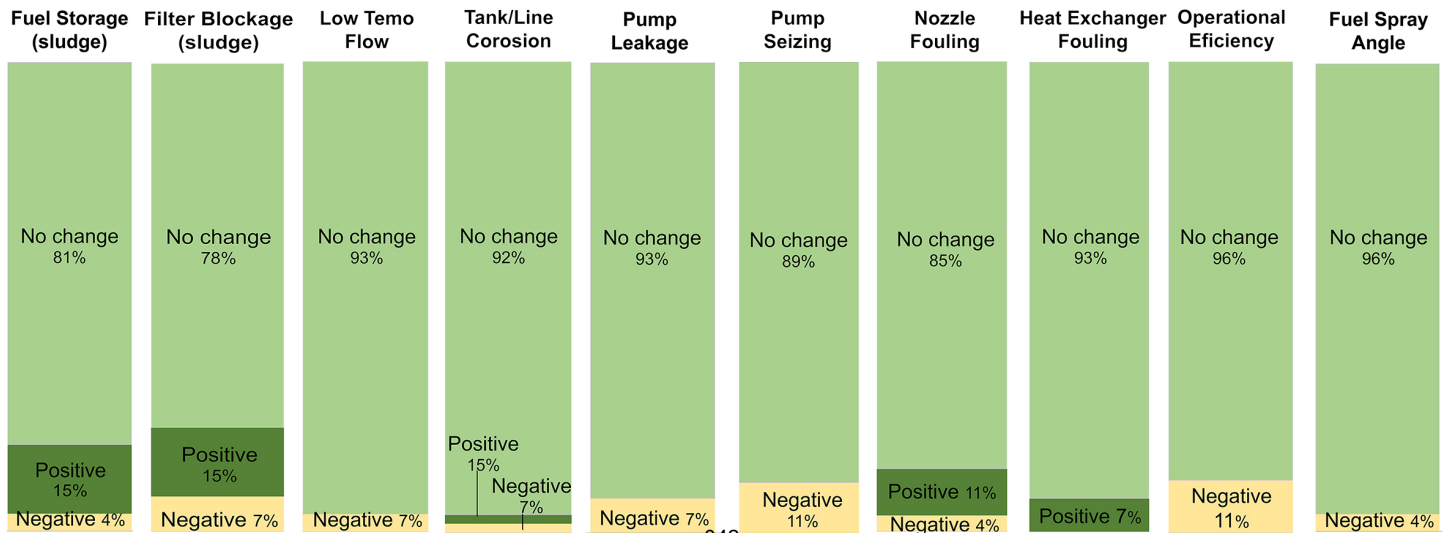
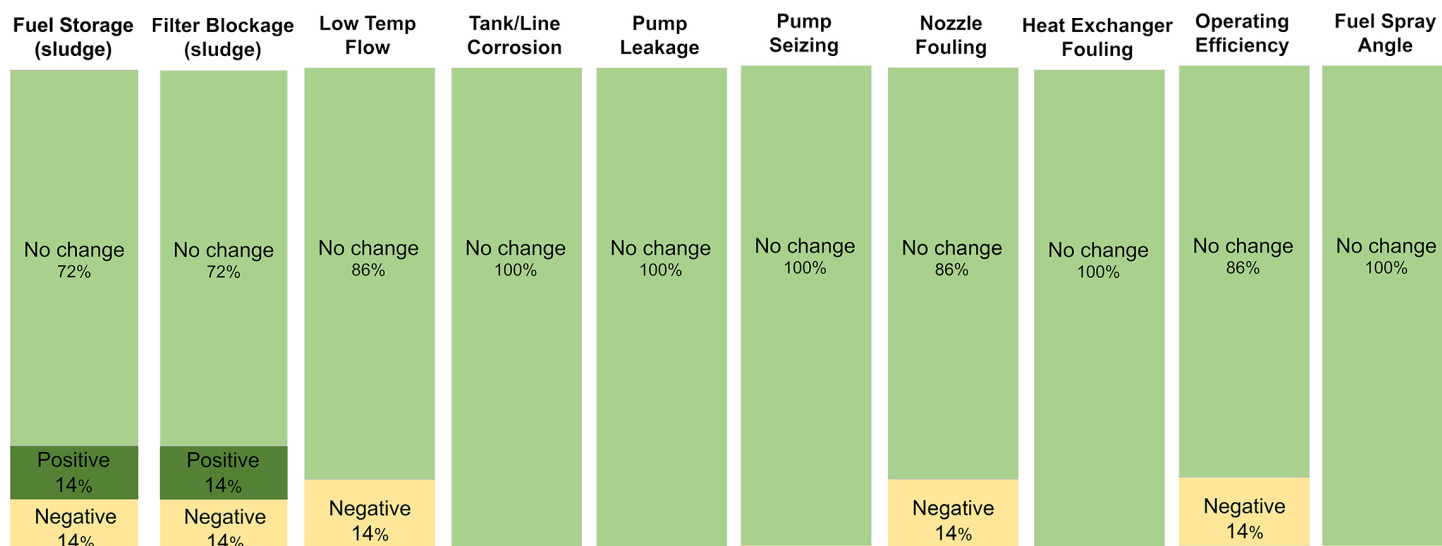


Figure 5

## Biodiesel Blends from 26% through 90%



Like the lower blend levels, 15% of respondents indicated that fuel storage and filter blockage were positively affected by the change. Operational efficiency and pump seizing had the highest negative response at 11%.

### B26 Through B90

This final group (**Figure 5**) is retailers who have opted to sell a low-carbon fuel and implement unique strategies to sell, distribute and maintain equipment with high biodiesel content. Seven companies responded that they sold fuel at these percentages with the distribution ranging from one year to over ten years. Through this sample, approximately 17,000 customers have been receiving these fuel blends.

In this group, five of the categories: tank line corrosion, pump leakage, pump seizing, heat exchanger fouling and spray angle were all described as having no change. For fuel storage and filter blockage, one respondent indicated they had a positive impact and one indicated a negative impact. Similarly, one respondent indicated that service for low temperature flow, nozzle fouling and operating efficiency were negatively impacted.

### Summary

Two primary areas of concern that have been raised with biodiesel are pump seizing and corrosion. The results of this survey do not clearly support this. Low blend users indicate more of a concern with these than higher blend users.

NORA has invested significant research time analyzing seized pumps recovered from the field as well as attempting to replicate pump seizing in the lab by running degraded biofuel & heating oil through them.

NORA's analysis indicates that degraded polymers are causing the pumps to stick. However, NORA has heated and aged fuel but has failed to make the polymer that causes the sticking pumps. NORA has also been unable to determine whether the degraded polymers originate with biodiesel or petroleum oil.

At this time, NORA's operating hypothesis is that the polymers are derived from inadequately filtered fuel. As a responsive measure, NORA is now evaluating the effectiveness of dual filtration.

Corrosion has also been identified as important. A major report funded by fuel and diesel engine manufacturers is currently in process and expected to be released in the fall of 2020. However, it has already been delayed multiple times.

Corrosion is very complicated but the key source of corrosion is related to the amount of water that the fuel holds, picks up or releases to the tank. Ultra-low sulfur diesel has also been identified as a potential for causing corrosion. However, regardless of fuel, the key indicator of corrosion problems is free-water. Therefore, while the studies continue, greater emphasis on water removal and prevention are strongly recommended.

NORA was authorized by Congress in 2000 to generate funding allowing the Oilheating industry to provide more efficient and more reliable heat and hot water to American consumers. NORA's efforts focus on Consumer Education, Professional Education, Energy Efficiency & Safety and Research. For more information on NORA, go to [NORAweb.org](http://NORAweb.org).



# NORA Board Meeting 2020

## Education Report



# Bronze & Silver Programs

Changes to tests & manual.



# Tests

- New versions are now in use
- No longer the same test, some questions are Bronze or Silver only
- 75 questions on each test (vs 100)
- Expanded bank of questions with a “pool”



# Tests

- Majority of schools utilize online testing
- Increased number of technicians opting for individual online proctored exams due to geography and/or Covid- 19



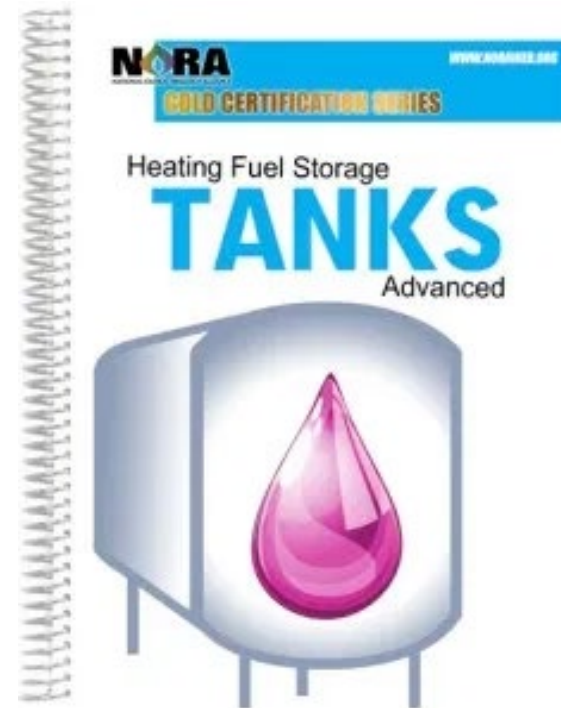
# Technician's manual

Continuing to rewrite chapters due to technical changes.



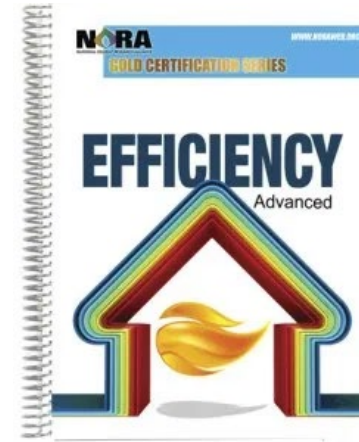
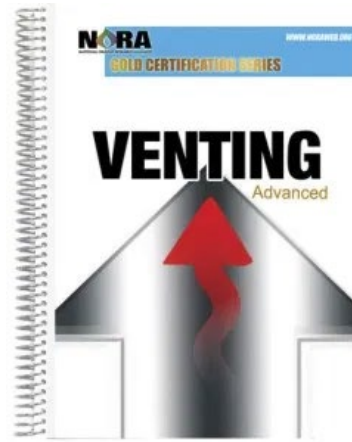
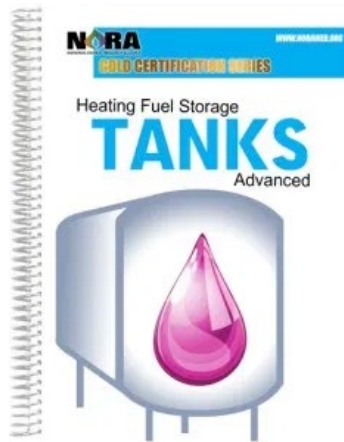
# Gold Program

Released new version of Tank Manual.



# Gold Program

Additional Gold options online



Advanced steam is up next

# CEUs

- Working with manufacturers & reps to add online content
- Online Bioheat Facts presentation in development for spring/summer release

# Questions??



## Officers and Executive Committee

Proposed 2020

Immediate Past Chairperson	– Charlie Uglietto
Chairman	- Rick Bologna
First Vice-Chairman	-
Second Vice-Chairman	-
Treasurer	- Eric DeGesero
President	- John Huber

### Executive Committee

John McCusker	Global
Mario Bouchard	Granby Industries
Steve Clark	Genessee Fuel
Charles Uglietto	Cubby Oil
Michael Estes	Estes Oil Burner Service
Matt Meehan	Mirabito Fuels
Matt Cota	Vermont Fuel Dealers Association
Rick Bologna	Westmore Fuels
Leann Panebianco	Panco Petroleum
Kate Duffey	D.E. Duffey & Sons
Scott Vadino	F.W. Webb
Sandra Farrell	Northboro Fuel
Michael Devine	World Energy
Gary Sippin	Sippin Energy