

CITY OF WEST HAVEN

COMPREHENSIVE ENERGY PLAN

ENERGY CONSERVATION
AND
REDUCTION OF
CARBON FOOTPRINT



The West Haven Energy Commission



Conservation and



Alternatives



Our future depends on it.



WEST HAVEN ENERGY COMMISSION

April 2008 through January 2010

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1.0 HISTORY

In 2007 Mayor John Picard proposed the formation of a West Haven Energy Commission with the purpose of developing and promoting:

- Energy efficiency and conservation
- Environmental responsibility through green energy usage
- Alternative energy resources
- Technologies and ideas on reductions of fuel usage and carbon footprint

The proposed Energy Commission was established by the West Haven City Council by an ordinance amending the Code of the City of West Haven by the adoption of Chapter 23 - Energy Commission dated September 10, 2007.

In part the ordinance states the purpose of the West Haven Energy Commission is to: "Promote energy efficiency and conservation; encourage environmental responsibility; promote alternate energy resources; reduce the City's fuel costs and to develop and promote new ideas and technologies with respect to energy efficiency and conservation".

Further, the City Council has resolved to recognize, participate in and meet the requirements of the 20% by 2010 program. The program targets that 20% of a community's energy purchases are from clean sources by the year 2010. The program is sponsored by the Connecticut Clean Energy Fund.

After formation of the Energy Commission, nominees for membership were sought, recommended and approved by the West Haven City Council, and on April 2, 2008 the West Haven Energy Commission conducted its inaugural meeting.

By forming an Energy Commission, the City of West Haven will also work toward meeting the July 2007 United States Conference of Mayors *Climate Protection Agreement*, which was supported by 600 mayors representing cities in all 50 states. The *Climate Protection Agreement* is a pledge to reduce carbon dioxide emissions by 7 percent below 1990 levels by the year 2012.

The most effective and timely method to reduce carbon dioxide is the conservation and lowering of current energy consumption.

The West Haven Energy Commission (WHEC) meets on the first Wednesday of each month in City Hall at 7 PM. Meetings are open to the public and attendance by West Haven citizens is encouraged.

Since its initial meeting the WHEC has met and discussed its purpose with governmental leaders, several department heads and other commission members to

seek support, especially regarding the 20% by 2010 reduction campaign. To date the West Haven Energy Commission (WHEC) is unaware of any steps taken by municipal departments, since June 2008, to achieve the goals of the 20% by 2010 reduction campaign as resolved by the West Haven City Council. The 20% by 2010 reduction campaign is a state-wide program that has achieved tremendous interest and public support from West Haven residents.

1.1 INITIAL PROGRESS

The WHEC's first order of business was to gain an understanding of the city's energy consumption as well as current methods of conservation, and to identify future opportunities to address the issues stated in its purpose.

The WHEC understands the complexity of the task and realizes an organized approach is needed to promote measures for implementation. While some measures are readily accepted and easy to implement, others can be controversial, take time to gain acceptance, and be complicated to put in place.

Being an apolitical, non-governing body, the WHEC concluded that the most effective method of attaining its goals was in the form of a written comprehensive plan, designed to highlight <u>all</u> measures it identifies as plausible means to achieve its stated purpose.

2.0 METHODOLGY

2.0 PURPOSE

The purpose of The Comprehensive Energy Plan (CEP) is to inform the City of West Haven Mayor's Office, the City Council and all applicable municipal departments to the WHEC's findings and recommendations for meeting the goals of the City Council's commission forming ordinance, the resolution to participate in the 20% by 2010 reduction campaign and coordinating with the United States Conference of Mayors *Climate Protection Agreement*.

The CEP is a dynamic "work-in-progress" document, requiring continuous revision and additions, which will adapt as the City's energy conservation measures evolve. If effective, it will become the blueprint from which the WHEC conducts its business. Utilized as a checklist, it will assist future commission members to assure that goals are met, progress is made or to determine the impact of inaction.

Distributed to individual municipal departments, facility managers and other city employees, the CEP can help reduce energy consumption when the pertinent recommendations are followed. By establishing an open dialogue between the WHEC and municipal departments, a better understanding of the goals of the CEP can be reached, making implementation more likely.

2.1 FORMAT

Part 3 of the Comprehensive Energy Plan (CEP) outlines the West haven Energy Commission's (WHEC) view of the state of energy & resource consumption and conservation in West Haven. The WHEC believes it is critical to have a realistic understanding of city operations, departmental relationships and the responsibilities, organizations and purposes of other boards, committees and commissions, in order to evaluate West Haven's current status.

Through various meetings, discussions, site visits, data collection and research the WHEC has gained a limited working knowledge of the city in order to outline the major areas for concern that require action.

Part 4 of the CEP is presented as a matrix, listing all initiatives considered by the WHEC as short or long-term remedial actions to mitigate current problems identified in Part 3, or as action items for consideration in moving the City of West Haven forward as an energy efficient community. The matrix is categorized into the following major groups:

- Governmental and Administrative (Municipal Action Items)
- Public Education and Awareness (Public Action Items)
- Municipal Outreach (Working with Other Municipalities)
- Developmental Programs (Initiatives Developed Over Time)

Part 5 of the CEP outlines the WHEC's conclusions as to what the impact might be if the CEP is adopted and carried out. Part 6 lists a sampling of the many sources utilized by the WHEC and where the reader may find helpful information, data, programs and other resources.

3.0 FINDINGS

3.0 OVERVIEW

The WHEC has actively sought involvement in all aspects of municipal operations and city life with regard to energy & resource consumption and conservation. The WHEC organized its review of the city's current energy status into two basic sectors:

- Residential Status
- Governmental / Municipal Status

Each sector was reviewed for impact in the following areas:

- Energy Awareness
- Energy and Economics
- Energy and Policy

3.1 <u>RESIDENTIAL STATUS</u>

Energy Awareness

The West Haven Energy Commission (WHEC) found that residents of West Haven are familiar with basic concepts of energy conservation. Many homeowners have already implemented some form of conservation methods (changing light bulbs, turning off unused lights etc.). But the majority of people the WHEC talks with are unaware of many simple measures that can affect energy consumption. The WHEC also found that many residents are unaware of the municipality's role in energy consumption and conservation. Many residents are not familiar with state and federal educational or grant programs designed to help homeowners curb energy costs. An overall greater awareness of the issues surrounding energy is needed to assist in the efforts of conservation.

Energy and Economics

Many homeowners, with whom the WHEC makes contact, identify cost as the major issue when considering measures of energy conservation. Therefore it is of the utmost importance to educate the public on the value that conservation measures bring, not only to the individual, but to the local and extended community as well.

Energy and Policy

As with other aspects of public input, there are residents from the community who attend public meetings and voice opinions regarding energy consumption, conservation and West Haven's role. The WHEC believes that greater resident involvement is essential in directing the community's future toward more efficient energy & resource use. It is incumbent on city government to foster resident involvement.

3.2 **GOVERNMENTAL STATUS**

Overview

The WHEC acknowledges that in its relatively short existence it has been challenging to gain complete understanding of the operations and management of City government. The commission continually strives for greater communications, research and understanding to ensure continual accurate assessment.

Energy Awareness

Based on its interaction and observation, the WHEC believes that municipal department leaders and facility managers have greater awareness of energy issues than the average homeowner or resident. However, that awareness may not be sufficient to positively impact the overall consumption of energy throughout the city.

By striving for optimal understanding of the interconnected nature of all municipal activities through interdepartmental relationships and coordination of activities, municipal departments can achieve a higher level of conservation. The West Haven Energy Commission (WHEC) believes it should be a resource for such activities, assisting and encouraging means of implementing conservation measures.

Energy and Economics

The WHEC has found that some municipal staff may view energy conservation measures as "budget busters". One attitude observed by the WHEC is that conservation measures must be included in the budgeting process prior to any implementation. If not, those measures will not be considered. Further, almost all attempts at implementing measures are met with payback "analysis paralysis". If payback periods appear too long, measures are considered less seriously. In addition, fear of taxpayer retribution can affect decision and policy-making.

The WHEC believes that committing to conservation measures is imperative, regardless of the payback period. The WHEC envisions working in tandem with other commissions, boards and committees to evaluate which measures should be implemented with or without short-term payback. Decisions to implement measures of conservation should not be made solely on payback period or offsetting amount.

Energy and Policy

While the WHEC is not charged with analyzing the efficiency of municipal operations, it has found that current operational aspects of government adversely effect energy consumption and West Haven's contribution to greenhouse gas emissions and its carbon footprint.

As of this writing, the WHEC believes that there are still municipal departments that are unaware of the WHEC's existence. The WHEC has sought opportunities to make introductions and offer assistance to individuals, departments and project leaders. Our purpose has been and is to ensure that all municipal departments, commissions, boards and committees are aware of the WHEC as a valuable resource for ways and means to implement energy conservation in the City of West Haven. Without this comprehensive awareness and acceptance of the WHEC's efforts, this ad-hoc, grass roots group, cannot affect change required to realize the goals set forth in its adopting ordinance.

At this time there is not a separate line-item for energy conservation funds within the City's budget. A separate energy conservation line-item would give a transparency to the actual costs of conservation, and other measures such as renewable sources, and ultimately reflect on monies saved by using such methods.

The WHEC recognizes resistance to change in the overall attitude toward new energy policies. To some, global warming is simply a political issue and not a reality. Others see

greenhouse gases as a national issue, failing to see any local impact. The West Haven Energy Commission (WHEC), formed to implement change and make a local impact, is often viewed as a group that hinders doing "business as usual".

For this change, there needs to be awareness and education of municipal department heads, staff and other city employees to help mitigate bureaucratic stereotypical attitudes. This process needs to be fostered by better communications, less political rivalry, more expedient processing of information and less resistance to change. This change is highly unlikely without commitment from city leadership.

3.3 <u>MUNICIPAL BUILDING DATABASE</u>

The WHEC, with the assistance of several departments, facilities and managers has developed, distributed and collected informational survey forms listing the energy aspects of all municipal buildings. In conjunction with United Illuminating a power usage survey was conducted on most city facilities. The result will be a database of buildings itemizing the following information:

- Building type and use
- Building construction
- Methods and Fuels for Heating and Air Conditioning
- Exterior envelope condition and insulation
- Electrical usage
- Fuel usage
- Conservation methods in place
- Conservation needs of the future

The database includes municipal buildings such as Schools, Sport Facilities, Fire Stations, Housing, Support Structures, Garages and others.

The purpose of the database is two-fold. First, the WHEC will establish a bench-mark of energy use as it stands today. This is essential if we are to measure the progress made from all combined measures that are implemented. The second purpose of the database is to identify those areas requiring the most attention. By prioritizing conservation measures, it may be possible to affect the change needed to meet the goals of the City Council ordinance and work toward meeting the standards of the United States Conference of Mayors *Climate Protection Agreement* by 2012.

Currently the Energy Commission is inputting the building survey data into a software program for future reporting and analysis. The database is not yet part of this report.

4.0 INITIATIVE MATRIX

4.0 MATRIX HEADINGS

The matrix is to provide you with a quick reference to proposed initiatives the West Haven Energy Commission (WHEC) has identified as appropriate measures for consideration in West Haven's overall energy policies.

It is divided into four basic sections:

- Governmental and Administrative (actions for municipality)
- Public Education and Awareness (actions for public)
- Municipal Outreach (actions taken with other communities)
- Developmental Programs (actions to implement over time)

The matrix headings include:

•	Initiative	measure identified as a method to reduce energy consumption or increase energy conservation
•	Description	brief description of the initiative. Contact WHEC for further information and coordination assistance
•	Priority	assigned level of importance in attaining goals as defined in WHEC formation ordinance
•	Started	indicates whether or not initiative has been started
•	Start Date	date of implementation
•	Responsible Agency	municipal agency/department that would most likely be responsible for implementation and coordination with WHEC
•	Associated Cost	estimated cost range expected and if funding or financing may be available

As previously stated, the Comprehensive Energy Plan (CEP) is an organic document that will change with time. As initiatives are implemented and removed from the list, other initiatives will be added. The ever changing landscape of the green revolution dictates that technological advances will be made rapidly and the dynamic approach to the CEP will accommodate change.

4.1 MATRIX

INTIATIVE	DESCRIPTION		RIORI		STAF		START	RESPONSIBLE	ASSOCIATED
		HI	MID	LO	Υ	N	DATE	AGENCY	COST
Budget Line-Item	Establish new budget line-item in Revenue and Expense capital projects to fund and expense energy initiatives.	√				√		Mayor's Office City Council	N/A
Fulfill commitment to 20% by 2010 campaign	Complete process and meet all requirements of program (purchase clean energy or energy certificates as an alternate.	√			√		2008	Mayor's Office City Council & WHEC	LOW #
Green Purchasing	Review City purchasing standards and revise to reflect purchase of certified low impact products, services and equipment.	√				√		Purchasing Dept. & Mayor's Office	N/A
Facility Operations	Develop standards for facility operations and maintenance that prioritizes energy conservation.	V				√		WHEC	N/A
WHEC Project Review	Develop outline for input of WHEC to review renovation and new construction projects		V			V		WHEC & Mayor's Office	N/A
Streamlined Zoning on Green Projects	Incentivize green development by allowing green projects priority status.	$\sqrt{}$				√		Planning & Development w/ Zoning Board	N/A
Adopt Green Building Standards	Regardless of State Codes, develop criteria for voluntarily meeting or exceeding nationally recognized green building standards within West Haven.		√			√		WHEC & Building Dept.	N/A
Develop Life Cycle Costing Review on New Construction Projects	Encourage submittal of Life Cycle Analysis of all energy related design and equipment during design and permitting process.		V			V		WHEC & Building Dept.	N/A
Include City Staff on Education of Energy Issues	Seminars, memos and newsletters for all city employees on energy issues & how they can make a difference.	√				V		WHEC Mayor's Office	LOW*

^{*} Indicates possible funding available (See References – Funding Source)

INTIATIVE	DESCRIPTION	Pl	RIORI	ΓΥ	STAI	RTED	START	RESPONSIBLE	ASSOCIATED
INTIATIVE	DESCRIPTION	НІ	MID	LO	Υ	N	DATE	AGENCY	COST
Develop Energy Savings Reinvestment Strategy	Develop system of tracking energy savings once Comprehensive Energy Plan (CEP) is in place and reinvest savings into additional developmental programs.	V				√		WHEC Mayor's Office	N/A
Develop intra-city departmental Energy Challenge	Challenge each department to reduce its energy usage by 10% per year for next 5-years and initiate incentives/recognition program.	V				V		Mayor's Office Dept. Heads & WHEC	LOW*
Green Goldpost	Post green thermometer on the green with energy usage reductions and progress of 20% by 2010 campaign.	√				$\sqrt{}$		Mayor's Office Public Works	LOW
Student Energy Savings Program	Develop annual program to challenge students of all ages to increase energy savings at home.	V				V		Mayor's Office Board of Education	N/A
Green State-of- the-City Address	Annual report / speech by Mayor (developed by WHEC) on successful measures of energy conservation.	V				V		Mayor's Office WHEC	N/A
United Illuminating Mandatory Notice	Develop means of making notification to UI mandatory prior to all maintenance or capital projects.	V				V		All Departments	N/A*#

^{*} Indicates possible funding available (See References – Funding Source)

INTIATIVE	DESCRIPTION	Р	RIORI	ΤΥ	STA	RTED	START	RESPONSIBLE	ASSOCIATED
IIVIIAIIVE	DESCRIPTION	HI	MID	LO	Υ	N	DATE	AGENCY	COST
Develop press release "Energy Matters" articles	Develop regular article/column in local newspapers to educate public on sustainability and energy efficiency.	V				V		Mayor's Office IT Dept. & WHEC	LOW
WHEC BLOG or Website Link	Create WHEC access link to public off the city's main homepage or Economic Development page. Maintain BLOG already in place.	1			V		01/08	IT Dept. WHEC	LOW
Develop WHEC Table-Top Presentation(s)	Develop 8x11 and other handouts and participate in public events (Savin Rock Fest, Apple Fest etc.)		√			V		WHEC	N/A
Annual Energy Award - Business	Develop method of rating and honoring private businesses for energy conservation or innovation.			V		V		WHEC All Depts.	LOW
Annual Energy Award - School	Develop method of rating and honoring school for energy conservation or innovation.			V		V		WHEC All Depts.	LOW
Annual Energy Award - Citizen	Develop method of rating and honoring private citizens for energy conservation or innovation.			√		V		WHEC All Depts.	LOW
Showcase Successful Energy Savings Ideas	Create brochure type announcement showcasing individual efforts to save energy.		√			V		WHEC Mayor's Office	LOW
Develop Annual Energy Plan Grade	Develop and publish grade (A-F) achieved by city for meeting goals of the Comprehensive Energy Plan.	V				V		WHEC	N/A
Develop school competitions for energy awareness	Have students create T-shirt patterns, posters, cards etc. and implement winning idea.		√			V		Board of Education	LOW*
Develop and Maintain Energy Speakers Bureau	Attract and maintain list of volunteer speakers for municipal events that will keep energy matters in the news.	V				V		WHEC	N/A
Celebrate Energy Conservation Month	Select one calendar month to promote and showcase ideas on energy conservation in West Haven.	V				V		Mayor's Office	LOW*

^{*} Indicates possible funding available (See References – Funding Source)

INTIATIVE	DESCRIPTION	PI	RIORI	ΓΥ	STAF	RTED	START	RESPONSIBLE	ASSOCIATED
INTIATIVE	DESCRIPTION	HI	MID	LO	Υ	N	DATE	AGENCY	COST
Establish Working Relationships with Local Energy Providers	Meet and consult with UI, CT Southern Gas, CL&P etc. to develop strategies and learn methods of energy conservation and alternatives.	\checkmark			V		05/08	WHEC	N/A
Energy Conservation Continuing Ed	Encourage all WHEC members and municipal employees to seek out and attend energy-related seminars to bolster knowledge of conservation, consumption and alternatives.	V				V		WHEC	N/A
Develop Shoreline Energy Expo	Host sponsored event with exhibitors, speakers and seminars covering energy issues and solutions. Collaborate with other municipalities.	√			V		2009	Mayor's Office WHEC	MID
Initiate formulation of Regional Energy Board	Partner with surrounding municipalities to foster greater awareness and collaborate on energy conservation.			√		V		WHEC MAYOR'S OFFICE	N/A
Establish working relationships with environmental non-profits	Partner with ecological non-profits to create regional environmental network to watch dog municipal governments.		√			√		WHEC	N/A
Develop intra-city "Energy Notes"	Create and distribute energy newsletter / dope sheet on issues in municipal conservation measures.	$\sqrt{}$				V		All Depts. WHEC	LOW*
Develop Green Feedback – Citizen	Establish method of reporting to "Hot- Line" on energy related issues and solutions.		V			V		Mayor's Office WHEC	N/A
Develop Green Feedback - Region	Establish method of reporting to "Hot- Line" on energy related issues and solutions.		√			V		Mayor's Office WHEC	N/A

^{*} Indicates possible funding available (See References – Funding Source)

INTIATIVE	DESCRIPTION	Pl	RIORI	ΤΥ	STAI	RTED	START	RESPONSIBLE	ASSOCIATED
IIVIIAIIVL	DESCRIPTION	HI	MID	LO	Υ	N	DATE	AGENCIES	COST
Implement light saving programs in public buildings	Create program that turns off lighting for peek periods during operational or after-hours. Consult with United Illuminating on implementation.	\checkmark				V		All Depts. WHEC UI	MID*#
Develop day- lighting techniques for school buildings	Install lighting and controls to depend on natural daylight and automatically dim lighting.	$\sqrt{}$				√		All Depts. WHEC UI	HIGH*
Install occupancy sensor switches & Compact Fluorescent Lamps	At regular maintenance intervals install sensor switches or other simple control device to turn lights off when not used.	$\sqrt{}$			V			All Depts. WHEC UI	LOW*
Develop re- insulation program for city buildings	Examine and classify building envelopes to specify adding insulation to conserve energy		√		√			All Depts. WHEC UI	LOW*
Install power-strip surge protection devices.	At regular maintenance intervals install power strips or other simple control device to turn electronic devices off when not used.							All Depts.	LOW
Develop city- owned zero energy facility	Identify one small city-owned building and retrofit for zero energy carbon neutral facility.			V		√		Public Works All Depts. WHEC	HIGH*#
Develop city- owned net metered facility	Identify most advantageous building and retrofit with PV for net-metering.		V			√		Public Works WHEC	HIGH*#
Create solar farm	Identify city-owned property and facility where a solar farm would provide dedicated or net-metered power.			√		V		Public Works WHEC	HIGH*#
Develop West Haven Solar Roof Initiative	Set goal to have solar PV or Thermal on 20% of city-owned buildings by year 2020.	$\sqrt{}$				V		Public Works WHEC	MID*

^{*} Indicates possible funding available (See References – Funding Source)

INTIATIVE	DESCRIPTION	PI	RIORI	ΤΥ	STA	RTED	START	RESPONSIBLE	ASSOCIATED
IINIIAIIVE	DESCRIPTION	HI	MID	LO	Υ	N	DATE	AGENCIES	COST
Identify city property for Concentrated Solar Collector	Utilize emerging technology for enhanced dedicated or net-metered electricity production.			V		√		Public Works Planning / Devel. WHEC	MID*
Develop solar powered sign initiative/regulation	Provide tax incentives for businesses that use solar and battery to power lighted signage.		√			V		Mayor's Office Tax Dept Public Works	LOW*
Identify possible city use for small direct solar power	Identify location for single use direct solar application to provide power for a specific item (light, sign etc.)	V				√		Public Works All Depts WHEC	LOW*
Retrofit mobile bandstand for solar power	Bandstand could be powered by solar during day and grid tied electricity at night only.	√				√		Public Works	MID*
Identify site/building and provider for Purchase Power Agreement	Locate probable site and develop Request for Proposal (RFP) for provider bidding. Provider installs system and retains funding/credits but sells city power on reduced rate contract.	V				√		Mayor's Office Purchasing Public Works	LOW
Study and track emerging solar nanotechnology	At time of energy replacement purchasing research emerging solar technology and possible applications.			√		√		WHEC	NO
Identify city-owned properties for wind turbine installation.	Shoreline or hilltop property could yield power production through a mast mounted rotary blade turbine.	V				√		Planning / Devel. Public Works WHEC	MID*
Identify city-owned building for wind Horiz. installation	A tall building open to prevailing wind current could yield power production through a Building-Integrated horizontal wind energy turbine.	V				√		Planning / Devel. Public Works WHEC	MID*

^{*} Indicates possible funding available (See References – Funding Source)

INTIATIVE	DESCRIPTION		RIORI	1		RTED	START	RESPONSIBLE	ASSOCIATED
	DEGGRII IIGIY	HI	MID	LO	Υ	N	DATE	AGENCIES	COST
Repair or retrofit existing geo- thermal system	The existing system at Parks & Recs Dept. should be checked, repaired, used and maintained.	V			√			Public Works WHEC Bldg Ovrst Cmte	MID*
Identify city-owned buildings for new geo-thermal use	Small buildings could be identified where geo-thermal systems could provide heat.	√				~		Public Works WHEC UI	MID*
Identify city-owned water courses capable of hydro	Develop stand alone micro-hydro- electricity source for direct or net- metered power.			1		√		Public Works WHEC UI	LOW
Study and track emerging wave and tidal energy technologies	At time of energy replacement purchasing research emerging tidal/wave technology and possible applications.			V		√		WHEC	MID
Identify city-owned facilities that can utilize fuel cells.	Develop schedule for integrating fuel cell technology into existing systems to mitigate electrical consumption.	√				V		Public Works WHEC	HIGH
Power city-owned facility(ies) with fuel cell source.	Identify location(s) where fuel cells can provide most of electricity required.	√				√		Public Works WHEC	HIGH
Identify city-owned building for utilization of Co- Generation	In coordination with new generation systems, install of combined power system for heat and electricity	V				V		Public Works WHEC	HIGH*#
Implement air heat recovery system	Identify city-owned buildings that could benefit from air heat recovery system to temper make up air.	V				V		Public Works WHEC	MID*#

^{*} Indicates possible funding available (See References – Funding Source)

INTIATIVE	DESCRIPTION		RIORI			RTED	START	RESPONSIBLE	ASSOCIATED
	Bestim Herr	HI	MID	LO	Υ	N	DATE	AGENCIES	COST
Implement water heat recovery system	Identify city-owned buildings that could benefit from heat recovery system to pre-heat water.	$\sqrt{}$				V		Public Works WHEC	MID
Implement drain water heat recovery in existing building	Identify city-owned buildings that could benefit from drain water heat recovery system to recapture lost heat.	V				V		Public Works WHEC	LOW
Develop Glazing Replacement Program	Survey all city building glass types and schedule replacement to Low-E or triple-glazed replacement glass.		√			V		Public Works WHEC	HIGH#
Utilize sun shading devices on existing building(s)	In coordination with a Glazing Replacement Program provide sun shade devices where appropriate.		V			V		Public Works WHEC	MID
Install Light shelves in school buildings	In coordination with Glazing and Shading programs install light shelves to increase daylight		√			√		Public Works WHEC	MID
Retrofit all city- owned building HVAC control systems	Evaluate and identify buildings with 10 years or more life remaining and retrofit controls to digital with updated building management systems.	V				V		Public Works WHEC	MID*#
Conduct balancing of all HVAC systems in operation	Develop scheduled plan to test and evaluate all systems and re-balance for optimal operation and distribution.	V				V		All Depts.	LOW
Conduct LED lighting upgrades	Evaluate all city-owned building lighting and identify locations and use of LED technologies.	V				V		Public Works WHEC	MID
Conduct LED re- lamping	Identify light sources where lamps can be changed to LED screw-in types.	√				V		Public Works WHEC	LOW

^{*} Indicates possible funding available (See References – Funding Source)

INTIATIVE	DESCRIPTION	PI	RIORI	ΓΥ	STAI	RTED	START	RESPONSIBLE	ASSOCIATED
INTIATIVE	DESCRIPTION	HI	MID	LO	Υ	N	DATE	AGENCIES	COST
Develop program for cool roof replacement	Install cool roof systems on city buildings when roof replacement is budgeted for maintenance/repairs.	V				V		Public Works WHEC	MID*
Install green roof on city building	Identify building where green roof could be implemented			V		V		Public Works WHEC	HIGH*
Identify city-owned building to install rainwater recovery	Install rainwater recovery system to capture water for use in various applications		V			V		Public Works WHEC	MID
Identify city-owned sites to install gray water recycling	Install system that can treat waste water for re-use in toilets or AC make up air and lessen burden on WPC.			1		V		Public Works WHEC	HIGH
Develop program for pavement replacement	Install pervious pavers in lieu of blacktop or brick pavers and use environmental patching for roads	V				V		Public Works WHEC	LOW
Tree Planting Programs	Establish tree planting program to offset carbon footprint.		V			V		Public Works WHEC	MID
Implement waterless urinal technology	Identify city-owned building where water based urinals can be replaced with waterless fixtures.			V		√		Public Works WHEC	MID
Implement composting toilet technology	Identify city-owned building where water based toilets can be replaced with composting fixtures.			V		V		Public Works WHEC	MID

^{*} Indicates possible funding available (See References – Funding Source)

5.1 CONCLUSION

The West Haven Energy Commission (WHEC) is a small, six member, group of diverse citizens committed to helping the City of West Haven gain a greater understanding of ways our community can conserve energy and the positive impact this will have on the municipality, financially and environmentally.

In the two years since its inception the WHEC has met on a regular basis at City Hall, encouraged communication, conservation and the exchange of information about energy related topics among municipal departments and businesses as well as the citizens of West Haven.

During this time the WHEC has identified systematic and practical challenges that impede progress and implementation of more effective ways to conserve energy. In response to this challenge, the WHEC has reached-out to municipal departments, been available to conduct site visits, attended meetings, composed letters, made phone calls and positioned itself as the liaison between the Connecticut Clean Energy Fund and the City. In short the WHEC has been and continues to be available to municipal departments for assistance with energy conservation issues and questions.

Energy plays a key role in every aspect of government. Therefore, it is critical that the municipality understands that even the smallest decisions, made by an administrator, affect the overall energy usage and ultimately West Haven's carbon footprint.

The Comprehensive Energy Plan (CEP) was developed to present a variety of energy conservation initiatives for review. The WHEC recommends that initiatives identified as high priority and low cost be implemented immediately, while others may be implemented over time as funds are made available.

In conclusion, the WHEC knows to effectively reduce the City's consumption of energy, a serious commitment is needed on the part of all individuals and the departments they represent. There needs to be a willingness to entertain change.

The next step is for the various agencies, departments, boards and commissions to reach out to the WHEC, adopt appropriate listed initiatives, and develop plans of action to accomplish the goal of an energy efficient community.

6.1 ORGANIZATIONS

Connecticut

Connecticut Clean Energy Fund– created by the CT legislature and funded by CT electric ratepayers, offering incentives and educational programs to encourage homeowners, businesses, municipalities and other institutions to support renewable energy. Support for "20% by 2010" campaign.

http://www.ctcleanenergy.com

Connecticut Dept. of Environmental Protection (DEP)– working to create climate change resources for municipalities.

http://ctclimatechange.com

Connecticut Energy Efficiency Fund - supporting energy efficiency programs to help reduce the amount of energy used in your home or business.

http://www.ctenergyinfo.com/dpuc_energy_efficiency_programs.htm

CT Green Building Council – nonprofit organization promoting design and construction of high performance energy efficiency buildings.

http://www.ctgbc.org/index.htm

CTEnergyInfo – online site with toll-free number helping consumers navigate the increasing number of energy-related resources available in CT.

http://www.ctenergyinfo.com/index.htm

Electronic Recycling & Research - recycling electronic devices in Stratford, CT.

http://www.erxrcorp.org

Institute for Sustainable Energy at Eastern CT State University – providing technical assistance on new school or municipal building construction; support for building energy audits; use of EnergyStar portfolio manager tool; energy educational curricula.

http://www.easternct.edu/sustainenergy/

SmartPower – nonprofit organization created by private foundations and the CT Clean Energy Fund to 'market' clean energy and energy efficiency.

http://www.smartpower.org

Solar Connecticut – nonprofit organization providing a resource of information on solar power for the citizens of Connecticut.

http://www.solarconnecticut.org/

National and Regional

Alliance to Save Energy - nonprofit coalition of business, government, environmental and consumer leaders supporting energy efficiency.

http://www.ase.org

American Council Energy Efficient Economy – nonprofit organization dedicated to advancing energy efficiency.

http://www.aceee.org

American Solar Energy Society – nonprofit association leading efforts toward increased use of solar, energy efficiency and other sustainable technologies.

http://www.ases.org

American Wind Energy Association – national trade association promoting wind energy as a clean source of electricity for consumers worldwide.

http://www.awea.org

Architecture 2030 – nonprofit organization reducing greenhouse gas emissions in the building sector by changing plans, designs, and construction.

http://www.architecture2030.org/

Carpet America Recovery Effort – industry-government effort: increase recycling/reuse of post-consumer carpet; reduce carpet waste to landfills.

http://www.carpetrecovery.org/

The Collaborative for High Performance Schools – facilitating design, construction, and operation of high performance schools.

http://www.chps.net/

Consortium for Energy Efficiency – national group of efficiency program administrators working to advance energy efficiency.

http://www.cee1.org

DOE Building Energy Efficiency – partnership w/ private sector and local governments to improve building, equipment and systems efficiency.

http://www1.eere.energy.gov/buildings/

EPA Community Energy Challenge – promoting energy efficiency and renewable energy in New England Cities and Towns.

http://www.epa.gov/region1/eco/energy/energy-challenge.html

Environmentally Preferable Purchasing – federal 'buy green' site with useful consumer information on finding/evaluating green products and services.

http://www.epa.gov/epp/

Green Energy Council – nonprofit association promoting sustainable energy production, sources, and design practices.

http://www.greenenergycouncil.com

Green Roofs for Healthy Cities - nonprofit industry association working to promote the green roof industry throughout North America.

http://www.greenroofs.org

National Renewable Energy Laboratory – federal laboratory dedicated to renewable energy and energy efficiency research and development.

http://www.nrel.gov

Northeast Sustainable Energy Assoc. – regional membership organization promoting sustainable energy solutions.

http://www.nesea.org

Northeast Energy Efficiency Partnerships – nonprofit org. facilitating regional partnerships to advance energy efficiency in homes, buildings and industry.

http://www.neep.org

The Rainwater Harvesting Community – online community dedicated to advancing sustainable water management practices for home and business.

http://www.harvesth2o.com

Recycled Materials Resource Center - developing guidelines for increased use of recycled materials in transportation infrastructure, construction, maintenance.

http://www.recycledmaterials.org

Renewable Energy Policy Project – supporting the advancement of renewable energy technology through policy research.

http://www.repp.org

Stop Waste – **Alameda County**, **CA** – county agency dedicated to achieving environmentally sound solid waste management and resource conservation.

http://www.stopwaste.org/

6.2 **FUNDING SOURCES**

Connecticut Clean Energy Fund – offering solar power, solar water heating, fuel cell, and geothermal rebates and incentives for home, business and municipality.

http://www.ctcleanenergy.com

Connecticut Dept. of Office, Policy and Management – overseeing federally-funded conservation block grants for municipalities.

http://www.ct.gov/opm/

Connecticut Energy Efficiency Fund – offering programs for lighting, electricity, natural gas retrofits; proper building operations; zero-interest 'on-bill' financing.

http://www.ctenergyinfo.com/dpuc_energy_efficiency_programs.htm

DESIRE Data Base – funded by the DOE; comprehensive info source on state, local, utility, and federal incentives/policies that promotes renewable energy and energy efficiency.

http://dsireusa.org

Department of Energy (DOE)- Energy Star – joint program between DOE and EPA to help everyone save money and protect the environment through energy -efficient products and practices.

http://www.energystar.gov

6.3 COMMERCIAL WEBSITES

American Society of Mechanical Engineers

http://www.asme.org

AHSRAE

http://www.ashrae.org

Athena Sustainable Materials Institute

http://www.athenasmi.ca/index.html

BCA-Building Commissioning Association

http://www.bcxa.org/index.htm

Bio Based Foam Insulation

http://www.biobased.net

Biobased Manufacturer's Association

http://www.biobased.com

Bonded Logic (Cotton Fiber Insulation)

http://www.bondedlogic.com

BP Solar USA

http://www.bp.com/modularhome.do?categoryld=8050&contentld=7035481

Brondell - Eco Flush

http://www.brondell.com/index.php

Caroma - Dual Flush Toilets

http://caromausa.com

CT Environmental Headlines

http://www.ctenvironmentalheadlines.com

Design Lights Consortium

http://designlights.org/index.html

EnergyPeak - BIPV Standing Seam Roofing

http://www.energypeak.com

Falcon Waterfree Technologies Urinals

http://www.falconwaterfree.com

Forest Stewardship Council

http://fscoax.org/principal.htm

Green Book - EDC Magazine

http://www.edcmag.com/greenbook

Green Seal

http://www.greenseal.org/index.html

Green Technology News

http://www.green-technology.org/green_technology_magazine/index.html

GreenClips

http://www.greendesign.net/greenclips/index.html

GreenGuard

http://www.greenguard.org

Greenroofs

http://www.greenroofs.com

Johns Manville - Green Insulation Products

http://www.jm.com/Insulation/default.asp

MMA Renewable Ventures

http://mmarenew.com/index.html

Oikos Green Building Source

http://oikos.com

Rainwater Harvester

http://rainwaterharvester.com

Rate It Green

http://www.rateitgreen.com

Renewable Energy

http://renewableenergy.com

SunEdison Solar Energy

http://sunedison.com/index.php

The Computer Recycler

http://www.thecomputerrecycler.com

Waterless Co. - No Flush Urinals

http://www.falconwaterfree.com