

600 Cameron Street, Suite 206 Alexandria, VA 22314 Phone: 703-340-1660

Fax: 703-340-1661

Email: info@nora-oilheat.org

AGENDA

February 27, 2006 1 p.m. Board Meeting Airport Hilton, Philadelphia, PA 866-886-5735, 8816810

| - | | |
|----|--------|----------|
| 1 | Introd | luctions |
| 1. | muou | luctions |

II. Approval of Minutes

III. Financial Review

- a. Draft Statement of Activities and Balance Sheet through December
- b. Recommended Adjustments to 2006 Budget
- c. 2007 Budget State Grants
- d. Development of 2008 Budget

IV. Research and Development

- a. Brookhaven/NYSERDA
- b. Roadmap Developed December 1^{st} and 2^{nd}

c. Efficiency Project Update

Richard Sweetser Tom Butcher

V. Consumer Education Report

- a. Planning Meeting March 22nd
- b. Budgeting for 2007

VI. Education and Training Report

- a. Revisions to Database for Education Site
- b. Revision for Silver Manual

VII. Tank Program - Update

- VIII. Election of 2nd Vice Chairman
- X. New York's Long Island Chapter 2006 Grant Approval Connecticut Fund Transfer Resolution
- XI. Remarks of Jack Sullivan
- XII. Adjournment

| Director | Company | State | Phone | Status |
|------------------------|--------------------------------------|-------|----------------|--------|
| Brett Adams | Adams Petroleum Co | ID | (800) 445-4088 | |
| Raymond Albrecht | NYSERDA | NY | (518) 862-1090 | |
| Don Allen | E.T. Lawson & Son Inc. | VA | (757) 722-1928 | |
| Nancy Allen | E.T. Lawson & Son Inc. | VA | (757) 722-3490 | |
| Mike Anton | Heating Oil Partners, LP | CT | (914) 304-1301 | |
| Debbie Baker | Crystal Flash Petroleum Co. | IN | (317) 879-2849 | |
| Richard Baran | Frame Oil | PA | (570) 454-3523 | |
| John Beckett | R.W. Beckett | OH | (440) 353-6237 | |
| Tom Berry | Berico Fuels, Inc. | NC | (336) 273-8663 | |
| Peter Bourne | Bournes Propane | VT | (802) 888-2611 | |
| Molly Brady | First Call Heating & Cooling | OR | (503) 231-3311 | |
| Jim Buhrmaster | Buhrmaster Energy Group | NY | | |
| | | DE | (518) 382-0260 | |
| Donnie Burch | Burch Oil Company, Inc | | (301) 373-2131 | |
| Thomas Butcher | Brookhaven National Laboratory | NY | (631) 344-7916 | |
| Peter Carini | Champion Energy Corp. | NY | 914-576-6190 | |
| Ralph Carlo | Tracey & Son LTD | CT | (203) 777-5747 | |
| Joe Cavanaugh | Star Gas Partners, L.P. | CT | (203) 325-5472 | |
| Jon Day | Jacobus Energy | WI | (414) 359-0700 | |
| Tom Devine | Devine Brothers,.Inc | CT | (203) 866-4421 | |
| Bob Durham | Anchor Oil Company | KY | (502) 241-4221 | |
| Charles Ermer | Palmer Gas Co. & Ermer Oil | NH | (603) 898-7986 | |
| Boyd Foster | Sunoco Inc. | PA | (610) 859-5780 | |
| Louise Giguere LeBlanc | Giguere & Marchand Oil Service, Inc. | MA | (508) 883-6010 | |
| David Glendon | Sprague Energy | NH | (603) 430-7239 | |
| Larry Goldstein | PIRF | NY | (212) 686-6470 | |
| Allison Heaney | Energy Conservation Group LLC | NY | 718) 353-7000 | |
| Gene Jacobus | Jacobus Energy | WI | (414) 359-1100 | |
| Barry Knox | Total Energy Solutions LLC | NH | (877) 436-9812 | |
| Brian Kottcamp | Shipley Energy | PA | (717) 848-4100 | |
| Will Lawes | Lawes Fuel Corp. | NJ | (732) 741-6300 | |
| Leonard Lipton | Lipton Energy | MA | (413) 443-9195 | |
| Richard Longacre | Farm & Home Oil Co. | PA | (215) 257-0131 | |
| Jon Madsen | Allied Washoe | NV | (775) 323-3146 | |
| Dave Martin | Webber Energy | ME | (207) 786-4288 | |
| Bill McKibbin | Henderson Oil Company | NC | (828) 693-3487 | |
| Ralph Mills | Abbott & Mills Inc | NY | (845) 561-0462 | |
| Mike Neish | | VA | · ' | |
| | Morgan Oil Corp | | (540) 364-1591 | |
| Ted Noonan | Noonan Energy | MA | (413) 731-3270 | |
| John Peters | Downeast Energy | ME | (207) 729-9921 | |
| Richard Phelps | Carrol Independent Fuel Company | MD | (410) 261-5360 | |
| Michael Romita | Castle Oil Corp. | NY | (914) 381 6500 | |
| Ron Sabia | Gulf Oil, Lp | MA | (617) 889-9089 | |
| Tom Santa | Santa Energy | CT | (203) 362-3332 | |
| Larry Scuder | Combind Oil Corp | NY | (718) 892-1500 | |
| Eric Slifka | Global Companies | MA | (781) 398-4257 | |
| Don Steward, Sr. | W B Steward & Son | NJ | (856) 845-9117 | |
| Jack Sullivan | NEFI | MA | (617) 924-1000 | |
| Jim Townsend | Townsend Oil Co | MA | (978) 927-0293 | |
| Denny Trautman | Suburban Propane | NY | (315) 385-4404 | |
| Kim Úllman | Ullman Oil Company | ОН | (440) 543-5195 | |
| Rob Van Varick | Van Varick & Son, Inc | NJ | (973) 694-2776 | |
| Gene Waldman | Duck Island Terminal , Inc. | NJ | (800) 325-3835 | |
| Jack Woodfin | Woodfin | VA | (804) 730-5000 | |
| Jim Woodruff | E M Sergeant | MI | (269) 343-1363 | |
| Norman Woolley Sr. | Woolley Fuel Co. | NJ | (973) 762-7400 | |



MINUTES November 8, 2006 10 a.m. Board Meeting Holiday Inn, Linthicum, MD 866-886-5735, 8816810

I. Introduction

Mr. Jim Townsend called the meeting to order at 10:00 am and directed Mr. John Huber to call the roll. Mr. Huber called the roll and the following members of the Board were Present. Mr. Huber indicated a quorum was present.

| Raymond | Albrecht | Will | Lawes |
|----------------|----------|---------|-------------|
| Don | Allen | Jon | Madsen |
| Debbie | Baker | Dave | Martin |
| Carl | Benker | Ralph | Mills |
| Molly | Brady | Ed | Noonan |
| Ned | Bulmer | Doug | Quarles |
| Thomas | Butcher | Michael | Romita |
| Ralph | Carlo | Ed | Scott |
| Charles "Bill" | Ermer | Larry | Scuder |
| Boyd | Foster | Judy | Smith |
| David | Glendon | Don | Steward Sr. |
| Daryl | Hackman | Jack | Sullivan |
| Allison | Heaney | Jim | Townsend |
| Chris | Keyser | Norman | Woolley Sr. |

II. Approval of Minutes

Mr. Townsend moved that the minutes of the meeting held on August 21, 2006 be approved as submitted to the Board of Directors. The motion was duly seconded and approved.

III. Financial Review

Mr. John Maniscalco reported on the financials through September 2006, and the state allocations. Mr. Maniscalco described the poor weather, and indicated that the Executive Committee had reviewed the poor performance and had agreed that the budget needed to be downgraded. The revenue anticipated has been downgraded by \$1 million. He then reviewed the proposed budget for 2007. John Huber reviewed with the Board the comments that had been received. He indicated that DOE had expressed concern with the research and development funding in light of their suspended program.

The 3rd Quarter Financials indicated normal operation and the expenditures were as expected. Mr. John Huber commented that the "unrestricted net asset" projected is if the winter is normal. He warned the Board if this winter is warm and the collection does not meet the projected amount, the revenue will have to be downgraded further which will impact the unrestricted net assets.

The following motion was moved, seconded, and approved by voice.

The Board of Directors of the National Oilheat Research Alliance approves the Financial Report as submitted to the Board.

Mr. Maniscalco commented that the 2007 budget includes a substantial reduction in revenue. This is due to the conservation of oil, and the overall warmer winters we have had in the 2000's.

The following motion was moved, seconded, and approved by voice.

The Board of Directors of the National Oilheat Research Alliance approves the 2007 Budget as submitted to the Board.

IV. Research & Development

Mr. Carini reported that in light of the elimination of Department of Energy funding for Oilheat research and development, we have had to look into alternative places to conduct research. To that end, we visited with NYSERDA about a month ago. Mr. Peter Carini reported that NYSERDA building may be a location to move the appropriate staff from Brookhaven. The facility is very impressive, and the location would also solidify our working relationship with NYSERDA. Mr. Townsend commented that the NYSERDA building is being designed for liquid fuel research and thanked Mr. Carini for all his efforts.

Mr. Don Allen reviewed the agenda and purpose of the December 1 & 2 Summit. This meeting is to explore the future role of oil, bioheat and solar energy in America's Energy Future.

The projects that are underway are the following: Bock is developing a small water heater that will be very efficient and can also be used for space heating; North Carolina is working on developing a combination oil/heat pump; a revolutionary condensing furnace, and investigations of coal to liquids and how they could integrate with our fuel.

Mr. Huber reported on the efforts of Tom Butcher to develop an alternative method of assessing efficiency. The current AFUE system is inadequate because it does not do a good job on boilers and does not work for combined systems. Butcher's approach will look at actual demand and consumption.

V. Consumer Education Report

The Martin Agency reported on Internet Advertising and how successful it is. Their presentation included snapshots of ad placements on the web and data they have collected. The soybean interactive ad was the most successful in getting viewers to click through.

Primedia reported on the new OilheatAmerica website that was launched on September 7, 2006. Mr. Richard Rutigliano explained the challenges that NORA had to overcome to produce such a user friendly site. To date 31,397 Unique Visitors have been on this website since the launch on September 7, 2006.

VI. Education and Training Report

Mr. Huber reported on the status of the database for the Education Site. He presented how a company would sign up and how the company would appear in the search results and on a map. An invitation was extended to all attendees to stay after the meeting for a brainstorming to where this database should go.

The Silver Manual is being revised. The goal for this revision is to add color, diagrams, and pictures to illustrate topics. Bob Hedden showed the improvements that were being made in the new book.

VII. Vermont Fund Transfer Resolution

The National Oilheat Research Alliance has established strong partnerships with the states. Vermont has indicated a need to transfer funds between programs that it is operating.

The following motion was moved, seconded, and approved by voice.

Revolved: The grant request identified as CE-03-VT-001 is hereby decreased from \$22,476.21 to \$00.00 and that the grant request identified as ET-06-VT-001 is hereby increased by \$22,476.21.

Be it further resolved: That the President of NORA enters into a contract with the grant application identified in the grant application to effectuate the purpose of the grant.

VII. Tank Program

Mr. Jim Rocco's proposal to develop a methodology for cleaning up releases from heating oil spills was reviewed.

The following motion was moved, seconded, and approved by voice.

The Board of Directors of the National Oilheat Research Alliance approved the Tank Project Proposal by Mr. Jim Rocco and grants \$50,000 to continue this project.

VIII. Transition in Board Members in 2007

2007 is the first year that the Board will undergo substantial transition. The following will be new members in 2007.

| Retail | |
|-----------------------------|--------------------------|
| MaineJohn Peters | Five From Large States |
| MassachusettsLeonard Lipton | ConnecticutThomas Devine |
| VermontPeter Bourne | New YorkJim Buhrmaster |
| New YorkJoe Cavanaugh | |
| PennsylvaniaBrian Kottcamp | |
| North CarolinaTom Berry | |
| VirginiaNancy Allen | |
| OhioKim Ullman | |
| | |

Five at Large
Bill McKibbin
Jack Woodfin
Eric Slifka

Richard Longacre Walter Brickowski Ted Noonan Michael Anton

John Beckett

IX. Executive Committee Appointments

The following were elected to serve on the Executive Committee.

| ChairmanJim Townsend | Ralph Carlo |
|---|----------------|
| PresidentJohn Huber | Leonard Lipton |
| 1 st Vice ChairmanAllison Heaney | Gene Jacobus |
| TreasurerJohn Maniscalco | Molly Brady |
| | Jim Woodruff |
| | Jim Buhrmaster |
| | Larry Scuder |
| | Will Lawes |
| | Eric Slifka |
| | Michael Romita |
| | Dave Martin |

X. Unfinished Business

| X. | New Business |
|------------|---|
| There | was no New Business |
| XII. | Next Meeting |
| | ext Board Meeting will be on February 27, 2007 at Hilton Philadelphia Airport 1pm to 4pm. |
| XVI. | Adjourned |
| The m | neeting was adjourned |
| | |
| Respe | ectfully Submitted, |
| | |
| Jack S | Sullivan |
| Secret | |
| | |

There was no Unfinished Business

National Oilheat Research Alliance Statement of Activities For the Month Ending December 31, 2006

| | YTD 2006 | % | YTD 2006 Budget | % |
|---|------------------|----------------|---------------------------------------|----------|
| COLLECTION REVENUES, NET: | | | | |
| Remittance Revenue * | | | 15,638,154 | |
| Less: Assessments and Collection | (228,592) | (1.59%) | (240,000) | (1.56%) |
| Cash Available for 2006 | 14,409,562 | | | |
| Total 2006 Revenue for Allocation | | | 15,398,154 | |
| Projects and State Rebates: | | | | |
| Research and Development-Tanks | 637,862 | 4.43% | 637,862 | 4.14% |
| Education and Training | 662,862 | 4.60% | 662,862 | |
| State Rebates | 11,502,558 | 79.83% | 11,502,558 | 74.70% |
| Consumer Education Production | 898,000 | 6.23% | 898,000 1,000,000 | 5.83% |
| Internet Communications | 1,000,000 | 6.94% | 1,000,000 | 6.49% |
| Total Grants and State Rebates | 14,701,282 | | 14,701,282 | |
| OPERATING EXPENSES: | | | | |
| Administrative Expenses: | | | | |
| Salaries and Consultants | 225,000 | 1.56% | 300,000 | 1.95% |
| Employee Taxes | 13,605 | 1.56% 0.09% | 11,000 | 0.07% |
| Health Insurance | 16,450 | 0.11% | 15,000 | 0.10% |
| Retirement Plan | 19,055 | 0.13% | 19,200 | 0.12% |
| Rent and Telephone | 27,000 | 0.19% | 30,000 | 0.19% |
| Office Supplies | 8,875 | 0.06% | 15,000 | 0.10% |
| Equipment Maintenance | 3,998 | 0.03% | 5,000 | 0.03% |
| Insurance (D & O, L) | 24,098 | 0.17% | 30,000 | 0.19% |
| Dues, Memberships & Subscriptions | 5,917 | 0.04% | 20,000 | 0.13% |
| Public and Staff Travel | 32,416 | 0.22% | 45,000 | 0.29% |
| Meeting Expense | 25,000 | 0.17% | 35,000 | 0.23% |
| Legal | 29,305 | 0.20% | 50,000 | 0.32% |
| Bank Fees | 3,218 | 0.02% | 0 | 0.00% |
| Accounting Fees | 80,000 | 0.56% | 100,000 | 0.65% |
| Professional Travel | 4,416 | 0.03% | 20,000 | 0.13% |
| Total Administrative Expenses | 518,353 | | 695,200 | |
| On said Ottodian and Mailines | | | | |
| Special Studies and Mailings Printing Annual Report & Other | EC 205 | 0.200/ | 40.000 | 0.000/ |
| | 50,∠05 40,700 | 0.39% | 40,000 40,000 | 0.26% |
| Postage/Special Mailings | | | 40,000 | |
| Total Special Studies & Mailings | 105,031 | 0.73% | 80,000 | 0.52% |
| Other (Income)/Expenses: | | | | |
| Interest Income/Expense | (325,940) | (2.26%) | (40,000) | (0.26%) |
| Depreciation and Amortization | 2,368 | 0.02% | 5,000 | 0.03% |
| Other Income | (158,872) | (1.10%) | 0 | 0.00% |
| Other Expense | 100,432 | 0.70% | 0 | 0.00% |
| Total Other Expenses | | | (35,000) | |
| Total Other Expenses | (302,012) | , | · · · · · · · · · · · · · · · · · · · | (0.2376) |
| TOTAL OPERATING EXPENSES | | | 740,200 | 4.81% |
| TOTAL EXPENDITURES | 14,942,654 | 103.70% | 15,441,482 | 100.28% |
| INCREASE/(DECREASE) IN NET ASSETS | (\$533,092) | (3.70%) | (\$43,328) | (0.28%) |
| | | | | |

^{*} Net of Refunds

National Oilheat Research Alliance Statement of Financial Position December 31, 2006

ASSETS

2006

==========

| 7.00210 | |
|---|---|
| CURRENT ASSETS: | |
| Cash and cash equivalents Assessments receivable, net of allowance | \$4,574,155.44 5,170,323.92 |
| Prepaid expenses | 12,066.48 |
| Total current assets | 9,756,545.84 |
| PROPERTY AND EQUIPMENT, Net | 4,203.02 |
| Other assets | 508,477.29 |
| Total noncurrent assets | 508,477.29 |
| TOTAL ASSETS | \$10,269,226.15 ====== |
| LIABILITIES AND NET ASSETS | |
| CURRENT LIABILITIES: | |
| Accounts payable | \$152.30 |
| Accrued expenses | 190,518.04 |
| Total current liabilities OTHER LIABILITIES: | 190,670.34 |
| Accrued state rebates | 4,876,700.81 |
| Accrued grants - research and development | 1,442,531.55 |
| Accrued grants - education and training | 252,571.73 |
| Accrued grants - consumer education Accrued Internet Communications | (<mark>167,687.00</mark> 625,000.00 |
| Total Other Liabilities | 7,029,117.09 |
| Total liabilities | 7,219,787.43 |
| UNRESTRICTED AND RESTRICTED NET ASSETS: | |
| Unrestricted net assets | 1,420,142.72 |
| Board designated net assets | 1,629,296.00 |
| Total net assets | 3,049,438.72 |
| TOTAL LIABILITIES AND NET ASSETS | \$10,269,226.15 |
| | |

| | National Oilheat Research A | | | | | |
|------------------------|-----------------------------|-----------|------------|--------------|-----------|---------------|
| | STATE GRANT STATU | S | | | | |
| Fo | or the Month Ending January | 31, 2007 | | | | |
| | | | | | | |
| | | | | | | |
| | | Disbursed | Disbursed | Disbursed | Disbursed | |
| | APPROVED | in '04 | in '05 | in '06 | in '07 | REMAINING |
| CONNECTICUT | | | | | | |
| R & D '06 Grant | 54,709.00 | 0.00 | 0.00 | 24,377.85 | 0.00 | 30,331.15 |
| CONS-ED '06 Grant | 765,933.00 | 0.00 | 0.00 | 550,157.99 | 0.00 | 215,775.01 |
| E & T '06 Grant | 273,821.00 | 0.00 | 0.00 | 158,754.37 | 0.00 | 115,066.63 |
| L G 1 00 Clair | | 0.00 | | | | |
| TOTALS FOR CONNECTICUT | 1,094,463.00 | 0.00 | 0.00 | 733,290.21 | 0.00 | 361,172.79 |
| IDAHO | | | | | | |
| E & T '03 Grant | 21,741.55 | 2,894.00 | 0.00 | 13,661.86 | 0.00 | 5,185.69 |
| CONS-ED '04 Grant | 16,380.49 | 0.00 | 0.00 | 0.00 | 0.00 | 16,380.49 |
| E&T '06 Grant | 16,402.26 | 0.00 | 0.00 | 8,907.23 | 0.00 | 7,495.03 |
| | | | | | | |
| TOTALS FOR IDAHO | 54,524.30 | 2,894.00 | 0.00 | 22,569.09 | 0.00 | 29,061.21 |
| INDIANA | | | | | | |
| CONS-ED '04 Grant | 101,262.75 | 90,697.04 | 0.00 | 9,589.62 | 0.00 | 976.09 |
| CONS-ED '05 Grant | 13,421.66 | 0.00 | 0.00 | 11,949.95 | 0.00 | 1,471.71 |
| CONS ED '06 Grant | 32,082.43 | 0.00 | 0.00 | 20,204.62 | 0.00 | 11,877.81 |
| E & T '06 Grant | 4,103.00 | 0.00 | 0.00 | 2,759.65 | 0.00 | 1,343.35 |
| TOTALS FOR INDIANA | 150,869.84 | 90,697.04 | 0.00 | 44,503.84 | 0.00 | 15,668.96 |
| TOTALS FOR INDIANA | 150,009.04 | 90,097.04 | 0.00 | 44,503.64 | 0.00 | 15,000.90 |
| KENTUCKY | | | | | | |
| CONS-ED '06 Grant | 120,028.36 | 0.00 | 0.00 | 88,171.69 | 0.00 | 31,856.67 |
| E & T '06 Grant | 39,785.00 | 0.00 | 0.00 | 18,885.38 | 0.00 | 20,899.62 |
| | | | | | | |
| TOTALS FOR KENTUCKY | 159,813.36 | 0.00 | 0.00 | 107,057.07 | 0.00 | 52,756.29 |
| MASSACHUSETTS | | | | | | |
| R & D '04 Grant | 13,574.79 | 13,574.79 | 0.00 | 0.00 | 0.00 | 0.00 |
| CONS-ED '05 Grant | 398,790.50 | 0.00 | 137,516.95 | 261,273.55 | 0.00 | 0.00 |
| E & T '05 Grant | 105,643.59 | 0.00 | 38,608.00 | 67,035.59 | 0.00 | 0.00 |
| CONS-ED '06 Grant | 1,012,000.00 | 0.00 | 0.00 | 1,007,665.95 | 0.00 | 4,334.05 |
| E & T -'06 Grant | 348,657.22 | 0.00 | 0.00 | 201,470.74 | 0.00 | 147,186.48 |
| | | | | | | |

| TOTALS FOR MASSACHUSETTS | 1,878,666.10 | 13,574.79 | 176,124.95 | 1,537,445.83 | 0.00 | 151,520.53 |
|--------------------------|--------------|------------|------------|--------------|------|------------|
| | | | | | | |
| MARYLAND (MID-ATL) | | | | | | |
| E & T '03 Grant | 55,635.53 | 35,697.09 | 10,878.44 | 5,060.00 | 0.00 | 4,000.00 |
| CONS-ED '04 Grant | 510,926.61 | 385,280.64 | 23,036.52 | 102,609.45 | 0.00 | 0.00 |
| E & T '04 Grant | 13,692.15 | 0.00 | 13,692.15 | 0.00 | 0.00 | 0.00 |
| CONS-ED '05 Grant | 188,392.10 | 0.00 | 184,910.76 | 3,481.34 | 0.00 | 0.00 |
| CONS-ED '06 Grant | 578,577.59 | 0.00 | 0.00 | 415,728.39 | 0.00 | 162,849.20 |
| | | | | | | |
| TOTALS FOR MARYLAND | 1,347,223.98 | 420,977.73 | 232,517.87 | 526,879.18 | 0.00 | 166,849.20 |
| MAINE | | | | | | |
| MAINE | | | | | | |
| CONS-ED '05 Grant | 163,003.36 | 0.00 | 132,032.43 | 30,970.93 | 0.00 | 0.00 |
| E & T '05 Grant | 92,028.71 | 0.00 | 74,543.26 | 17,485.45 | 0.00 | 0.00 |
| CONS-ED '06 Grant | 411,460.80 | 0.00 | 0.00 | 200,000.00 | 0.00 | 211,460.80 |
| E & T - '06 Grant | 276,000.00 | 0.00 | 0.00 | 260,598.74 | 0.00 | 15,401.26 |
| | | | | | | |
| TOTALS FOR MAINE | 942,492.87 | 0.00 | 206,575.69 | 509,055.12 | 0.00 | 226,862.06 |

| | National Oilheat Research Al | | | | | |
|---------------------------|------------------------------|-----------|------------|------------|-----------|------------|
| | STATE GRANT STATU | | | | | |
| Fo | or the Month Ending January | 31, 2007 | | | | |
| | | | | | | |
| | | Disbursed | Disbursed | Disbursed | Disbursed | |
| | APPROVED | in '04 | in '05 | in '06 | in '07 | REMAINING |
| | | | | | | |
| MICHIGAN | | | | | | |
| CONS-ED '06 Grant | 79,985.00 | 0.00 | 0.00 | 61,686.90 | 0.00 | 18,298.10 |
| E & T '06 Grant | 46,975.00 | 0.00 | 0.00 | 20,070.15 | 0.00 | 26,904.85 |
| TOTALS FOR MICHIGAN | 126,960.00 | 0.00 | 0.00 | 81,757.05 | 0.00 | 45,202.95 |
| | | | | | | |
| NORTH CAROLINA | | | | | | |
| CONS-ED '05 Grant | 128,357.11 | 785.00 | 109,774.98 | 17,797.13 | 0.00 | 0.00 |
| E & T '05 GRANT | 32,678.14 | 787.00 | 27,394.97 | 4,496.17 | 0.00 | 0.00 |
| CONS-ED '06 Grant | 365,375.00 | 0.00 | 0.00 | 224,184.07 | 0.00 | 141,190.93 |
| E & T '06 Grant | 64,477.95 | 0.00 | 0.00 | 41,568.48 | 0.00 | 22,909.47 |
| TOTALS FOR NORTH CAROLINA | 590,888.20 | 1,572.00 | 137,169.95 | 288,045.85 | 0.00 | 164,100.40 |
| NEW HAMPSHIRE | | | | | | |
| CONS-ED '05 Grant | 112,478.44 | 0.00 | 85,764.81 | 26,713.63 | 0.00 | 0.00 |
| E & T '05 Grant | 28,119.57 | 0.00 | 28,119.57 | 0.00 | 0.00 | 0.00 |
| CONS-ED '06 Grant | 308,879.00 | 0.00 | 0.00 | 203,139.71 | 0.00 | 105,739.29 |
| E & T '06 Grant | 70,113.00 | 0.00 | 0.00 | 50,784.93 | 0.00 | 19,328.07 |
| TOTALS FOR NEW HAMPSHIRE | 519,590.01 | 0.00 | 113,884.38 | 280,638.27 | 0.00 | 125,067.36 |
| NEW JERSEY | | | | | | |
| E & T '05 Grant | 385,996.20 | 0.00 | 323,061.04 | 62,935.16 | 0.00 | 0.00 |
| CONS-ED '06 Grant | 822,338.91 | 0.00 | 0.00 | 535,419.92 | 0.00 | 286,918.99 |
| E & T '06 Grant | 218,145.00 | 0.00 | 0.00 | 147,634.14 | 6,011.64 | 64,499.22 |
| TOTALS FOR NEW JERSEY | 1,426,480.11 | 0.00 | 323,061.04 | 745,989.22 | 6,011.64 | 351,418.21 |
| NEVADA | | | | | | |
| CONS-ED '04 Grant | 12,638.38 | 0.00 | 0.00 | 13,664.58 | 0.00 | (1,026.20) |
| E & T '04 Grant | 7,706.40 | 0.00 | 0.00 | 0.00 | 0.00 | 7,706.40 |

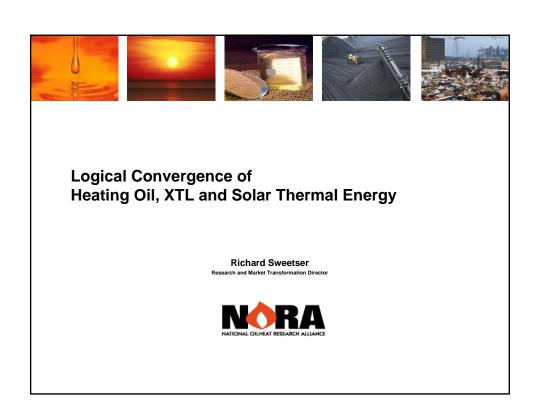
| CONS-ED '05 Grant | 1,330.42 | 0.00 | 0.00 | 1,330.42 | 0.00 | 0.00 |
|------------------------|------------|-----------|-----------|------------|------|------------|
| E & T '02&'05 Grants | 11,237.60 | 10,000.00 | 0.00 | 0.00 | 0.00 | 1,237.60 |
| CONS-ED '06 Unassigned | 6,922.00 | 0.00 | 0.00 | 0.00 | 0.00 | 6,922.00 |
| | | | | | | |
| TOTALS FOR NEVADA | 39,834.80 | 10,000.00 | 0.00 | 14,995.00 | 0.00 | 14,839.80 |
| | | | | | | |
| OHIO | | | | | | |
| E & T '04 Grant | 69,660.91 | 68,660.91 | 0.00 | 1,000.00 | 0.00 | 0.00 |
| E & T '02 & '05 Grants | 17,369.07 | 13,330.52 | 0.00 | 4,038.55 | 0.00 | 0.00 |
| CONS-ED '06 Grnt | 276,518.00 | 0.00 | 0.00 | 171,285.70 | 0.00 | 105,232.30 |
| E & T '06 Grant | 69,130.00 | 0.00 | 0.00 | 67,178.24 | 0.00 | 1,951.76 |
| | | | | | | |
| TOTALS FOR OHIO | 432,677.98 | 81,991.43 | 0.00 | 243,502.49 | 0.00 | 107,184.06 |
| | | | | | | |
| OREGON | | | | | | |
| CONS-ED '05 Grant | 16,504.32 | 0.00 | 16,504.32 | 0.00 | 0.00 | 0.00 |
| CONS-ED '06 Grant | 41,815.00 | 0.00 | 0.00 | 26,604.28 | 0.00 | 15,210.72 |
| E & T '06 Grant | 2,669.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2,669.00 |
| | | | | | | |
| TOTALS FOR OREGON | 60,988.32 | 0.00 | 16,504.32 | 26,604.28 | 0.00 | 17,879.72 |

| | National Oilheat Research A | | | | | |
|-------------------------|-----------------------------|------------|------------|--------------|-----------|------------|
| | STATE GRANT STATU | SI | | | | |
| Fo | r the Month Ending January | 31, 2007 | | | | |
| | | | | | | |
| | | | | | | |
| | | Disbursed | Disbursed | Disbursed | Disbursed | |
| | APPROVED | in '04 | in '05 | in '06 | in '07 | REMAINING |
| PENNSYLVANIA | | | | | | |
| CONS-ED '05 Grant | 521,579.20 | 0.00 | 140,770.00 | 380,809.20 | 0.00 | 0.00 |
| E & T '05 Grant | 101,323.68 | 0.00 | 0.00 | 101,323.68 | | 0.00 |
| CONS-ED - '06 Grant | | 0.00 | 0.00 | | | |
| | 1,343,011.00 | | | 953,621.10 | | 389,389.90 |
| E & T- '06 Grant | 336,076.00 | 0.00 | 0.00 | 200,000.00 | 0.00 | 136,076.00 |
| TOTALS FOR PENNSYLVANIA | 2,301,989.88 | 0.00 | 140,770.00 | 1,635,753.98 | 0.00 | 525,465.90 |
| RHODE ISLAND | | | | | | |
| CONS-ED '05 Grant | 109,749.06 | 0.00 | 88,896.88 | 20,852.18 | 0.00 | 0.00 |
| E & T '05 Grant | 13,804.30 | 0.00 | 11,181.48 | 2,622.82 | 0.00 | 0.00 |
| R & D '06 Grant | 8,326.00 | 0.00 | 0.00 | 8,326.00 | | 0.00 |
| CONS-ED '06 Grant | 212,485.00 | 0.00 | 0.00 | 211,975.00 | | 510.00 |
| E & T '06 Grant | 112,237.00 | 0.00 | 0.00 | 87,377.18 | | 24,859.82 |
| 2 d i oo oran | | | | | | |
| TOTALS FOR RHODE ISLAND | 456,601.36 | 0.00 | 100,078.36 | 331,153.18 | 0.00 | 25,369.82 |
| | | | | | | |
| VIRGINIA | | | | | | |
| E & T '03 Grant | 82,923.34 | 0.00 | 9,592.77 | 42,769.52 | 0.00 | 30,561.05 |
| CONS-ED '04 Grant | 380,777.08 | 323,711.67 | 18,063.08 | 39,002.33 | 0.00 | 0.00 |
| E & T '04 Grant | 95,194.27 | 52,176.91 | 17,172.36 | 0.00 | 0.00 | 25,845.00 |
| CONS-ED '05 Grant | 144,216.05 | 0.00 | 31,506.32 | 112,709.73 | 0.00 | 0.00 |
| E & T '02 & '05 Grant | 33,250.79 | 0.00 | 7,555.23 | 0.00 | 0.00 | 25,695.56 |
| CONS-ED '06 Grant | 373,276.00 | 0.00 | 0.00 | 260,805.41 | 0.00 | 112,470.59 |
| E & T '06 Grant | 84,731.00 | 0.00 | 0.00 | 0.00 | 0.00 | 84,731.00 |
| | | | | | | |
| TOTALS FOR VIRGINIA | 1,194,368.53 | 375,888.58 | 83,889.76 | 455,286.99 | 0.00 | 279,303.20 |
| VERMONT | | | | | | |
| CONS-ED '04 Grant | 192,660.00 | 117,110.17 | (580.16) | 0.00 | 0.00 | 76,129.99 |
| CONS-ED '05 Grant | 58,284.02 | 0.00 | 0.00 | 54,493.67 | 0.00 | 3,790.35 |
| CONS-ED '06 Grant | 139,233.00 | 0.00 | 0.00 | 131,368.42 | 0.00 | 7,864.58 |
| E & T '06 Grant | 79,346.21 | 0.00 | 0.00 | 79,346.21 | 0.00 | 0.00 |
| | | | | | | |

| TOTALS FOR VERMONT | 469,523.23 | 117,110.17 | (580.16) | 265,208.30 | 0.00 | 87,784.92 |
|-----------------------|------------|------------|-----------|------------|------|-----------|
| | | | | | | |
| WASHINGTON | | | | | | |
| CONS-ED '04 Grant | 67,016.05 | 59,039.78 | 0.00 | 7,976.27 | 0.00 | 0.00 |
| CONS-ED '05 Grant | 26,359.56 | 0.00 | 18,100.00 | 8,259.56 | 0.00 | 0.00 |
| CONS-ED - '06 Grant | 65,531.20 | 0.00 | 0.00 | 32,718.17 | 0.00 | 32,813.03 |
| E & T - '06 Grant | 5,520.00 | 0.00 | 0.00 | 0.00 | 0.00 | 5,520.00 |
| | | | | | | |
| TOTALS FOR WASHINGTON | 164,426.81 | 59,039.78 | 18,100.00 | 48,954.00 | 0.00 | 38,333.03 |
| | | | | | | |
| WISCONSIN | | | | | | |
| CONS-ED '05 Grant | 24,091.68 | 0.00 | 19,514.26 | 4,577.42 | 0.00 | 0.00 |
| E & T '05 Grant | 8,033.07 | 0.00 | 0.00 | 8,033.07 | 0.00 | 0.00 |
| CONS-ED - '06 Grant | 86,595.71 | 0.00 | 0.00 | 58,019.13 | 0.00 | 28,576.58 |
| | | | | | | |
| TOTALS FOR WISCONSIN | 118,720.46 | 0.00 | 19,514.26 | 70,629.62 | 0.00 | 28,576.58 |
| | | | | | | |
| | | | | | | |

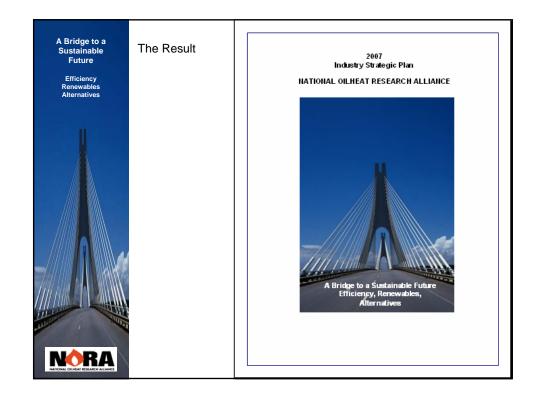
| | National Oilheat Research A | | | | | |
|--------------------|------------------------------|--------------|------------|------------|-----------|------------|
| | STATE GRANT STATU | | | | | |
| | For the Month Ending January | 31, 2007 | | | | |
| | | | | | | |
| | | Disbursed | Disbursed | Disbursed | Disbursed | |
| | APPROVED | in '04 | in '05 | in '06 | in '07 | REMAINING |
| ESPA (NEW YORK) | | | | | | |
| E & T '03 Grant | 62,200.80 | 58,114.00 | 0.00 | 4,086.80 | 0.00 | 0.00 |
| CONS-ED '04 Grant | 2,035,867.49 | 1,677,914.35 | 88,432.45 | 10,000.00 | 0.00 | 259,520.69 |
| E & T '04 Grant | 510,014.96 | 184,862.09 | 20,000.00 | 39,320.20 | 0.00 | 265,832.67 |
| CONS-ED '05 Grant | 554,988.30 | 0.00 | 45,171.75 | 374,696.00 | 0.00 | 135,120.55 |
| E & T '05 Grant | 353,160.90 | 0.00 | 211,328.00 | 0.00 | 0.00 | 141,832.90 |
| CONS-ED '06 Grant | 146,316.00 | 0.00 | 0.00 | 9,739.15 | 0.00 | 136,576.85 |
| E & T '06 Grant | 67,284.00 | 0.00 | 0.00 | 17,300.00 | 0.00 | 49,984.00 |
| E & 1 00 Grant | 67,284.00 | 0.00 | 0.00 | 17,300.00 | 0.00 | 49,964.00 |
| TOTALS FOR ESPA | 3,729,832.45 | 1,920,890.44 | 364,932.20 | 455,142.15 | 0.00 | 988,867.66 |
| NYOHA | | | | | | |
| CONS-ED '06 Grant | 706,785.00 | 0.00 | 0.00 | 319,120.60 | 9,786.26 | 377,878.14 |
| E & T '06 Grant | 81,956.00 | 0.00 | 0.00 | 45,686.33 | 0.00 | 36,269.67 |
| | | | | | | |
| TOTALS FOR NYOHA | 788,741.00 | 0.00 | 0.00 | 364,806.93 | 9,786.26 | 414,147.81 |
| EASTERN | | | | | | |
| CONS-ED '06 Grant | 157,659.00 | 0.00 | 0.00 | 0.00 | 0.00 | 157,659.00 |
| E & T '06 Grant | 92,593.00 | 0.00 | 0.00 | 92,593.00 | 0.00 | 0.00 |
| TOTALS FOR EASTERN | 250,252.00 | 0.00 | 0.00 | 92,593.00 | 0.00 | 157,659.00 |
| TOTALOT ON EXOTERN | 200,202.00 | 0.00 | 0.00 | 32,030.00 | 0.00 | 107,000.00 |
| WESTERN | | | | | | |
| CONS-ED '06 Grant | 95,856.00 | 0.00 | 0.00 | 0.00 | 0.00 | 95,856.00 |
| E & T '06 Grant | 27,036.00 | 0.00 | 0.00 | 0.00 | 0.00 | 27,036.00 |
| TOTALS FOR WESTERN | 122,892.00 | 0.00 | 0.00 | 0.00 | 0.00 | 122,892.00 |
| CENTRAL | | | | | | |
| CENTIVIE | | | | | | |
| CONS-ED '06 Grant | 130,478.00 | 0.00 | 0.00 | 115,630.94 | 0.00 | 14,847.06 |
| E & T '06 Grant | 59,446.00 | 0.00 | 0.00 | 37,316.00 | 0.00 | 22,130.00 |
| TOTALS FOR CENTRAL | 189,924.00 | 0.00 | 0.00 | 152,946.94 | 0.00 | 36,977.06 |

| HUDSON VALLEY | | | | | | |
|--------------------------|---|---|--------------|--------------|-----------|--------------|
| CONS-ED '06 Grant | 225,495.00 | 0.00 | 0.00 | 139,962.20 | 0.00 | 85,532.80 |
| E&T '06 Grant | 33,695.00 | 0.00 | 0.00 | 33,695.00 | 0.00 | 0.00 |
| | | | | | | |
| TOTALS FOR HUDSON VALLEY | 259,190.00 | 0.00 | 0.00 | 173,657.20 | 0.00 | 85,532.80 |
| LONG ISLAND | | | | | | |
| '06 Grant - Unassigned | 41,298.00 | 0.00 | 0.00 | 0.00 | 0.00 | 41,298.00 |
| CONS-ED '06 Grant | 419,693.00 | 0.00 | 0.00 | 280,495.82 | 0.00 | 139,197.18 |
| E & T - '06 Grant | 162,406.00 | 0.00 | 0.00 | 109,510.51 | 0.00 | 52,895.49 |
| | | | | | | |
| TOTALS FOR LONG ISLAND | 623,397.00 | 0.00 | 0.00 | 390,006.33 | 0.00 | 233,390.67 |
| TOTALS FOR NY STATE | 5,964,228.45 | 1,920,890.44 | 364,932.20 | 1,629,152.55 | 9,786.26 | 2,039,467.00 |
| | | | | | | |
| | ======================================= | ======================================= | | | | ========= |
| TOTALS FOR REPORT | 19,495,331.59 | 3,094,635.96 | 1,932,542.62 | 9,598,471.12 | 15,797.90 | 4,853,883.99 |
| | ========== | ======================================= | | | | ========= |











The Result



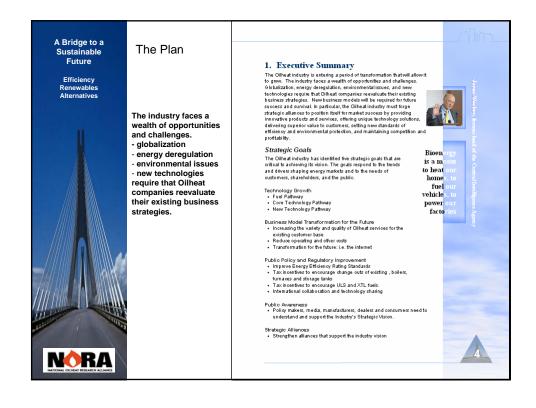
"THE DILHEAT INDUSTRY IS UNIQUELY POSITIONED TO DELIVER TO HOMEOWNERS, BUSINESSES AND INDUSTRY
LIQUID FUELS AND FUEL
BLENDS OF THE FUTURE.

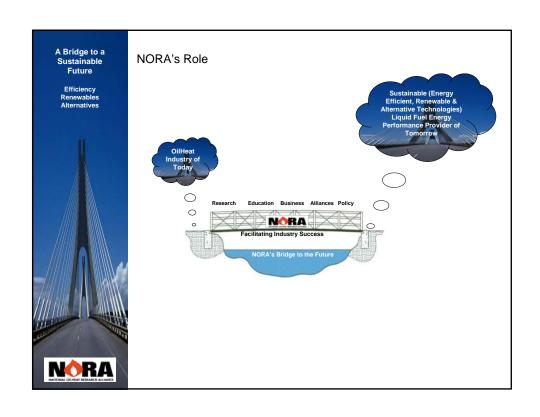
INVESTMENT IN THESE FUELS OF THE FUTURE WILL

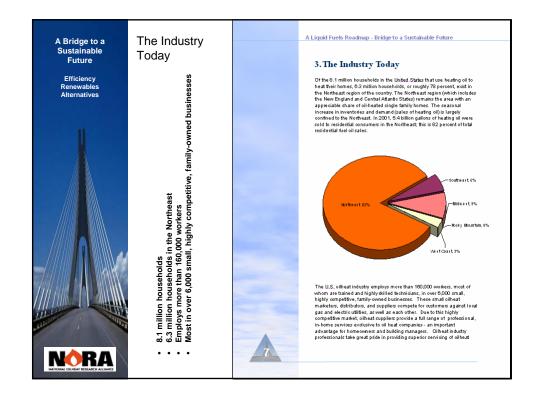
PLAGE AMERICA IN THE FOREFRONT OF ENERGY SECURITY AND SUSTAINABILITY.

SUSTAINABLE LIQUID FUELS ARE ONE KEY ELEMENT OF DUR STRATEGIC PLAN TO PROVIDE THE INDUSTRY, ITS CUSTOMERS AND THE NATION AT LARGE WITH NEW AND EXCITING APPLIANCES, ENERGY SOLUTIONS, AND BUSINESS MODELS. WE ARE INDEED PLEASED TO OFFER OUR INDUSTRY'S VIEW OF THE FUTURE."

JAMES TOWNSEND, NATIONAL DILHEAT RESEARCH









The Industry Today

The oilheat industry historically markets a commodity over which it has limited control - of the source, quality, price, and availability.

The industry has managed to be a clean, cost-efficient supplier of premium indoor comfort to over 8 million homes in the United States, but it has seen continuous erosion of market share since 1960.

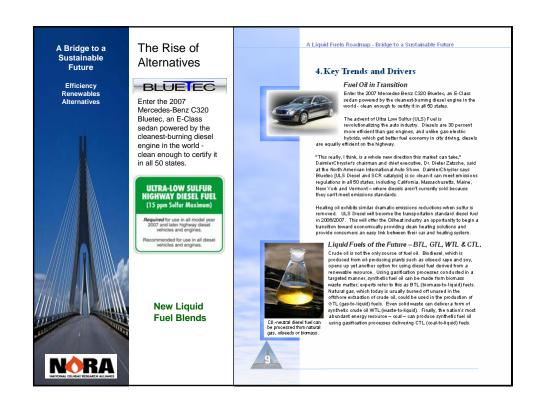
equipment. Whether it is the middle of the night or in below-freezing temperatures, serviormen are always available to diagnose and fix problems. Building on this coultome service pilotosphy, the oitheast industry is striving to maintain and build their maket share, as well as move into heav riche makets.

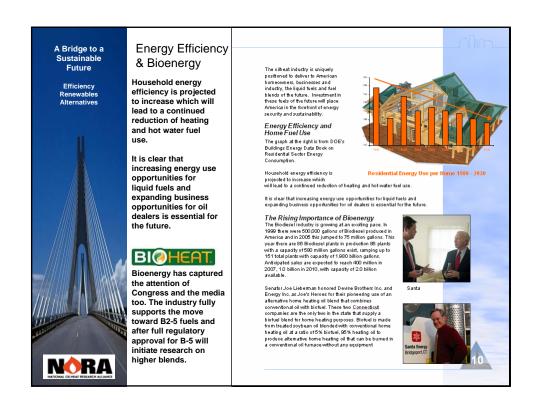
Historically, the chemical nature of heating oil in atmospheric combustion has yielded a long-standing efficiency advantage over propane and natural gas in the same types of equipment. Furthermore, electricity was expensive for heating and the moderate air temperature supplied by heat pumps is not perceived as being comfortable. Oil for heating was part of a larger world oil maket, which established heating oil as a cheap source of energy in its core makets.

Today's energy markets are quite different. Fuel piece volatility provides continuing price shods at the gas pump, as well as, for home energy such as heating and air conditioning bills. Technology has also changed with natural gas and propane condensing turnos and bolees providing increased efficiency. As a result these competing condensing gas heating appliances have diamed the efficiency high gound. Heat pumps have responded to some of the comforthallenges and ground source heat pumps are considered state-office and exhiping conditioning. The high gound heat pumps have responded to some of the comforthallenges and ground source heat pumps are considered state-office and exhalten pumps have responded to some of the comforthallenges and ground source heat pumps are considered state-office and exhalten posts many questions.

The oilheat industry is at a distant furning point. Historically markets a commodity over which it has limited control - of the source, quality, price, and availablist. The industry has managed to be a dean, cost-efficient supplier of permium indoor comfort to over 8 million homes in the United States, but thas seen ontinuous erosion of maket share since 1000.

Declining Oilheat Residential Market Share



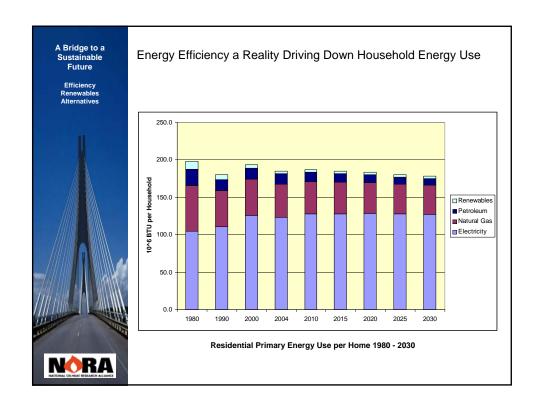


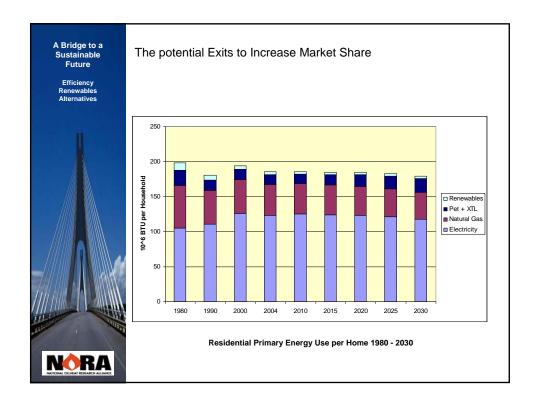


2004 Heating Oil Market Share

| 1.1.4 2004 U.S. Buildings Energy End-Use Splits, by Fuel Type (quads) | | | | | | | | | |
|--|---------|---------|------|-------|--------|----------|---------|---------|--|
| | Natural | Fuel | | | Renew. | Primary | Primary | | |
| | Gas | Oil (1) | LPG | Other | Energy | Electric | Total | Percent | |
| Space Heating (5) | 4.70 | 1.13 | 0.29 | 0.21 | 0.41 | 2.19 | 8.94 | 23.2% | |
| Lighting | | | | | | 6.79 | 6.79 | 17.6% | |
| Space Cooling | 0.01 | | | | | 4.19 | 4.20 | 10.9% | |
| Water Heating | 1.69 | 0.19 | 0.05 | | 0.05 | 1.77 | 3.75 | 9.7% | |
| Refrigeration (6) | | | | | | 2.78 | 2.78 | 7.2% | |
| Electronics (7) | | | | | | 2.05 | 2.05 | 5.3% | |
| Cooking | 0.47 | | 0.03 | | | 0.81 | 1.31 | 3.4% | |
| Wet Clean (8) | 0.07 | | | | | 0.96 | 1.03 | 2.7% | |
| Ventilation (9) | | | | | | 1.01 | 1.01 | 2.6% | |
| Computers | | | | | | 0.66 | 0.66 | 1.7% | |
| Other (10) | 0.37 | 0.02 | 0.27 | 0.05 | 0.09 | 1.81 | 2.61 | 6.8% | |
| Adjust to SEDS (11) | 0.80 | 0.22 | | | | 2.32 | 3.33 | 8.7% | |
| Total | 8.13 | 1.57 | 0.63 | 0.26 | 0.55 | 27.33 | 38.46 | 100% | |
| 1) Includes (1.45 quad) distillate fuel oil and (0.12 quad) residual fuel oil. | | | | | | | | | |

1.45 quads / 38.46 quads = 3.8% primary energy of the building







The Industry's Vision for the Future

By 2012, the industry will establish B5 BioheatTM as the fuel of choice where clean, renewable, affordable, safe, and reliable energy is required. The industry will capitalize on Bioheat's distinct advantage as a portable fuel to provide customers with exceptional service, value, and flexibility. The industry will be recognized as the bridge to the energy future where Gas-to-Liquids, Bio-to-Liquids, Waste-to-Liquids and Coal-to-Liquids will offer America domestic sustainability for centuries to come. The Oilheat industry will be acknowledged as highly customer focused, reliable, innovative, progressive, and environmentally friendly. Oilheat companies will set new standards of customer service within the energy industry that others will strive to achieve.



Strategic Goals

• Technology Growth

- Fuel Pathway
- Core Technology Pathway
- New Technology Pathway

Business Model Transformation for the Future

- Increasing the variety and quality of Oilheat services for the existing customer base
- Reduce operating and other costs
- Transformation for the future: i.e. the internet

Public Policy and Regulatory Improvement

- Improve Energy Efficiency Rating Standards
- Tax incentives to encourage change outs of existing, boilers, furnaces and storage tanks
- Tax incentives to encourage ULS and XTL fuels.
- International collaboration and technology sharing

Public Awareness

 Policy makers, media, manufacturers, dealers and consumers need to understand and support the Industry's Strategic Vision.

Strategic Alliances

- Strengthen alliances that support the industry vision



Portfolio 5-Year Investment Plan

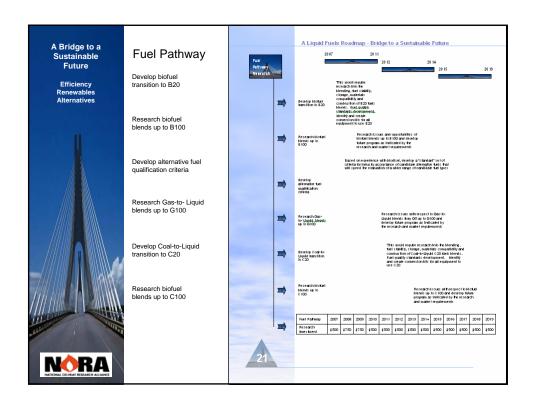
- Industry investment is required to improve core technologies and business practices through cost effectively increasing energy efficiency, increase utilization of lower sulfur fuel as economic factors provide consumer acceptance and enhance energy service capabilities of the industry.
- The portfolio further includes a significant technological and business shift toward:
 - new sustainable liquid fuels
 - cost effective, 90+, ultra-high efficiency systems
 - new technologies and applications
 - and whole system, energy service practices
 - The research portfolio ranges between three to four million dollars per year during the five-year planning period.

| | 2007 | 2008 | 2009 | 2010 | 2011 |
|----------------------------|---------|---------|---------|---------|---------|
| Fuel Pathway | \$500 | \$750 | \$750 | \$500 | \$500 |
| Core Technology Pathway | \$1,000 | \$1,000 | \$1,000 | \$500 | \$500 |
| New Technology Pathway | \$1,500 | \$2,000 | \$2,000 | \$2,000 | \$2,000 |
| Annual Research Investment | \$3,000 | \$3,750 | \$3,750 | \$3,000 | \$3,000 |

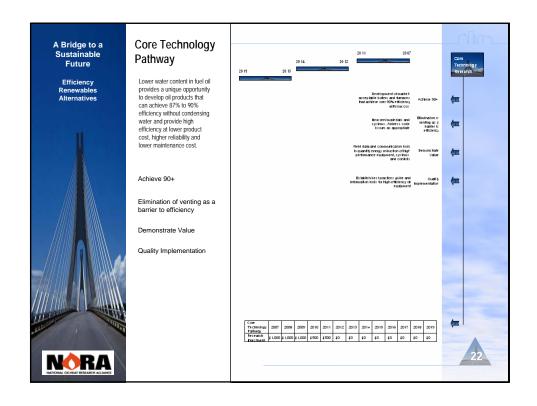


Fuel Pathway

- Develop biofuel transition to B20
- Develop B20, CTL20 (Coal-to- Liquid), GTL20 (Gas-to- Liquid) transitions at the right time
- Identify and create conversion kits for all equipment to use (B20, CTL20, GTL20)



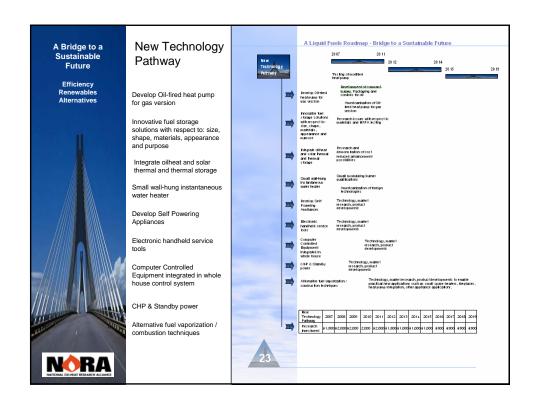


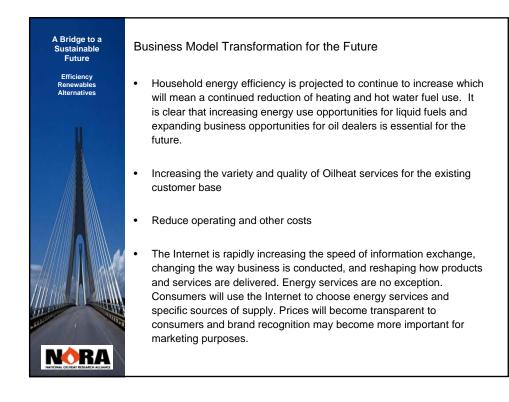




New Technology Pathway

- The advent of clean and sustainable fuels opens the door to apply these new fuels to a broader base of end-use technologies.
 - Oil-fired heat pump
 - Innovative fuel storage solutions with respect to: size, shape, materials, appearance and purpose
 - Integrate oilheat and solar thermal and thermal storage
 - Small wall-hung instantaneous water heater
 - Ancillary products: patio heaters, fireplaces, etc.
 - Electronic handheld service tools
 - Self Powering Appliances
 - Computer Controlled Equipment integrated in whole house control system
 - Combined Heat and Power systems
 - Standby Electric Generation

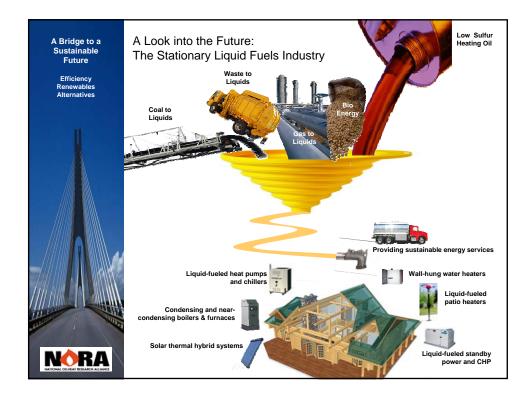






Public Policy and Regulatory Improvement

- The liquid fuels industry must increase collaboration in areas of mutual benefit and create standards and regulations that properly present the energy efficiency and economic impact of heating and cooling appliances. The industry must take advantage of all the resources available to it, including government and international programs. Specific priorities include:
 - Improve Energy Efficiency Rating Standards
 - Tax incentives to encourage change out of existing oil-fired boilers and furnaces with new oil-fired boilers and furnaces
 - Tax incentives to encourage change out of existing in-ground storage tanks
 - Tax incentives to encourage ULS and XTL fuels.
 - International collaboration and technology sharing





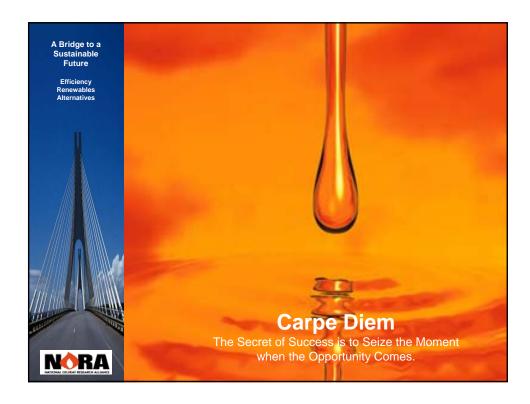
Imagine the Industry's Future

Where

- · households will use less oil for heating
- · but, will use oil for energy needs other than just heating, and
- a portion of the oil will be renewable

and where Oilheat

- · contributes to reducing dependence on imported oil
- helps reduce Greenhouse Gas Emissions
- · is the residential energy leader
- is the Most Environmentally Friendly Home Fuel



The Performance of Integrated Hydronic Heating Systems

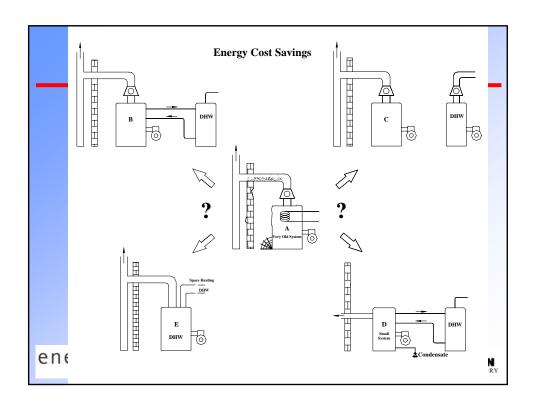
Tom Butcher

National Oilheat Research Alliance Board of Directors Meeting February 27, 2007



Dr. Thomas A. Butcher Building 526 Brookhaven National Laboratory Upton, N.Y. 11973 Tel. (631) 344 7916 butcher@bnl.gov





Objectives

- Compare annual fuel use of different combination systems
- Systems to include boilers, water heaters, storage tanks and control concepts. Oil and gas –fired.
- Impact of oversize decisions
- Consideration of jacket and near-boiler piping losses, location dependent
- Consideration of electric power
- Understanding sources of losses



3



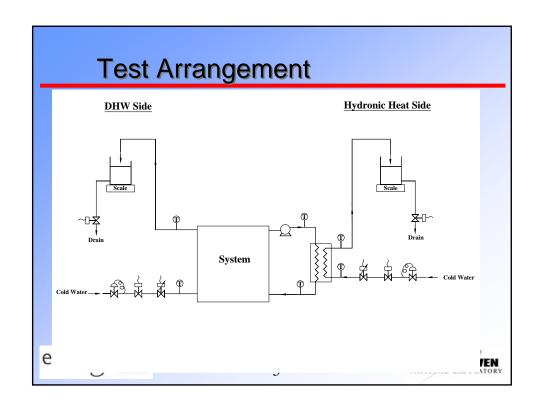
Units planned for tests

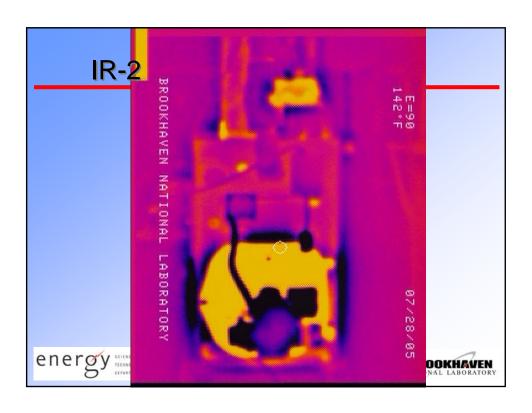
- Cast iron, oil-fired boiler, severely oversized, fixed temperature, tankless coil
- 2. Cast iron, oil-fired boiler, slightly oversized, with indirect tank
- Cast iron, oil-fired boiler, slightly oversized, with indirect tank, with outdoor reset control
- 4. Cast iron, oil-fired, well-insulated boiler with indirect tank
- 5. Steel, oil-fired, thermally purgable control with indirect tank
- 6. Water heater dual use, oil-fired
- 7. Combi-system, oil-fired
- 8. Condensing oil boiler
- Cast iron, gas-fired with atmospheric burner, heat only, with outdoor reset
- Cast iron, gas-fired with atmospheric burner, boiler and separate water heater
- 11. Old boiler removed from field
- 12. Modulating, condensing gas boiler

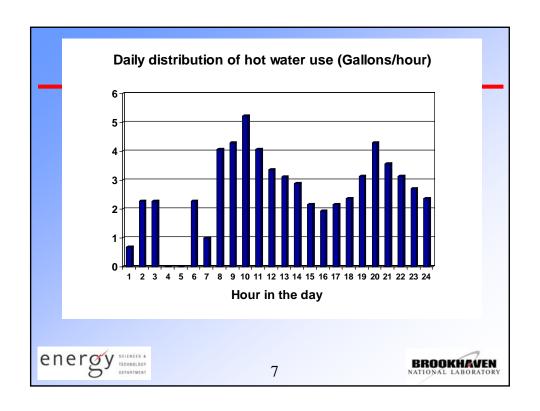


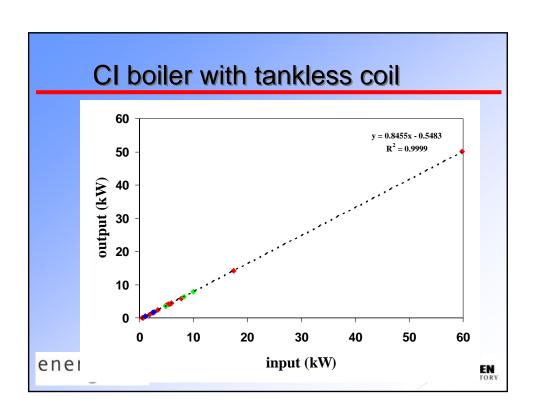
4

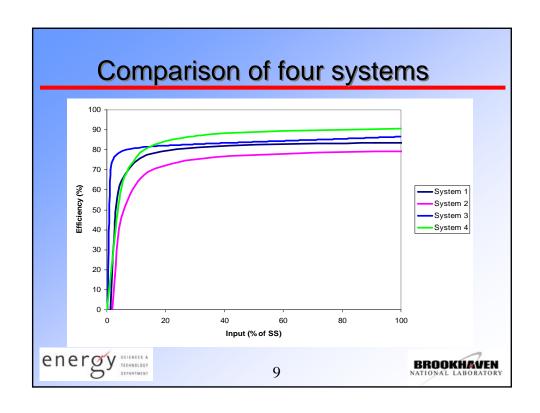


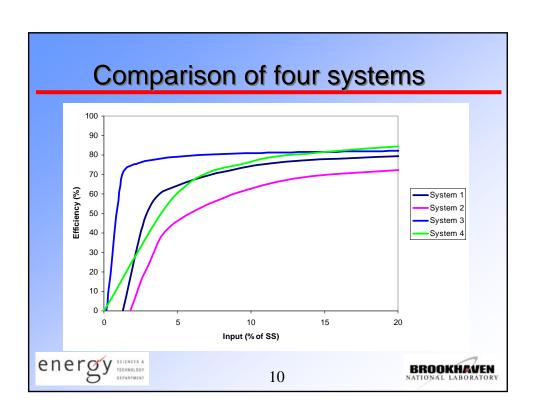












Systems Tested

| Number | Fuel | System |
|--------|------|---|
| 1 | Oil | Cast iron boiler with tankless |
| 2 | Oil | Cast iron boiler with indirect |
| 3 | Oil | Steel boiler with indirect and thermal purge |
| 4 | Oil | Condensing boiler with indirect |
| 5 | Oil | Well insulated cast iron boiler with indirect |
| 6 | Oil | Water heater used for space heating and DHW |
| 7 | Oil | Combi-system |
| 8 | Gas | Atmospheric with tankless |
| 9 | Gas | Atmospheric water heater |
| 8+9 | Gas | Gas boiler + water heater |
| 10 | Oil | Old Cast iron boiler |
| 11 | Gas | Modulating, condensing |



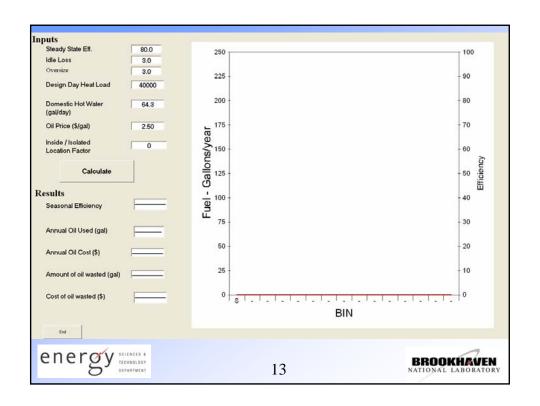
11

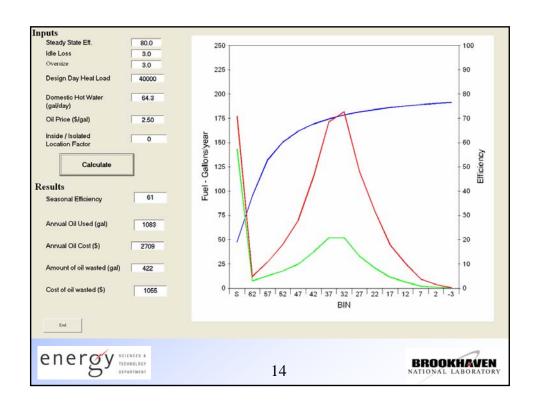


| Number | Fuel | System | Thermal Efficiency | Idle Loss |
|--------|------|---|--------------------|-----------|
| 4 | Oil | Condensing boiler with indirect | 92 | 1.5 |
| 5 | Oil | Well insulated cast iron boiler with indirect | 87.5 | 0.6 |
| 3 | Oil | Steel boiler with indirect and thermal purge | 86.5 | 0.15 |
| 1 | Oil | Cast iron boiler with tankless | 83.7 | 1.2 |
| 6 | Oil | Water heater used for space heating and DHW | 81.5 | 1.2 |
| 7 | Oil | Combi-system | 79.5 | 0.8 |
| 2 | Oil | Cast iron boiler with indirect | 78.4 | 2.1 |
| 9 | Gas | Atmospheric water heater | 74 | 0.65 |
| 10 | Oil | Old Cast iron boiler | 73.8 | 2 |
| 8 | Gas | Atmospheric with tankless | 72.5 | 1.7 |



BROOKHAVEN NATIONAL LABORATORY





| | | | Thermal | ldle | Ann. |
|--------|------|---------------------------|------------|------|------|
| Number | Fuel | System | Efficiency | Loss | Eff. |
| 3 | Oil | Steel / Thermal Purge | 86.5 | 0.15 | 85.7 |
| 5 | Oil | Well Insulated / Indirect | 87.5 | 0.6 | 84.2 |
| 4 | Oil | Condensing / Indirect | 92 | 1.5 | 83.7 |
| 1 | Oil | CI with Tankless | 83.7 | 1.2 | 77.6 |
| 6 | Oil | Water Heater | 81.5 | 1.2 | 75.5 |
| 7 | Oil | Combi-system | 79.5 | 8.0 | 75.4 |
| 2 | Oil | CI with Indirect | 78.4 | 2.1 | 69.8 |
| 9 | Gas | Bir + WH | | | 66.6 |
| 10 | Oil | Old | 73 | 2 | 66.1 |
| 8 | Gas | Atmospheric w coil | 72.5 | 1.7 | 65.2 |



15



| | | | Thermal | ldle | Ann. |
|--------|------|---------------------------|------------|------|------|
| Number | Fuel | System | Efficiency | Loss | gal |
| 3 | Oil | Steel / Thermal Purge | 86.5 | 0.15 | 816 |
| 5 | Oil | Well Insulated / Indirect | 87.5 | 0.6 | 827 |
| 4 | Oil | Condensing / Indirect | 92 | 1.5 | 830 |
| 1 | Oil | CI with Tankless | 83.7 | 1.2 | 895 |
| 6 | Oil | Water Heater | 81.5 | 1.2 | 921 |
| 7 | Oil | Combi-system | 79.5 | 0.8 | 923 |
| 2 | Oil | CI with Indirect | 78.4 | 2.1 | 1005 |
| 9 | Gas | Bir + WH | | | 1060 |
| 10 | Oil | Old | 73 | 2 | 1064 |
| 8 | Gas | Atmospheric w coil | 72.5 | 1.7 | 1065 |



BROOKHAVEN NATIONAL LABORATORY

Old Oil Upgrade

| | | | Thermal | ldle | % |
|--------|------|---------------------------|------------|------|---------|
| Number | Fuel | System | Efficiency | Loss | Savings |
| 3 | Oil | Steel / Thermal Purge | 86.5 | 0.15 | 23.3 |
| 5 | Oil | Well Insulated / Indirect | 87.5 | 0.6 | 22.3 |
| 4 | Oil | Condensing / Indirect | 92 | 1.5 | 22.0 |
| 1 | Oil | CI with Tankless | 83.7 | 1.2 | 15.9 |
| 6 | Oil | Water Heater | 81.5 | 1.2 | 13.4 |
| 7 | Oil | Combi-system | 79.5 | 8.0 | 13.3 |
| 2 | Oil | CI with Indirect | 78.4 | 2.1 | 5.5 |
| 9 | Gas | BIr + WH | | | 0.4 |
| 10 | Oil | Old | 73 | 2 | 0.0 |
| 8 | Gas | Atmospheric w coil | 72.5 | 1.7 | -0.1 |



17



Next

- Modulating gas boiler
- Report
- Communication piece
- Water heater STAC
- Additional lab studies and field verification

18

Standards support



BROOKHAVEN NATIONAL LABORATORY

RESOLUTION G-1

Oil Heat Comfort Corp. Inc. has submitted a grant application to cover 2006 Consumer Education. This grant has been reviewed and was found to provide sufficient detail to meet the requirements of the law, that there is commitment to comply with the title in using the requested funds, that the grant has been made public and not received adverse comments, and will directly benefit the Oilheating industry.

Be it therefore resolved: That the NORA Board approved a grant to the Oil Heat Comfort Corp. Inc. for \$36,186, of which \$41,298.00 will be used for consumer education. This sum includes an administrative fee within the Board specified amount.

Resolution A1

National Oilheat Research Alliance from its inception has considered the state associations to be one of the strongest forces in the Oilheat industry and the effective use of their resources will help advance the goals of NORA.

The Board in compliance with the internal budget adjustments has decided to approve this grant.

Revolved: The grant request identified as RD-06-CT-001 is hereby decreased from \$54,709.00 to \$00.00 and that the grant request identified as CE-06-CT-001 is hereby increased by \$54,709.00.

Be it further resolved: That the President of NORA enters into a contract with the grant application identified in the grant application to effectuate the purpose of the grant.

THIS IS A SPECIAL CLEARANCE OF CONSUMER ITEMS SHOWN BELOW FROM THE NORA PRODUCTS STORE. THE ITEMS ARE FREE OF CHARGE.

FORM effective 02-21-07

You can order as many of each of the items below as you'd like (while supplies last) as long as you prepay all shipping and handling charges. Select the item(s) you want, and indicate how many PACKS you want, not individual pieces. Each PACK contains 100 pieces.

Proceed to add up and compute your total as if you were paying for all items. Then compute handling rate as shown, and place in box on Line D. STOP. WRITE A CHECK FOR AMOUNT IN BOX D. ONLY AND MAIL WITH SHIPPING INFO. OR FAX FORM WITH CREDIT CARD INFO. TO 1-866-924-1200.

| OR FAX FORM WITH CREDIT CA | RD INFO. TO 1-866-924-1200. NO. OF PACK | S TOTAL \$ DUE PER ITEM |
|---|--|-------------------------|
| CONSUMER DIRECT ITEMS | EFFICIENCY statement stuffer \$3.00/pack | |
| These six consumer information items are designed to assist Oilheat dealers in communicating | BUDGET statement stuffer \$3.00/pack | |
| to customers, while emphasizing the value of Oilheat as a home | EFFICIENCY postcard \$3.00/pack | |
| energy resource. | CONSERVATION postcard \$3.00/pack | |
| This is a screen resolution PDF. For better visibility, visit www.norastore.org and link to consumer products. (Do not order via the Internet | BUDGET door hanger \$4.00/pack | |
| if you want the items free of charge. Shipping and handling must be prepaid.) | □ NORA-GAB SEA Q&A Brochure \$4.00 pack TO THE BEADCH'S HOUST COMMUNE COMMUNES BLAST SONS ABOUT EXERCE COSTS AND MAYS TO CONSESSE. | |
| EARANCE ITEMS: Add up your total; show | here in box and complete form below up to and including Line D. | |
| | PROCEED TO TOTAL \$ COST FOR ALL ITEMS ORDERED / LINE A Please check your math. Thank you. | \$ |
| Please Note: Orders shipped outside the Continental USA may be subject to additional | Massachusetts and Virginia Companies Only. Add In Sales Tax. LINE B Massachusetts = total x .05; Virginia = total x .05 | \$ |
| shipping costs and will be charged accordingly. | SUB-TOTAL: LINE C | \$ |
| | ADD IN AT THE FOLLOWING RATE FOR HANDLING/FULFILLMENT: LINE D R TOTAL \$ COST ON LINE A IS: \$0 up to \$25 add in \$7.0°; over \$25 up to \$50 add in \$14.0° Il orders over \$50, add in \$10.0° plus 15% of sub-total (example: for \$100 order, add in \$25.0°) | \$ |
| | YOUR TOTAL AMOUNT DUE: LINE E | \$ |
| KE YOUR CHECK PAYABLE TO: NORA FULFILLMENT CENT IL PAYMENT WITH ALL PAGES OF THIS FORM. MAKE A CO | ER - Post Office Box 314, Watertown, MA 02471-0314 PY FOR YOUR RECORDS. COMPLETE THE "SHIP TO" DATA IN ITS ENTIRETY. | |
| ır Name | | |
| npany | | |
| | | |
| | Email | |
| | | |
| (OU WISH TO PAY BY CREDIT CARD: MC, VISA ONLY IF P/ ne on Card | IYING BY CREDIT CARD, MAIL FORM OR FAX TO: 1-866-924-1200 | |
| | | |
| | ine Phone Number | |
| d Number | Card Expiration Date | |