Haverhill Massachusetts

Mayor's Energy Task Force

Task Force Report
May 2007

Executive Summary

TBD – Mike?

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Introduction

The Task Force

On 29 June 2006 the Haverhill City Council convened a subcommittee meeting to discuss biofuels. The City Council asked the Mayor to form a task force, and he agreed.

Members

Ted Becker
Ted is a teacher at the Nettle Middle School in Haverhill. His former experience includes employment at an energy services company.

Jeff Dill
Jeff is Building Supervisor for Haverhill.

Concetta Fisichella

Haverhill citizen

Jared Fortna
Haverhill citizen

Mike LaBonte – chairperson
Mike is a telecommunications engineer who has had an interest in energy since childhood.

David Swartz
Haverhill City Council

Advisers

Jack Bevelaqua
Jack is Energy Conservation Improvement Program Manager at the Massachusetts Division of Energy Resources.

Kathy LaRoque/Chris Donovan

Haverhill citizens and diesel advocates.

Robert Scattamaccia

Haverhill City Council

Goals

The key goals and principles for the Task Force are:

- Haverhill should reduce it's energy "footprint" and expenditures.
- Haverhill should be at the forefront of newer energy technology.
- Recommendations should involve negligible capital investment from the general fund.

Meetings Held

Task force public meetings were held on the following dates:

- 16 October 2006 – Public meeting
- 22 January 2007 – Public meeting
- 26 February 2007 – Public meeting
- 19 March 2007 – Public meeting
- 19 April 2007 – Public meeting
- 7 May 2007 – Public meeting

In addition, Mike LaBonte attended an Energy Services Workshop conducted by the Division of Energy Resources 24 April 2007.

Web Site

All documents and communications regarding task force activities are stored on the task force web site:

http://havenergy.civiczone.net

Research

Current Haverhill Energy Expenses

Energy used by Haverhill government facilities can be estimated by the budget allocated. Figure 1 shows that the major energy expenditures in Haverhill currently are for the school s, wastewater, water, and street lighting.

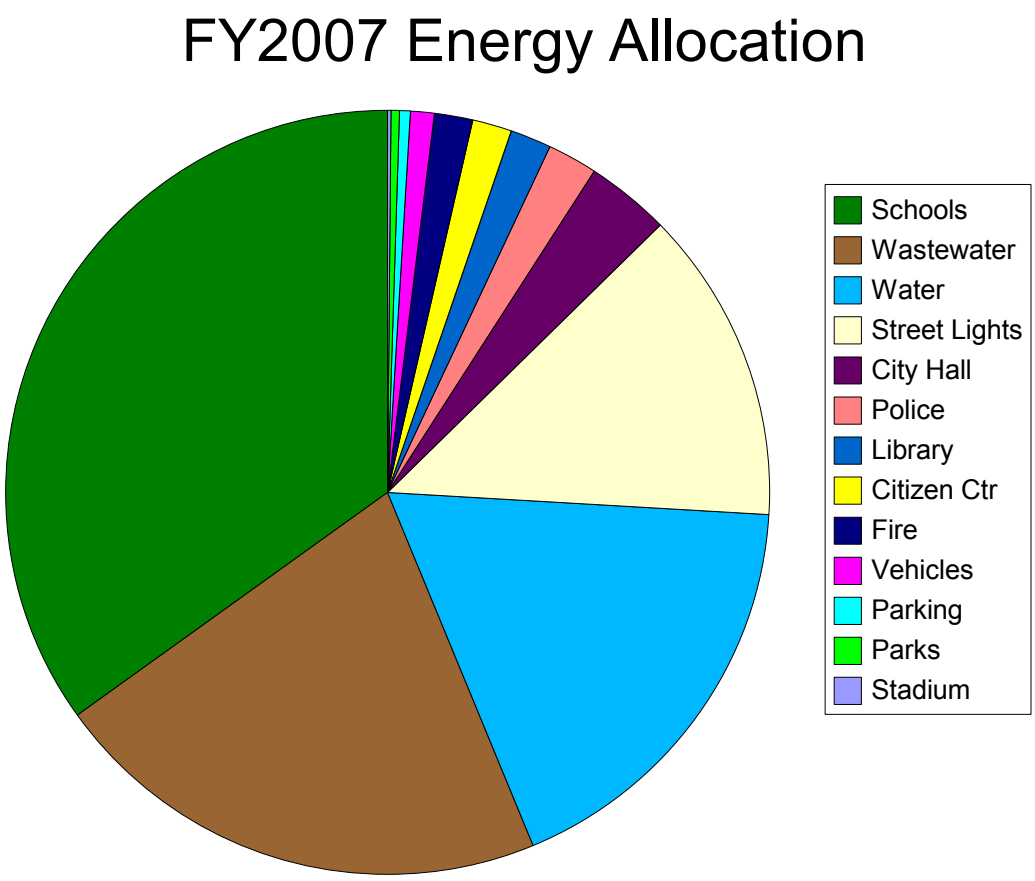


Figure 1: Haverhill FY2007 Energy Budget Allocation
Source: [1] *Haverhill Fiscal Year 2007 Financial Plan*

The total allocation for energy expenses in the fiscal year 2007 budget is $4,717,604, about 3.2% of the total budget of $149,073,605 (General Fund: $135,502,325 + Sewer Fund: $7,086,721 + Water Fund: $6,484,559).

Most of the energy expense is for electricity. Table 1 Shows the energy items from the FY2007 budget, categorized as electricity and fuels.

Haverhill Facility	FY2007 Budget	Electricty	Fuel
Citizen Ctr-Electricity	$39,500	$39,500	
Citizen Ctr-Heat	$40,000		$40,000
City Hall-Utilities	$171,000	$128,250	$42,750
Fire-Utilities	$75,000	$56,250	$18,750
Library-Utilities	$81,874	$61,406	$20,469
Parking-Lighting	$20,250	$20,250	
Parks-Electricity	$8,775	$8,775	
Parks-Heat	$8,000		$8,000
Police-Utilities	$101,300	$75,975	$25,325
School Maintenance-Electric Elem	$425,000	$425,000	
School Maintenance-Electric HS	$200,000	$200,000	
School Maintenance-Electric Mid	$200,000	$200,000	
School Maintenance-Heat-Electric Elem	$45,000	$45,000	
School Maintenance-Heat-Gas Elem	$500,000		$500,000
School Maintenance-Heat-Gas HS	$50,000		$50,000
School Maintenance-Heat-Gas Mid	$20,000		$20,000
School Maintenance-Heat-Oil Elem	$125,000		$125,000
School Maintenance-Heat-Oil Mid	$80,000		$80,000
Stadium-Electricity	$4,832	$4,832	
Sttreet Lighting	$625,000	$625,000	
Vehicle Maint-Electricity	$25,650	$25,650	
Vehicle Maint-Heat	$20,000		$20,000
Wastewater-Electricity	$890,103	$890,103	
Wastewater-Heat & Hot Water	$113,195		$113,195
Water-Electricity	$783,125	$783,125	
Water-Pumping Fuel & Heat	$65,000		$65,000
TOTALS	**$4,717,604**	**$3,589,116**	**$1,128,489**

NOTES:
a) Assuming elec = 75% of utilities for City Hall, Fire, Library and Police

Table 1: Haverhill FY2007 Energy Budget
Source: [1] Haverhill Fiscal Year 2007 Financial Plan

Haverhill Energy Expense Trends

Energy expenses from FY2004 to FY2006 have generally been on an upward trend. When viewing Figure 2 be careful to note that while most of the numbers are actual energy expenses, for fiscal year 2007 the budget allocation is given. The actual expenses for FY2007 may not match the budgeted numbers.

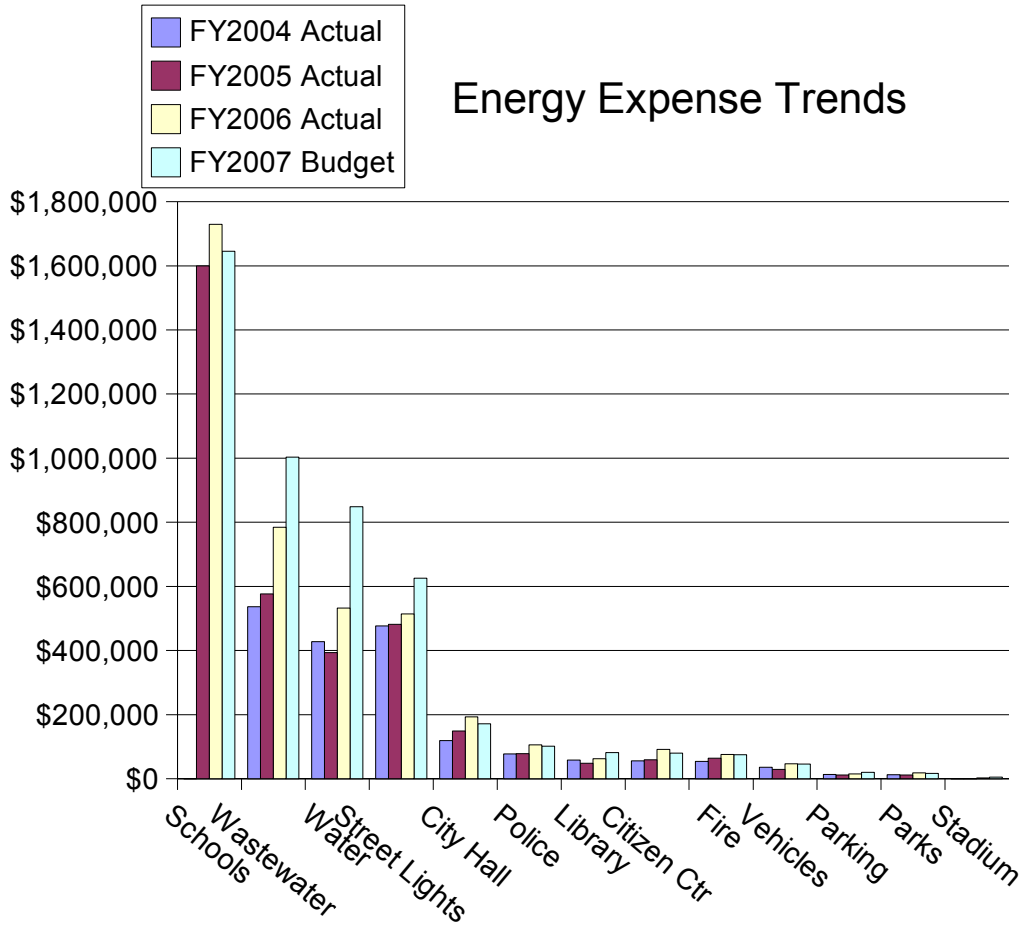


Figure 2: Haverhill Energy Expense Trends
Source: C. Benevento 27 April 2007

Note that the FY2004 datum for schools is missing above, due to incomplete data for individual school line items. Figure 2 shows aggregated data. For example, all schools are bundled into a single line item. The detailed data for Figure 2 is shown in Table 2 below.

Haverhill Facility	FY2004 Actual	FY2005 Actual	FY2006 Actual	FY2007 Budget	FY2007 YTD (2)	FY2007 Projected (3)
Citizen Ctr-Electricity	$28,053	$27,881	$46,357	$39,500	$35,872	$43,937
Citizen Ctr-Heat	$27,566	$31,467	$45,464	$40,000	$25,286	$30,971
City Hall-Utilities	$119,184	$148,825	$192,613	$171,000	$128,240	$157,073
Fire-Utilities	$54,292	$64,046	$75,481	$75,000	$74,302	$91,008
Library-Utilities	$57,948	$48,336	$62,008	$81,874	$70,012	$85,753
Parking-Lighting	$13,609	$11,973	$14,977	$20,250	$18,960	$23,222
Parks-Electricity	$4,461	$6,187	$8,635	$8,775	$8,136	$9,965
Parks-Heat	$7,694	$5,800	$9,445	$8,000	$6,553	$8,026
Police-Utilities	$76,921	$78,390	$105,426	$101,300	$86,247	$105,638
School Maintenance-Electric Elem		$399,834	$517,995	$425,000	$295,041	$361,375
School Maintenance-Electric HS		$136,494	$145,997	$200,000	$90,351	$110,665
School Maintenance-Electric Mid		$71,878	$206,456	$200,000	$142,755	$174,851
School Maintenance-Heat-Electric Elem				$45,000		
School Maintenance-Heat-Electric HS					$8,571	$10,498
School Maintenance-Heat-Electric Mid					$289	$354
School Maintenance-Heat-Gas Elem		$694,478	$572,165	$500,000	$142,792	$174,896
School Maintenance-Heat-Gas HS		$48,898	$55,753	$50,000	$248,538	$304,417
School Maintenance-Heat-Gas Mid		$22,705	$57,342	$20,000	$247,270	$302,864
School Maintenance-Heat-Oil Elem		$153,098	$106,741	$125,000	$89,435	$109,542
School Maintenance-Heat-Oil HS		$16,806	$10,992			
School Maintenance-Heat-Oil Mid		$55,345	$55,521	$80,000	$53,020	$64,940
Stadium-Electricity		$	$2,417	$4,832	$4,982	$6,102
Street Lighting	$476,528	$481,238	$514,101	$625,000	$519,971	$636,878
Vehicle Maint-Electricity	$17,584	$16,079	$19,793	$25,650	$23,812	$29,165
Vehicle Maint-Heat	$17,902	$13,380	$26,835	$20,000	$16,981	$20,799
Wastewater-Electricity	$481,308	$484,013	$699,584	$890,103	$756,287	$926,325
Wastewater-Heat & Hot Water	$54,992	$92,513	$84,371	$113,195	$136,567	$167,272
Water-Electricity	$404,030	$359,517	$493,923	$783,125	$376,130	$460,696
Water-Pumping Fuel & Heat	$23,768	$33,615	$38,881	$65,000	$35,160	$43,065
TOTALS	**$1,865,840**	**$3,502,796**	**$4,169,274**	**$4,717,604**	**$3,641,558**	**$4,460,298**

NOTES:
1) Data for some years is missing
2) YTD values are for 27 April 2007
3) Projected values linearly extrapolated from YTD

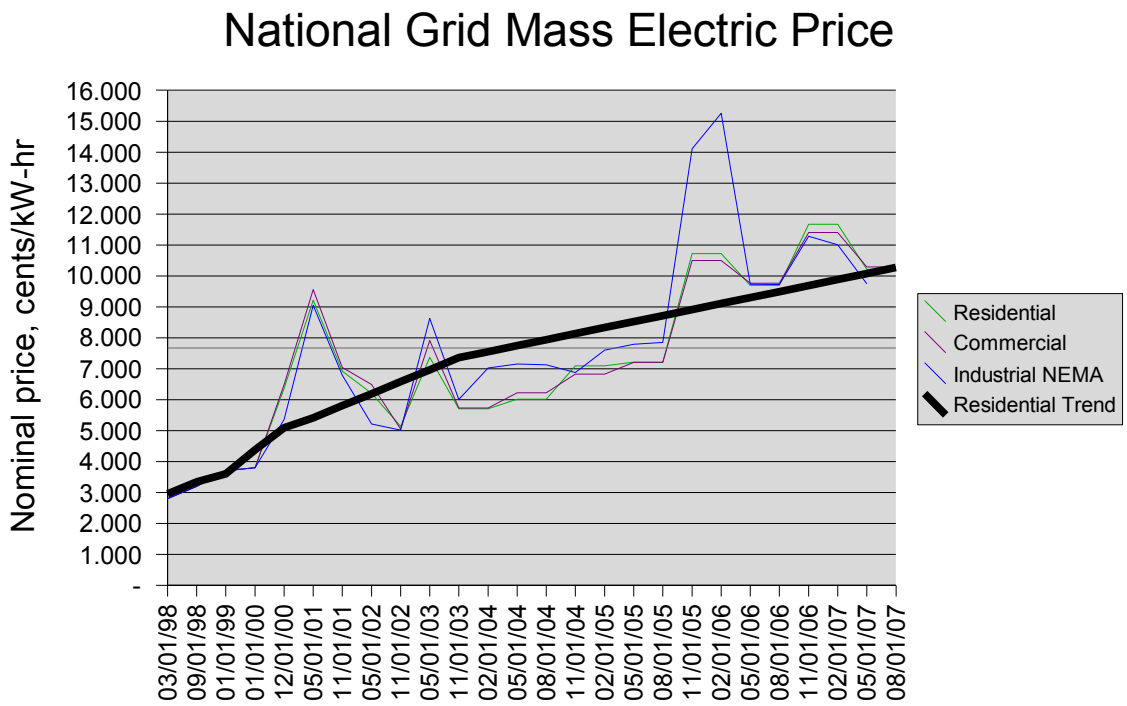
Table 2: Haverhill Energy Expense Trends
Source: C. Benevento 27 April 2007

Moodys Investors Service has indicated that energy costs currently play a significant role in Haverhill expenditure increases:

> **The fiscal 2007 budget is 5.8% greater than the previous year with the main expenditure drivers being fuel and energy health insurance and educational costs.**
> -- Moodys Investors Service, Haverhill (City of) MA, 31 OCT 2006
> Source: [2] Haverhill's 2006 Report by Moody's

TBD – Local energy price trends

Electrical Energy Cost Projection



Benefits of Energy Reduction and Alternative Supply

The most direct benefit of energy use reduction is reducing energy expenditure from city budgets. David L. O'Connor, Commissioner of the Massachusetts Division of Energy Resources (DOER) gave a keynote speech at the 27 April 2007 Performance Contracting Seminar in Worcester, MA. Mr. O'Connor described three other potential benefits:

- Revenue from selling Regional Greenhouse Gas Initiative credits
- Revenue from forward capacity agreements
- Revenue from selling Alternative Energy Portfolio Standard credits

TBD – explain RGGI

TBD – explain forward capacity

TBD – explain AEPC

Role of an Energy Manager

The Haverhill school system achieves a reduction in energy use through:

- Energy conservation policies
- Energy use monitoring software
- Designation of an energy auditor

School Dude© software is used to track energy and manage use, among other items. An employee designated as energy auditor is responsible for communicating and enforcing energy conservation policies, as well as collecting energy use data through records examination and instrumentation. The School Dude© software automates reporting and analysis.

Some Massachusetts cities have an Energy Manager position:

- Worcester (planned)
- Newton

TBD – establish potential savings

Energy Savings Performance Contracting (ESPC)

TBD – Ted?

Can savings during contract fund an energy manager?

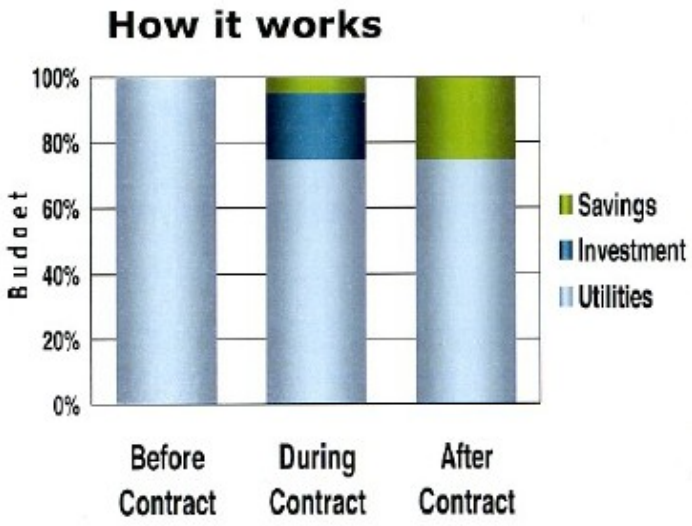


Figure 3: ESPC Economics

Massachusetts Technology Collaborative Programs

TBD – Ted?

Environmental Protection Agency Programs

TBD – Jared?

Energy Star

Clean Energy Challenge

Portfolio Manager web service

Renewable Electric Power

National Grid customers in Massachusetts may choose to have their electric power supplied from renewable sources through the GreenUp program. When signing up for this program customers currently choose one of three suppliers:

- Clear Sky Power
- NewWind Energy
- Massachusetts Energy Consumers Alliance

National Grid continues to handle power distribution and billing. They pay the company you designate to supply power to the grid on the customer's behalf, instead of the non-renewable supplier they would normally use. An additional fee appears on the bill to cover the cost of the renewable energy.

As described above, buying renewable power earns credits in the Massachusetts Technology Collaborative Clean Energy Choice programs. Haverhill electric customers who participate in the GreenUp program not only help support the development of renewable power, they also add to an MTC account that allows Haverhill to buy renewable energy products.

The terms of this arrangement can be difficult to understand, as the various web pages over-simplify the offerings, leaving some questions unanswered.

Bio-diesel

Various grades of bio-diesel fuel are labeled by the percentage of content that comes from bio-mass, the remainder being standard petroleum derived fuel.

Recommendations

1 Create a position for City Energy Manager

The designation of an energy auditor within the school maintenance force, coupled with use of energy management software, has resulted in significant energy savings for the school system. The city is likely to enjoy a net savings from applying this strategy to all city facilities. A city Energy Manager position should be created as soon as possible. It is believed that of portion of the energy savings will fund this position.

2 Utilize MTC Clean Energy Choice credits

The Massachusetts Technology Collaborative Renewable Energy Trust offers grants through the Clean Energy Choice program. As of 31 March 2007 Haverhill has a credit of $9,002 in the program, resulting from renewable energy certificates purchased by Haverhill residents and businesses. Haverhill's first grant under this program will be a solar photovoltaic system for the Citizen's Center. Appendix A contains helpful information.

3 Encourage Haverhill citizens to use clean electricity

As of 30 September 2006, 67 out of 22,976 Haverhill households were buying clean electric power. We can accelerate the accumulation of Clean Energy Choice credits by increasing participation by Haverhill citizens in the New England GreenStart^{SM} program from Mass Energy, for example.

4 Issue an energy savings performance contract RFQ

Haverhill may be able to conserve a great deal of energy by having an Energy Service Company (ESCo) analyze and improve city facilities. The services of such a company may be obtained through the simplified Request For Qualifications (RFQ) process. Appendix D contains Massachusetts general laws related to the process and Appendix E contains a list of DCAM certified contractors.

City department heads, as well as the Energy Manager and City Solicitor should be involved in the RFQ process as early as possible.

5 Pursue a power purchase agreement

The city can install alternative energy equipment such as solar photovoltaic and wind turbines with no capital expenditure through power purchase agreements.

The contract for such an arrangement would require the city to purchase electric power generated by the equipment at a favorable fixed price for a fixed period. Considering the likelihood that electric prices will continue to rise, this would make economic sense.

Appendix G contains a partial list of companies offering renewable energy installations funded by power purchase agreements.

6 Consider the use of bio-diesel fuel for city vehicles

TBD – Mike?

7 Take the EPA Community Energy Challenge

The city Energy Manager should make use of the EPA program described in Appendix F.

8 Incorporate renewable energy requirements in building standards for new edvelopment

TBD – Mike?

Submission

This report is respectfully submitted to the City of Haverhill in the sincere hope that it will play a part in bring to Haverhill the prosperity that comes with a bright energy future.

Ted Becker	Jeff Dill
Concetta Fisichelli	Jared Fortna
Mike LaBonte, chairperson	David Swartz

References

[1] *Haverhill Fiscal Year 2007 Financial Plan*
http://www.ci.haverhill.ma.us/departments/auditor/budgetbook07.pdf

[2] *Haverhill's 2006 Report by Moody's*
http://www.ci.haverhill.ma.us/departments/auditor/Moods-rating-06.pdf

[3] *Massachusetts DOER - Energy Management Services in Massachusetts*
http://www.mass.gov/doer/

List of Appendices