Connecticut's Federal Weatherization Assistance Program Operations Manual

Revised September 30, 2016

Contents

100 -INTRODUCTION 1
101 STATE ADMINISTRATION 1
102 POLICY ADVISORY COUNCIL (PAC) 3
103 SUBGRANTEE SELECTION 3
104 LOCAL ADMINISTRATION 4
104.1 Subgrantee Agencies 5
104.2 Local Staffing 5
104.3 Program Operations 5
104.4 Case Work 6
104.5 Service Delivery 6
104.6 Fiscal Administration 7
104.7 Reporting 7
104.8 Quality Assurance 8
104.9 Training and Technical Assistance 8
104.10 Other Responsibilities 9
105 SUBGRANTEE ALLOCATION 9
105.1 Allocation Formula Administration and Program Operations 10
105.2 Production Goals 10
106 SUBGRANTEE CONTRACT 11
107 CODES OF ETHICS 11
107.1 Conflicts of Interest 11
107.2 Discrimination Prohibition 11
107.3 Debarment & Suspension 11
107.4 Drug-free Workplace 12
107.5 Criminal Background Investigation 12
107.6 Ownership of Intellectual Property 12
107.7 Religious Activities 12
107.8 Political Activity 12
107.9 Campaign Contribution and Solicitation Ban 12

107.10 Legislative Contact 12
107.11 Whistleblower Protection 12
107.12 Client Confidentiality 13
108 OTHER REQUIREMENTS 13
109 INSURANCE REQUIREMENTS 15
109.1 Indemnification 15
109.2 Liability Insurance 15
109.3 Pollution Occurrence Insurance 15
109.4 Workers' Compensation 15
109.5 Unemployment Compensation 15
109.6 Misappropriation Bond 15
109.7 Cancellation of Insurance Policy 16
110 SUBGRANTEE FISCAL AUDIT 16
110.1 Fiscal Audit Findings 16
111 SUBGRANTEE PLAN & BUDGET 16
111.1 Plan 17
111.2 Budget and Budget Narrative 17
111.3 Budget Modifications 18
112 FUNDS MANAGEMENT 19
112.1 Financial Records 19
112.1.1 Tracking Expenditures 20
112.2 Production Records 20
112.3 Program Income 20
112.4 Landlord Contributions 21
112.4.1 Landlord Contribution Waivers 21
112.5 Leveraged Funds 21
112.6 Segregation of Funds 22
112.7 Supplanted Funds 22
112.8 Capital Expenditure 22
113 EQUIPMENT 22
113.1 Weatherization Equipment, Tools & Materials 23

114 INVENTORY 23
114.1 Inventory Schedule 24
114.2 Disposition of Inventory 25
114.3 Inventory Reports 26
114.4 Inventory Reconciliation 26
115 CLOSEOUT 27
115.1 Final Status Reports 27
115.2 Final Inventory Report 27
115.3 Disallowed Costs 27
115.4 Final Supplemental Reconciliation 28
116 ADVANCED FUNDING 28
117 PROCUREMENT 28
117.1 Procurement Regulation 28
117.2 Types of Procurement 29
117.2.1 Small Purchase 29
117.2.2 Invitation to Bid 29
117.2.3 Requests for Proposal 30
117.2.4 Vehicle and Other Equipment Procurement 31
117.3 General Procurement Information 31
117.3.1 Procurement Policy Review 31
117.3.2 Specifications 31
117.3.3 Advertisement 32
117.3.4 Minority and Women Business Enterprises 32
117.3.5 Procurement Process Documentation 32
117.3.6 Evaluation 33
117.3.7 Protest Resolution 33
118 CONTRACTOR PROCUREMENT 34
118.1 Contractor Requirements 34
118.2 Debarment and Suspension 34
118.3 Contractor Types 34
118.4 Supplemental Procurement Process 35

118.5 Bidder Assurances 35
119 CONTRACTOR AGREEMENTS 37
119.1 Contractor Agreement for Services 38
119.2 Contractor Licensure 39
119.3 Contractor Insurance 40
119.4 Damages for Delays 40
119.5 Contractor Agreement for Materials 40
200 INTRODUCTION 42
201 APPLICATION 42
201.1 Where to Apply 42
201.2 Right to Apply 43
201.3 Uniform Application Process 43
201.4 Waiting List and Priorities 44
202 HOUSEHOLD ELIGIBILITY DETERMINATION 45
202.1 Energy Assistance Program Eligibility 46
202.2 CT-WAP Eligibility 47
202.2.1 Eligibility Verification Procedures 47
203 PROPERTY ELIGIBILITY 48
203.1 Single-family Units 48
203.2 Multi-family Unit 48
203.3 Rental Units 49
203.4 Ineligible Dwellings 49
203.5 Re-weatherization of Units 49
203.6 Proof of Ownership 49
203.7 Proof of Tenancy 50
203.8 No Undue Enhancements 50
203.9 Weatherization Agreement 50
203.9.1 Renter Eviction Limitations 51
203.9.2 Subsidized Units 51
203.9.3 Rent Increase Prohibition 51
203.9.4 Landlord Contribution 52

204 UNIT DEFERRAL 52
204.1 Deferral of Services 53
204.2 Deferral Resources 53
204.3 Deferral Resolution 54
205 NOTIFICATIONS AND APPEALS 54
205.1 Eligibility for Services 54
205.2 Denial of Services 54
205.3 Appeal 55
206 CLIENT FILE MAINTENANCE 55
206.1 Computerized Records 56
206.2 Case Eligibility Documentation 56
206.3 Weatherization Services Documentation 57
206.4 Denied Case File 57
300 INTRODUCTION 58
301 GENERAL WEATHERIZATION REQUIREMENTS 58
301.1 Subgrantee and Contractor Staff Expectations 59
301.2 Workmanship 59
301.3 DOE Materials Standards 60
301.4 Weatherization Contractors 61
301.5 Training 62
301.6 Weatherization Tools 62
301.7 Job-site Health & Safety 63
301.8 Health & Safety Measures 63
301.9 Other Legal Compliance 64
301.10 Savings to Investment Ratio (SIR) 64
301.11 Historic Preservation 65
301.11.1 SHPO Submission 66
301.12 Waiver / Standard Quote Form 67
301.12.1 Window or Door Waivers 68
301.12.2 Heating Systems/Domestic Water Heaters/Fuel Oil Storage Tanks Waiver 69
301.13 Home Energy Solutions/ Income Eligible 69

302 HOME ENERGY AUDIT 70
302.1 Audit Timeline 72
302.2 Energy Auditor 72
302.2.1 Auditor Qualifications 72
302.2.2 Contractor Auditors 73
302.2.3 Separation of Duties 73
302.3 Energy Audit Steps 74
302.3.1 Client Refusal of Certain Measures 74
302.4 Audit Preparation 74
302.5 Unit Identification 76
302.5.1 Unit Classification 76
302.5.2 Unit Occupancy Types 76
302.6 Licensure Restriction 77
302.7 Audit Software 77
302.8 Unit Applicability 78
302.9 Building Weatherization Report (BWR) 78
302.10 Second Party Review 79
302.11 Supply Library Pricing in NEAT, MHEA 79
302.12 Generating the Work Orders 80
303 SUBGRANTEE PRODUCTION REQUIREMENTS 80
303.1 Weatherization Timeframes 80
303.2 Production Schedule 81
303.3 Work Order 81
304 WEATHERIZATION 82
304.1 Measures 83
304.2 Weatherization Testing 84
304.3 Pre-Weatherization Steps 84
305 AIR SEALING 85
305.1 Blower Door Directed Air Sealing 85
305.2 Air Sealing Measures 86
305.2.1 Two-Part Foam 87

305.3 ASHRAE 62.2 Ventilation Standards 87
305.4 Air Sealing Funding 88
306 INSULATI0N 89
306.1 Attic Insulation 90
306.1.1 Prior Attic Measures 91
306.2 Foundation Insulation 91
306.2.1 Basement 91
306.2.2 Crawl Space 92
306.3 Sidewall Insulation 92
306.3.1 Preparation for Sidewall Insulation 92
306.3.2 Sidewall Insulation Waiver 93
306.4 Water Pipe Insulation 93
307 WINDOWS AND DOORS 93
307.1 Window and Door Repairs vs. Replacement 94
307.2 Primary Window Measures 95
307.2.1 Window Sealing Measures 95
307.3 Primary Door Measures 96
307.3.1 Door Sealing Measures 96
308 HEATING SYSTEMS 97
308.1 Energy Audit 98
308.3 Duct Insulation and Sealing 99
308.4 Hydronic Systems 99
308.5 Primary Space Heaters 99
308.6 Electric Space Heaters 100
308.7 Secondary Heating Systems 100
308.8 Heating Appliance Thermostat Retrofit 100
308.8.1 New Thermostat Installation 101
308.9 Other Heating Appliance Retrofits 101
308.10 Heating Appliance Replacement 101
308.10.1 Heating Appliance Specifications 102
308.10.2 Utility Switching 103

309 DOMESTIC HOT WATER HEATER 103
309.1 DWH Energy Audit 104
309.2 DWH Measures 104
309.3 DWH Repair and Retrofit 105
309.4 DWH Replacement 106
309.4.1 Replacement Procurement 106
310 OTHER MEASURES 106
310.1 General Heat Waste Measures 106
310.2 Smoke Detectors 107
310.3 Carbon Monoxide Detectors 107
310.4 Baseload Measures 107
310.4.1 Refrigerators 107
310.4.2 Compact Florescent Light Bulbs 108
311 INCIDENTAL REPAIRS 108
312 MOBILE HOME 109
312.1 Mobile Home Energy Audit (MHEA) 109
312.2 Mobile Home Doors and Windows 110
312.3 Mobile Home Reflective 110
312.4 Mobile Home Deferral 110
313 CLIENT EDUCATION 110
313.1 Subgrantee's Education Responsibility 110
313.2 Energy Auditor Education Responsibility 111
313.3 Subcontractor Education Responsibility 111
313.4 Final Inspector Education Responsibility 112
314 FINAL INSPECTION 112
314.1 Final Inspector Qualifications 113
314.2 On-site Final Inspection Steps 113
314.3 Final Inspection Process 114
314.4 Final Inspection Tests 116
315 RE-WORK AND WARRANTEE 117
315.1 Final Inspector Ordered Reworks 117

315.2 Go-Backs on Reported Units 118
315.3 Warrantee 118
316 SUBGRANTEE FINAL RESPONSIBILITIES 118
316.1 Completion Process 119
400 INTRODUCTION 121
401 ENERGY EFFICIENCY vs. HEALTH & SAFETY 122
402 REGULATORY REFERENCES 123
403 H & S TRAINING 123
403.1 Training 123
403.2 Certification 124
403.3 Tracking 124
404 H & S MONITORING 124
405 H & S FUNDS 125
405.1 H & S Cost Category 125
405.2 H & S Budget Caps 125
405.3 State Waiver Requirement 126
406 WEATHERIZATION WORK SAFETY 126
406.1 Regulations and Training 126
406.2 Training Funds 127
406.3 Occupant Safety 127
406.4 Worksite Guidelines 128
406.5 Personal Protective Equipment (PPE) 129
406.6 Spray Polyurethane (two-part) Foam (SPF) 129
406.7 Lead-Safe Weatherization 130
407 CLIENT H&S EDUCATION 130
408 COMBUSTION APPLIANCES 131
408.1 Comprehensive Combustion Appliance Analysis 131
408.1.1 Licensure Restrictions 132
408.2 Combustion Appliance Issues 133
408.3 Ambient CO Danger - Immediate Response 134
408.4 Combustion Appliance Safety Action Limits 134

408.5 Daily Checkout – Testing Out 135
409 Heating Degree Days 135
410 HEATING SYSTEMS 136
410.1 Primary Heating Systems 136
410.2 Secondary Heating Systems 137
411 GAS/OIL FIRED DOMESTIC WATER HEATERS 137
412 GAS COOK RANGE 138
413 GAS DRYERS 138
413.1 CO Generation by Gas Dryers 138
413.2 Gas Leaks 138
414 CARBON MONOXIDE DETECTORS 139
415 SMOKE ALARMS 139
416 WATER AND MOISTURE 139
417 OTHER POLLUTANTS 142
417.1 Asbestos 142
417.2 Vermiculite 144
417.3 Radon and Soil Gases 145
417.4 Formaldehyde and Volatile Organic Compounds 145
417.5 Dust 146
417.6 Unsanitary Conditions 146
417.7 Bacteria and Viruses 146
417.8 Pests 147
417.9 Refrigerant Issues 147
418 BUILDING CODE COMPLIANCE ISSUES 147
419 LEAD SAFE WEATHERIZATION 147
420 STRUCTURAL ISSUES 149
420.1 Injury Prevention 149
420.2 Building Structure 149
421 ELECTRICAL SAFETY 149
422 FIRE HAZARDS 150
423 INDOOR AIR QUALITY/ ASHRAE 62.2 2013 151

423.1 Ventilation and Air Sealing 151
423.2 IAQ Funding 151
423.3 Blower Door Restrictions 151
424 HEALTH & SAFETY DEFERRAL 152
HEALTH & SAFETY DISCLAIMER 154
MOLD DISCLAIMER 155
CONNECTICUT WEATHERIZATION PROGRAM 156
CARBON MONOXIDE DISCLAIMER 158
SMOKE/CO DETECTOR DISCLAIMER 159
500 INTRODUCTION 161
501 TRAINING PLAN 162
501.1 Program Administration Training 163
501.2 Weatherization Services Training 163
501.3 Health & Safety Training 164
501.3.1 Lead Safety Training Requirement 164
502 TRAINING RESOURCES 165
502.1 Sample Curricula 165
503 JOB CLASSIFICATIONS TRAINING 166
503.1 Energy Auditor/Inspector 166
503.2 Crew Chief/Superviso 167
503.3 Weatherization Installers 168
503.4 Mechanical Systems Contractor 168
503.5 Program Administration 169
503.6 Weatherization Program Coordinator/Manager 169
503.7 Weatherization Directors Meeting 170
504 TRAINING REPSONSIBILITIES 170
504.1 Subgrantee Responsibilities 170
504.1.1 Training Plan and Budget 170
504 .1.2 Training Compliance Monitoring 171
504.1.3 Retention Agreement 171
504.2 Contractor Responsibilities 171

600 INTRODUCTION 172
601 STATE MONITORING PROGRAM 172
601.1 Monitoring Topics 173
601.2 Annual Administrative Review (AAR) 174
601.3 Fiscal Management Review 175
601.4 Case Reviews 176
601.4.1 File Reviews 176
601.4.2 Field File Review 178
601.4.3 Unit File Review – Denied 179
601.5 Compliance Monitoring 179
601.6 Technical On-Site Review 180
601.7 Technical Assistance 182
601.8 Desk Review of Monthly Claims & Reports 182
602 MONITORING REPORT & RESPONSE 183
602.1 Exit Interview (AAR) 184
602.2 Annual Administrative Review (AAR) Report 184
602.3 Subgrantee Response (AAR Report) 186
603 SUBGRANTEE MONITORING 186
700 INTRODUCTION 188
701 OVERALL COST LIMITATIONS 188
702 WEATHERIZATION SERVICES COSTS 189
702.1 Energy Audit Costs 190
702.2 Air Sealing Costs 190
702.2.1 Windows and Doors Costs 191
702.3 Insulation Costs 191
702.4 Heating Appliance Costs 191
702.5 Central Air Conditioning Systems 192
702.6 Humidification Systems 192
702.7 Domestic Water Heaters (DWH) Costs 192
702.8 General Heat Waste (GHW) Costs 193
702.9 Health & Safety Costs 193

702.10 Incidental Repair Costs 194
703 COST CATEGORIES 194
703.1 Materials Costs 196
703.1.1 Actual Costs Units Completed, Units in Progress 197
703.2 Program Support Costs 197
703.2.1 Subgrantee Staff 197
703.2.2 Subcontracted Labor 198
703.2.3 Rent, Utilities & Other Direct Costs 199
703.2.4 Equipment, Supplies & Tools 199
703.2.5 Vehicle Purchase and Operation Costs 200
703.2.6 Storage & Handling 200
703.2.7 Transportation 200
703.3 Training and Technical Assistance Cost Category 201
703.3.1 Prior Approval 201
703.3.2 Staff Costs at Training 202
703.3.3 Contractor's Training Costs 202
703.3.4 Training Presentation Cost 202
703.3.5 Training Travel Cost 203
703.3.6 Training Registration Cost 203
703.3.7 T&TA Documentation 203
703.4 Liability Insurance Cost Category 203
703.5 Pollution Occurrence Insurance Cost Category 204
703.6 Financial Audit Cost Category 204
703.7 Health & Safety 204
703.8 Administration Cost Category 205
703.8.1 Cost Allocations 206
704 LEVERAGED FUNDS 207
704.1 Utility Programs 207
704.2 Leveraged and DOE Funds 207
705 SUBGRANTEE CLAIMS 207
705.1 Subgrantee Claim/ Report 208

705.1.1 Administrative, Insurance, Audit & T&TA Claims 209
705.2 State Approval Process 210
705.2.1 Claim Payment Time Frame 211
705.3 Contractor Invoices 211
705.3.1 Contractor Invoice Information 211
705.3.2 Interim Contractor Claims 212
705.4 Withholding of Funds 213
705.4.1 Errors 213
705.4.2 Fiscal Monitoring and Audit Issues 213
705.4.3 Line Item Over-expenditure 213
706 SUBGRANTEE REPORT REQUIREMENTS 213
706.1 Monthly Reports 214
706.2 Unit Completion Definition 214
706.3 Building Weatherization Report (BWR) 215
706.4 Individual Assisted, Completed Units Statistics 216
706.5 Subgrantee Training Report 217
706.6 Subgrantee CCR Federal Report 217
707 CONTRACTOR REPORTING 218
707.1 Contractor Production 218
707.2 Contractor Training Reporting 218
708 STATE REPORTS 218
708.1 State DOE Reports 218
708.1.1 Grantee Quarterly Performance Report 218
708.1.2 Training, Technical Assistance, Monitoring, and Leveraging 218
708.1.3 Quarterly Financial Status Report 219
708.1.4 State CCR Report 219
800 INTRODUCTION 220
801 PRE-QUALIFIED MULTI-FAMILY 220
801.1 Unit Eligibility 221
802 MULTI-UNIT STIPULATIONS 221
802.1 Accrual of Benefits to Low-Income Tenants 222

802.2 Rent Increases 222
802.3 Undue Enhancement 222
803 COSTS 223
804 MULTI-UNIT ENERGY AUDIT 223
805 SHELTERS 223

SECTION 100 ADMINISTRATION

100 -INTRODUCTION

The *Connecticut Program Operations and Training Manual* provides a comprehensive and dynamic resource to guide state and local level agency staff in the delivery of weatherization services with funds allotted by the U.S. Department of energy (DOE), in a consistent and effective manner, to low-income households in communities throughout Connecticut.

The manual is a reference book where daily operational program matters can be found as needed. It is arranged and numbered to be easily updated whenever there are changes to the program. It is also designed as a training aid for new staff, as well as a place for existing staff to keep track of the program policies as they evolve and change.

The manual describes weatherization services in terms of policy, but it is not meant to define the technical aspects of the program. It is different than, but a compliment to, the Connecticut field guides which are the more authoritative sources for technical information and protocols.

Each level of program administration has an important role to play in the delivery of effective weatherization. Each level has inherent responsibilities which if not conducted appropriately degrade the final effect of the services. Operated effectively, the weatherization program not only has the outcome of delivering needed energy savings to the low-income, it has concomitant effects of community economic development and energy conservation, making the program an important economic stimulus to both the individual clientele and the community at large.

The State received approximately $64.3 million in American Recovery and Reinvestment (ARRA) funding for a three year period. Of this $64.3 million, the State allocated $18.5 million to weatherize state-financed portfolio of public housing. In addition, $3.1million was set aside to weatherize DSS funded shelters. The remaining Program Dollars were allocated to Subgrantees using the same processes and formulas used for the Base WAP for the weatherization of single and small multi-family units and HUD projects.

ARRA funds were also spent in the development and production of the Connecticut Weatherization Program Operations and Training Manual. Since the ARRA program will be ending soon after the manual is published, the focus is on the regular DOE WAP that will be administered by the Department of Energy and Environmental Protection (DEEP) effective April 1, 2012. There will be rare instances where ARRA will be mentioned in the manual.

101 STATE ADMINISTRATION

The administration of the WAP in Connecticut is in a period of transition between state agencies. The DSS continues to administer weatherization services funded under the ARRA component of the program. Effective April 1, 2012, the base component, the regular DOE WAP has been transferred to the Department of Energy and Environmental Protection (DEEP). DSS acknowledges that DEEP may establish different administrative and/or procedures as it assumes total responsibility for WAP.

As a matter of convention, in this manual, the state agencies are referred to generically as the “State”. The local agencies are referred to as the Subgrantee.

It is the responsibility of the recipient state agencies to apply for weatherization funding from DOE, the federal agency which administers the program. (The DOE base grant period runs from April 1 in one year to March 31 of the next.) The regular program state plan includes separate planning narratives for training and technical assistance (T&TA), and health & safety (H&S), as well as the program budget and production projections.

A list of state level planning responsibilities includes:

Devise and submit state plans for the effective use of federal DOE grant funds.

- Write and maintain policies and procedures that will optimize the delivery of the program benefits in compliance with state and federal requirements.
- Develop and maintain effective hardcopy forms and software formats, as well as efficient procedures that assist in the delivery of services, without overburdening program operations.
- Formulate a statewide budget utilizing all funding resources in the most cost-effective manner possible.
- Allocate grant funds among Subgrantees in a fair and efficient formula, one which optimizes the use of the grant dollars.
- Set state-wide and local production targets for weatherization activities based on available funding.
- Allocate funds for local budgets and budget modifications to ensure compliance, efficiency and accountability.
- Review and approve local plans and budgets to ensure compliance and effectiveness in policy implementation.

The State is responsible for staffing the program to ensure that all functions are covered administratively, fiscally, and programmatically at the State level. The staffing of personnel at the state level is determined based on need and available funding. At a minimum, staffing functions will include program management, fiscal management, program technical expertise, and program quality field monitoring. State weatherization program personnel functions include:

- Overall plan & budget management
- Design and maintenance of policies, procedures, forms, software
- Review and approval of local agency plans and budgets
- Review and approval of local agency production and claims
- Preparation and submission of federal & state reports
- Administration of T&TA programs
- Local liaison and coordination of services
- State level appeals process
- Program quality monitoring
- Fiscal and regulatory compliance monitoring

102 POLICY ADVISORY COUNCIL (PAC)

DOE requires under 10 CFR § 440.17 that prior to the expenditure of any grant funds the State must establish a policy advisory council (PAC) or a State commission or council to advise in the development of the DOE Weatherization Program. Members must have sensitivity in respect to low income issues and be broadly representative of organization and agencies, including consumer groups that represent low-income people, elderly and Native Americans. However, if a member is employed by the DOE WAP, the member must abstain from reviewing or approving activates associated with the program. States are also allowed to use an existing commission or council to review and approve activities associated with the DOE WAP.

In the fall of 2005, the Connecticut legislature enacted Public Act 05-204 establishing a Low-Income Energy Advisory Board (LIEAB). The charge of the Board is to advise and assist the Office of Policy and Management and DSS in the planning, development, implementation and coordination of energy assistance and WAP policies.

The current membership of the LIEAB includes representatives from the Office of Policy and Management, DSS, the Commission on Aging, the Department of Public Utility Control, the Office of Consumer Counsel, Operation Fuel, 2-1-1, Connecticut Local Administrators of Social Services, Legal Assistance Resource Center of Connecticut, Connecticut AARP, Norwich Public Utility, Connecticut Petroleum Dealers Association, Northeast Utilities Service Company, Yankee Gas Company, Connecticut Natural Gas Company, Southern Gas Company, United Illuminating, and the Connecticut Association for Community Action Agencies.

Connecticut is using LIEAB to fulfill the requirements of 10 CFR §440.17.

103 SUBGRANTEE SELECTION

The State may periodically, according to its assessment of need, issue requests for proposals from local entities wishing to be a sub-recipient of the DOE grant to provide local services under the WAP. The procurement of a Subgrantee will be conducted in an open and competitive proposal process.

In accordance with 10 CFR § 440.15 (a)(3), priority will be extended to agencies that are currently administering an effective program and have a proven record of responsible service delivery. In order for an entity in Connecticut to qualify as a new Subgrantee, it must:

- be a Community Action Agency (CAA) or other public or nonprofit entity;
- be experienced and have performed weatherization or housing renovation;
- be experienced in assisting low-income persons in the area to be served;
- be able to undertake a timely and effective weatherization program;
- be in legal and financial compliance with requirements and regulations established under state and federal law;
- provide a list of the current board of directors or governing body and a copy of the by-laws and other documents concerning the structure and operation of the organization;
- provide proof that the organization has been responsive to the needs of the community by citing the programs and services in the energy or human services area that it has implemented

or by otherwise demonstrating that the organization has the potential to provide such services in an efficient and responsible manner;

- establish that it has special expertise for providing energy conservation programs, by demonstrating its management and outreach capabilities, technical skills and other qualities that render the entity qualified;
- establish that it has experience in housing and construction management programs;
- submit a detailed budget and narrative work plan showing how the project will be carried out; and
- provide a copy of the most recent annual report and the previous year's financial audit with all management notes and findings.

In accordance with 10 CFR § 440.15(d), selection of a Subgrantee will be partially based on public comment submitted to State or offered at a public hearing.

104 LOCAL ADMINISTRATION

As stipulated in DOE regulations, the CT-WAP is contracted to local entities throughout the state that are responsible for the implementation of the delivery of weatherization services in their assigned territories. Five (5) local not-for-profits, each a part of the network of eleven (11) Connecticut Community Action Agencies (CAAs) that cover the state not only provide weatherization, but coordinate those services with a broad range of social services programs for low income households that they also administer. All towns and counties within the State are covered by the five Subgrantees.

The clientele for weatherization comes from the Energy Assistance Program applications which are processed at all eleven CAAs. Applications from non-weatherization agencies are forwarded to the CAAs administering weatherization services in the appropriate WAP territory.

104.1 Subgrantee Agencies

The list of current WAP Subgrantees:

AGENCY	SERVICE AREA
The Community Renewal Team, Inc. (CRT) 330 Market Street Hartford, CT 06120	**Region 1** North Central & South Central CT – 45 Towns
The ACCESS Agency, Inc. (ACCESS) 1315 Main Street, Willimantic, CT 06226	**Region 2** Eastern CT – 49 Towns
Community Action Agency of New Haven (CAA of NH) 419 Whalley Ave. New Haven, CT 06515	**Region 3** South – 14 Towns
New Opportunities, Inc. (NOI) 232North Elm St. Waterbury, CT 06702	**Region 4** North West and West Central CT – 44 Towns
New Opportunities, Inc. (NOI) 232North Elm St. Waterbury, CT 06702	**Region 5** Southwest CT – 14 towns

104.2 Local Staffing

Planning for adequate staffing is essential to the success of the local program. The number of full-time positions employed locally depends on the size and needs of the program. At a minimum the local agency must have a full time program manager for weatherization.

Adequate numbers of case worker staff to handle intake and the ongoing services to program participants is also essential. In addition to program staff, administrative and support staff must be dedicated to the program in adequate time allocations to accomplish program activities.

The planning of staffing needs should reflect the lists of Subgrantee functions in the areas of administration, case work, service delivery, fiscal, reporting, quality management, and training.

The weatherization services may be implemented by Subgrantee employed crews and/or contracted to qualified individuals or companies.

104.3 Program Operations

The Subgrantee has the responsibility for all aspects of local program operations. The Subgrantee must:

- Conduct case work, outreach, education, and publicity for the WAP.
- Maintain weatherization staffing with a qualified and well-trained work force.
- Contract for qualified weatherization services, as needed.

- Procure services, equipment, materials, and supplies through an open and competitive procurement process.
- Track and report on expenditures and production, as required.
- Participate in T&TA activities.

104.4 Case Work

Effective program implementation begins with competent case work staff performing the following functions:

- Intake of applicants from recipients of Energy Assistance Program as provided by the CAA.
- Maintain a Waiting List of all applicants.
- Pull names from the Waiting List in order, according to the established list of program priorities.
- Verify the family's eligibility strictly according to WAP eligibility rules.
- Negotiate and administer landlord part pay agreements.
- Provide energy education services to the program clientele.
- Explain the weatherization work and be available to the program clientele for questions or problems.
- Maintain applications, correspondence, forms and documentation in an organized client case file.
- Assign a specific work order tracking number traceable to every step in the weatherization process.
- Process the local client appeals according to Subgrantee procedures.

104.5 Service Delivery

Subgrantee staff is responsible that the flow of work ensures a timely and accurate job completion.

- Coordinate weatherization work flow among the agency crews, the household and weatherization Contractors.
- Assign the unit for the initial Energy Audit.
- Input the audit data into the *HomeCheck* software to help in the determination of cost effective measures to be installed.
- Formulate a Work Order based on the qualified measures.
- Conduct a supervisory review and approval of the finalized Work Order measures.

- Assign the weatherization work to agency crews or Contractors according to the weatherization needs identified in the Work Order.
- Monitor the progress of weatherization work on the unit to ensure the work and time frames are in compliance.
- Be available to answer questions or resolve issues among the occupants, the crews and the Contractors.
- Assign the completed unit and conduct the Final Inspection.
- Conduct a supervisory review of the Final Inspection to ensure the work was completed properly, resolving issues with Contractors, coordinating any re-works, and so forth.
- Pay Contractors for completed and inspected work.
- Approve units for claim and report them as completed units only after Final Inspection is passed.

104.6 Fiscal Administration

The Subgrantee's responsibilities include the management of weatherization funds only in conformance with applicable financial regulations, 10 CFR, Part 600 and generally accepted fund accounting principles.

- Prepare the Subgrantee program budget according to the Department's allocations and the allowable cost categories.
- Request budget modifications as needed.
- Review, approve, and pay Contractor claims for labor and materials only after the unit has passed the inspection, as required by program policies.
- Submit the monthly report/claims packets for the reimbursement of weatherization expenditures to the Department, on state prescribed (spreadsheet) forms.
- Account for weatherization funds in accordance with applicable financial regulations and generally accepted fund accounting principles
- Maintain a fair and competitive process for the procurement of weatherization related supplies, equipment and services.
- Account fully for the purchase, maintenance and disposition of inventory.
- Institute an annual audit of weatherization funds as required by applicable regulations.
- Meet all reporting requirements regarding weatherization expenditures and production.
- Cooperate fully with weatherization program monitoring, fiscal reviews or other requests for fiscal information.

See *CT Weatherization Program Operations and Training Manual*, Section 700, CLAIMS AND REPORTS

104.7 Reporting

The Subgrantee is required to submit reports in the timeframe and on forms prescribed by the Department:

- Monthly and grant-to-date production reports.

- Monthly and grant-to-date expenditure reports.
- Program demographics and statistics.
- Davis Bacon Act related reports, including employee pay information (ARRA only).
- *Ad hoc* reports as requested by the Department or the DOE.

See *CT Weatherization Program Operations and Training Manual*, Section 700, CLAIMS AND REPORTS

104.8 Quality Assurance

The Subgrantee is responsible for conducting quality assurance reviews to ensure that staff and Contractors are adhering to program policies and work standards and that work completed meets all requirements including:

- Client income eligibility is met.
- Dwelling eligibility is met.
- Agreed upon project timelines are met.
- Expenditure limits are met.
- Waivers have been approved by the Department, where required.
- All required paperwork is completed and in files.
- All required weatherization testing protocols are conducted.
- All protocols for weatherization measures are being performed.
- All H&S tests and protocols are being conducted.
- Workmanship and material standards are met.
- Only appropriately certified and licensed personnel are being used to conduct the work.

The State will also conduct periodic monitoring reviews to ensure that the above listed areas are met and that the Subgrantee's administrative processes are in place. The State will send a written report to the Subgrantee with its review findings. The Subgrantee is responsible for responding to the monitoring reports within thirty (30) calendar days of the date of the monitoring report. The agency will respond to the findings and recommendations with corrective action taken, when required for compliance.

See *CT Weatherization Program Operations and Training Manual*, Section 600, QUALITY ASSURANCE

104.9 Training and Technical Assistance

As part of its effort to improve the quality of weatherization services, the State will devise an ongoing T&TA regimen, including a comprehensive set of training requirements that will apply to the State staff, Subgrantee and its Contractors.

104.10 Other Responsibilities

The responsibilities of the Subgrantee are the subject of most of the remainder of this program manual. The subgrantee weatherization administrators must thoroughly understand every aspect of the program in order to plan and implement this highly complex program.

105 SUBGRANTEE ALLOCATION

Each year the state is awarded a Total Program Allocation from DOE, which identifies the Base Program Budget Component and the T&TA Budget Component.

Pursuant to 43 USC 6865(a)(1) and 10 CFR 440.18(e) States may allocate up to 10 percent of any grant to administrative purposes. Of this 10%, the state may only use up to 5% for administering the program at the State level. The State must award to its Subgrantees, the other 5% for administration. States are allowed to retain T&TA funding at the State level to pay for training, training staff, monitoring staff, and training tools and equipment. States are also able to provide T&TA funding to Subgrantees to provide additional training, or allow local staff and contractors to attend other training. The State keeps 5% of administrative funds and a small portion of T&TA funds to administer the program.

The DOE allows states to allocate up to an additional five (5) percent of the grant for administration for those Subgrantees awarded less than $350,000.

Currently, the State allocates these funds as follows:

- Materials – Based on Formula
- Program Support – Based on Formula
- Liability Insurance – Actual Cost
- Pollution Insurance – Actual Cost
- Administration – Based on Formula
- Financial Audit – Actual Cost
- Health & Safety – Based on Formula
- T&TA – Based on Needs Analysis

In Connecticut, Subgrantees that are in good standing will receive funding each year unless the Subgrantee withdraws from program participation. In some instances funding may be withheld in full or in part based on serious issues found in DEEP monitoring or auditing.

When allocating DOE funds to Subgrantees, the State uses the following methods to determine the agency allocation. The State and Subgrantee Administration Budgets are determined based on 10% of Total Program Allocation. Also considered:

- Financial Audit Budget
- Pollution Occurrence Insurance Budget

- Liability Insurance Budget
- Amount of funding needed for T&TA (for State and Subgrantees). These amounts are deducted from the T&TA Budget Component, and if there is a balance in the budget, it is allocated to Program Services.

The above category budgets amounts are then deducted from the Total Program Allocation and the amount remaining is allocated to the Materials, Program Support, and Health & Safety categories.

105.1 Allocation Formula Administration and Program Operations

An allocation is computed for Administration and Program Dollars (Materials, Program Support, and Health & Safety). Funds for the purpose of program operations (just Materials and Program Support) are proportionately split based on expenditure limits between Materials and Program Support. Under the Connecticut program the agency can only claim up to $2.50 in Program Support for every $1 of Materials.

To determine the actual allocation awarded to the agency, the following criteria are used:

- a base allocation of $75,000 split between administrative and program services a weighted value of 45% is given to the category of agency total materials expenditures, vs. total materials expended;
- a weighted value of 35% is given to the category of agency total units completed; and,
- a weighted value of 20% is given to the category of eligible units, by service area, versus Eligible units statewide, as per census data, less those units previously weatherized.

The period used to determine the allocation is December to November of each year.

Subgrantees receive T&TA funds each year based on a yearly analysis of training needs and costs for staff and contractors to attend trainings and/or conferences, including travel etc.

105.2 Production Goals

The State will monitor production reports submitted by the Subgrantee during the contract to see that the number of weatherization completions and Subgrantee expenditures meet quarterly goals. If the Subgrantee's production falls substantially below the projected schedule of production, the State may require a written corrective action plan for bringing production in line.

If production continues to fall short of program goals, the State may, at its sole discretion, suspend, de-obligate and re-distribute all or any portion of the funds allocated to the Subgrantee.

- Contracted production time frames that result in 9 or fewer months of production will utilize monthly production goals based on the number of months to produce 100% of the projected annual goal.
- Example: a 9 month production period would require a minimum of 11% of annual production goal to be completed each month concurrently, to ensure that each Subgrantee's projected annual goals will be met.

106 SUBGRANTEE CONTRACT

The CT-WAP is conducted under a contract between the State and the Subgrantee for the allocation of weatherization funds. The amount of the contract will be determined by the State based on the amount of weatherization funding available.

The standard period of the CT-WAP contract is normally for a one-year period or until otherwise terminated as stipulated in the contract. Contract periods of more than one year may be executed at the discretion of the State.

107 CODES OF ETHICS

Subgrantees must maintain written policies that address codes of conduct. These codes are specified in Connecticut's WAP contract and must include employees, officers, agents of the Subgrantees, their families, partners or related organizations.

107.1 Conflicts of Interest

No employee, officer, or agent of the State or the Subgrantee shall participate in the election, award, or administration of a weatherization contract or subcontract if a real or apparent conflict of interest would be involved.

No employee, officer, agent, or contractor of the Department or of the Subgrantee who may be in a position to participate in the decision-making process may derive an inappropriate personal or financial interest or benefit from any activity funded through a contract or subcontract, either for him or for those with whom he has family or business ties.

The officers, employees, and agents of the State and of the Subgrantee shall neither solicit nor accept gratuities, favors, or anything of monetary value from Subgrantees or contractors, or parties to contracts or subcontracts, or any client this program serves.

If any organization, agency or company responding to a procurement request offers such gratuities, favors, or anything of monetary value to any officers, employees, and agents of the State and of the Subgrantee, said entity and its employees will be disqualified from participation in current and future weatherization contracts.

107.2 Discrimination Prohibition

The Subgrantee and its Contractor may not discriminate against any applicants, staff, personnel, suppliers, clients or others connected to the weatherization program on the basis of race, color, creed, religion, sex, age, national origin, or disability. Neither shall discrimination be based on present or past military status. Nor shall discrimination be based on sexual orientation.

107.3 Debarment & Suspension

The Subgrantee must certify that within the last five (5) years, and afterward annually, that neither the organization nor its principals are debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in a weatherization contract with the Department, the State of Connecticut, or any federal department or agency

The Subgrantee must contractually require the same certification by its contractors.

107.4 Drug-free Workplace

The Subgrantee must make a good faith effort to provide and maintain a drug-free workplace. The Subgrantee is required to give written notice to the State within ten (10) days after receiving actual notice that an employee has been convicted of a criminal drug violation occurring in the workplace.

107.5 Criminal Background Investigation

Subgrantee, staff and Contractors must agree to provide criminal background checks, as provided for in the State of Connecticut Department of Public Safety Administration and Operations Manual or such other State document as governs procedures for background checks.

107.6 Ownership of Intellectual Property

All copyright and patent rights to all papers, reports, forms, materials, creations, or inventions created or developed in the performance of the WAP is the sole property of the CT-WAP as administered by the State.

107.7 Religious Activities

The rendering of weatherization services is non-sectarian in nature. The Subgrantee must ensure that religious activities are not a part of any activities funded under the grant.

107.8 Political Activity

The Subgrantee must ensure that the funding provided by the State through any weatherization contract or agreement is not used to further any type of political or voter activity.

The Subgrantee must comply with applicable provisions of the Hatch Act (5 U.S.C. §§ 1501-1508 and 7324-7326) which limit the political activities of employees whose principal employment activities are funded in whole or in part with weatherization funds.

107.9 Campaign Contribution and Solicitation Ban

Neither the Subgrantee nor its principals shall make a contribution to or solicit contributions on behalf of an exploratory committee or candidate committee established by a candidate for nomination or election to the office of Governor, Lieutenant Governor, Attorney General, State Comptroller, Secretary of State, or Treasurer; or to a political committee authorized to make contributions or expenditures to or for the benefit of such candidates; or to a party committee.

107.10 Legislative Contact

The Subgrantee may not use weatherization funds to lobby, or to directly or indirectly influence action on any legislation or appropriation matters before federal or state legislative bodies.

Nothing in this section prohibits the Subgrantee from providing educational or other information regarding the weatherization program, as appropriate.

107.11 Whistleblower Protection

The Subgrantee may not discharge, demote, or otherwise discriminate against an employee as a reprisal for disclosing "whistleblower" information; such as mismanagement, abuse, fraud, legal violations, non-competitive procurement, and so forth.

107.12 Client Confidentiality

The Subgrantee, including its Contractors must ensure the confidentiality of Client information per Federal and State Confidentiality laws which include but is not limited to the Health Insurance and Portability and Accountability Act of 1996 (HIPPA). This includes the requirement to encrypt all electronic data classified as confidential.

108 OTHER REQUIREMENTS

The Subgrantee must adhere to all policies, stipulations, terms and requirements set forth in the:

- Contracts and agreements between the Subgrantee and the Department, funded under the DOE and ARRA grants;
- Connecticut State Weatherization Plan and subsequent revisions, as approved by the DOE;
- Connecticut Weatherization Program Operations and Training Manual;
- Connecticut Weatherization Field Guides (for Auditor/Inspector and Installer as drafted and approved by the Department); and
- All other weatherization guidance documents, as approved and issued by the Department.

Throughout the term of the contract the Subgrantee must:

- Adhere to DOE's Civil Rights Requirements, in accordance with 10 CFR Part 1040 et seq., as amended.
- Expend and administer funds in accordance with the DOE's financial assistance regulations defined in 10 CFR Part 600 as amended.
- Be and remain in compliance with the American with Disabilities Act of 1990.
- Comply with the Federal Rehabilitation Act of 1973 regarding access to programs and facilities by people with disabilities.
- Be in compliance with all reporting requirements relative to client abuse and neglect, including but not limited to requirements related to children and relative to persons with mental retardation or relative to elderly persons as stipulated in the State contract.
- Utilize Minority Business Enterprises in accordance with 45 C.F.R. Part 74; and applicable, C.G.S. §§ 4a-60 to 4a-60a and 4a-60g to carry out this policy in the award of any subcontracts.
- Subject to determining the qualifications for all employment positions, give priority to hiring welfare recipients who are subject to time-limit welfare and must find employment. The Subgrantee will determine the number and types of positions to which this section applies.

- Submit reports to the Department in a timely and accurate manner as prescribed according to procedures.
- Conduct all procurement transaction in such a manner to provide, to the maximum extent possible, free and open competition.
- Require that contractors comply with Federal standards in the purchase of supplies and other expendable property, equipment, and services.
- Retain financial records, supporting documents, statistical records, and all program or other records pertaining to the Subgrantee's contract with the Department for a period of three (3) years from the date of the final expenditure report by the subgrantee. If litigation, claim or Audit is started before the expiration of the 3-year period, the records must be maintained for a 3-year period from when all litigation, claims or audit findings involving the records have been resolved and final action taken.
- Have in place a system used to determine the order of service for program eligible clients, applied equally to both owners and renters; and prioritizes eligible households that have members who are elderly, disabled, children 6 and under; or are high energy user households.
- Ensure that services are provided only to eligible households and dwellings.
- Do not re-weatherize dwellings that have been weatherized since September 30, 1994.
- Comply with the current Connecticut H&S Plan as approved by DOE.
- Comply with certification and training requirements as set forth in the approved WAP State Plan, the CT Weatherization Program Operations and Training Manual and other approved and issued state guidance documents.
- Comply with EPA and DOE regulations ensuring that lead safe weatherization work practices are followed, as applicable.
- Submit for payment only work that has been inspected and report units as completed only after they have passed Final Inspection.
- Perform no additional work on units that have been reported as completed under the DOE program, except as may be re-weatherized under program policies.
- Monitor and maintain expenditure levels within all cost limits, including the average cost-per-unit, as well as other limits further defined in this manual.
- Maintain a record of all maintenance performed on vehicles, as well as a "mileage log" for each vehicle utilized for the provisions of Program services;

- Report any vehicle accidents related to contracted services and theft of Program materials and/or equipment, in writing to the Department's Contract Manager within 30 days of such event(s). Any occurrence of theft of property valued at more than $100.00 must be reported to the police, and a copy of the resulting police report must be submitted to the Department's Contract Manager in a timely manner.

109 INSURANCE REQUIREMENTS

The Subgrantee is required to provide at a minimum the following insurance coverage. These requirements are also to be required of any Contractor by the Subgrantee.

109.1 Indemnification

The Subgrantee is required contractually to hold harmless the State from and against any and all claims for injury, loss of life, or damage to or loss of use of property caused or alleged to be caused, by acts or omissions of the Subgrantee, its agents, employees, assigns, and invitees on or about the premises and which arise out of the Subgrantee's performance, or failure to perform as specified in the Subgrantee's contract.

109.2 Liability Insurance

The Subgrantee must provide comprehensive general liability insurance coverage in the minimum amount of one million dollars ($1,000,000) for bodily injury and property damage, with a minimum amount of $500,000 for each. Upon request, the Subgrantee must provide the State with Certificates of Insurance that document the required coverage, the limits of liability and coverage dates of the Subgrantee policies. All documents and coverage must be current.

109.3 Pollution Occurrence Insurance

The Subgrantee must provide Pollution Occurrence Insurance coverage in the minimum amount of at least $500,000.00 per occurrence.

109.4 Workers' Compensation

The Subgrantee must provide Workers' Compensation as required by law.

109.5 Unemployment Compensation

The Subgrantee must provide Unemployment Compensation as required by law.

109.6 Misappropriation Bond

The Subgrantee shall provide a bond or insurance coverage for all persons who will be handling funds or property received or disbursed as a result of its contractual agreement with the State in an amount equal to one-half of the total annual of funding provided to the Subgrantee through the State, or $250,000 whichever is less, to be effective for the period of the Subgrantee's contract plus three (3) years for purposes of discovery.

The Subgrantee's coverage must provide protection against losses resulting from criminal acts and wrongful and negligent performance of the person's duties and it must specify the Department as an additional insured.

109.7 Cancellation of Insurance Policy

The Subgrantee is required to immediately notify the State if any required insurance is canceled, or modified in amount. In the event of a cancellation of the Subgrantee's coverage, the State will make no further disbursements to the Subgrantee until certification is provided by a company that the coverage has been restored. In the event such verification is not received by the State within ten (10) days of the notice of cancellation, the Subgrantee agrees to return to the appropriate state agency the balance of all monies paid to the Subgrantee under its contractual agreement.

110 SUBGRANTEE FISCAL AUDIT

The Subgrantee is required to conduct an annual financial audit of any and all expenditures of weatherization funds. The Audit must be conducted by an independent certified public accountant selected by the appropriate competitive process.

The audit may either be conducted as a part of an agency-wide audit, or as an individual audit of weatherization funds. It is to be performed in accordance with Federal and State single audit standards and applications, including the applicable provisions of the OMB Circular A-133, *Audits of States, Local Governments, and Non-Profit Organizations*.

The complete audit report, including management letters and Audit recommendations must be submitted to the Department by the Subgrantee within thirty (30) days of the receipt of the completed audit, or the receipt of a notice from the auditor that the audit cannot be completed. The reason(s) for an incomplete audit must be stated clearly by the auditor and the Subgrantee.

110.1 Fiscal Audit Findings

The State will review the audit for material problems with the accounting systems of the agency, questioned costs and disallowed costs. The Subgrantee will be required to submit a written analysis of root cause of findings and a written plan for corrective action of findings, within a time frame set by the State. Follow-up on the corrective action will be monitored in the State's administrative review of the Subgrantee.

The State will address any disallowed costs to the Subgrantee Fiscal and Program Staff.

111 SUBGRANTEE PLAN & BUDGET

The Subgrantee must submit a contract and budget to the Department that describes how program services and production goals will be met over the contract period.

111.1 Plan

The State provides production goals for each Subgrantee service area, including those areas only covered by the agency for weatherization.

Application Process: The Subgrantee plan must explain the process that is in place for receiving weatherization applications, particularly from the Connecticut Energy Assistance Program (CEAP) in other CEAP service areas that are covered by the Subgrantee for weatherization.

Crew Staffing: The Subgrantee must detail the extent to which it uses its own crews and/ or Contractor crews. The budget must indicate the estimated number of each type of personnel. The Subgrantee must have available the specific responsibilities of each staff.

Local Health and Safety: The Subgrantee must ensure compliance with the approved State H&S plan, both in its own operation of the weatherization services and in the requirements for its weatherization Contractors.

See *CT Weatherization Program Operations and Training Manual*, Section 400 HEALTH AND SAFETY, for additional information.

111.2 Budget and Budget Narrative

The Subgrantee must submit an annual line item budget detailing the projected use of allocated contract funds during the program year. The budget projections should be tied to production goals based on the average cost per unit and other limits. The line item budget includes details by cost category as shown in the following chart.

Section No./ Category Line Items	Sub Category Line items
703.1 MATERIALS	Contractor Materials Installed in Completed Units Agency Materials Installed in Completed Units Materials for DOE Heating Systems
703.2 PROGRAM SUPPORT	Storage Contractor Installed Measures - Labor Contractor-Other (attach itemized sheet) Maintenance, Repair, Tools, Equipment & Vehicles Insurance for Tools, Equipment and Vehicles Purchase of Non-Expendable Tools, Equipment and Vehicles Purchase of Expendable Tools and Equipment Annual Lease of Tools and Equipment Salaries - Crew

	Salaries - Supervisory Salaries - Program Staff Fringe Benefits Transportation Program: Other (attach itemized sheet) Audit Fees Purchase/Lease of Vehicle(s) Labor for DOE Heating Systems $200 Reimbursement per Heating System Minus Landlord Contribution
703.3 TRAINING & TECHNICAL ASSISTANCE	Actual Direct Cost
703.4 LIABILITY INSURANCE	Actual Direct Cost
703.5 POLLUTION INSURANCE	Actual Direct Cost
703.6 FINANCIAL AUDIT	Actual Direct Cost
703.7 HEALTH & SAFETY	Actual Direct Cost
703.8 ADMINISTRATION	Salaries Fringe Benefits Travel Other (Attach itemized sheet)

See *CT Weatherization Program Operations and Training Manual*, Section 703, COST CATEGORIES, for cost definitions and additional detail.

111.3 Budget Modifications

Connecticut only allows for one type of budget modification, the transfer of funds from the Program Support to the Materials cost category. In some situations, after State approval from DOE, a Subgrantee may be allowed to reallocate funds from the T&TA line item to Program Operations (Materials and Program Support).

A formal written request for transfer must be submitted to the State for approval. In addition, the Subgrantee must submit a Line Item Budget revision to the State for approval and adjust the contract Grant Budget Column on the Financial Report.

Once money has been moved into the Materials Budget category, it *cannot* be moved back to Program Support, or to any other budget category.

The following procedures are to be followed in order to request a reallocation of these funds:

- Prior to any request, the agency must conduct a budgetary analysis to calculate what funds are needed to cover program support expenditures (e.g. salaries, fringe benefits) through the end of the contract term or in a specified duration of a contract period so as to ensure that they do not run into a lack of funds after the transfer.

- Agencies must take into account units in process and the amount of funds encumbered as a result of these works in process. This will allow for an accurate assessment of the projected expenditures.

- The agency should request to reallocate only enough funds to cover a 2-month period. This is to ensure that the agency does not end up without funds to cover an unexpected program support expense. There is no limit on the amount of transfers an agency may request, provided they have the funds available for reallocation, so this should not be a deterrent from following best practice.

- The funds reallocated should be a negotiable amount, because again, once funds are moved into the Materials Budget Category they cannot be moved back into program support.

112 FUNDS MANAGEMENT

The proper administration of funds begins with the quality of the Subgrantee's own internal fiscal controls and accounting procedures. The Subgrantee must maintain written fiscal procedures which are periodically reviewed and approved by its governing board. The disbursal of weatherization funds must be properly documented and tracked in a systematic, transparent method.

112.1 Financial Records

All Accounting records related to budgets, claims, and purchases must be maintained in accordance with 10 CFR, Part 600, and this policy manual, and generally accepted accounting principles for fund accounting. The Subgrantee's financial records shall include, but are not limited to:

- Accounting books, ledgers, charts,
- Time sheets, payroll forms, wage records,
- Accounting reports, bank statements,
- Fiscal reviews, audits,
- Tax records, tax withholding records,
- Source documents, bills, claims, canceled checks,
- Job descriptions, pay rates, pay schedules, and

- Other fiscal forms and reports, as required by the State.

Such records shall be sufficient to fully document the Subgrantee's financial activities, including the Subgrantee's claims for reimbursement under its weatherization contract with the Department. All fiscal accounting records must be made available to the DOE, the State, the Department, or other appropriate agencies, upon request.

112.1.1 Tracking Expenditures

The Subgrantee must track its expenditures monthly, over the period of the contract, so that funding allocations are not over-expended. It is the responsibility of the Subgrantee not to exceed line item limitations, among the average cost- per-home, H&S limits, and Incidental Repair expenditure limits over the period of the contract.

Expenditures must be tracked and reported separately for each weatherization funding source. Expenditures are reported monthly to the Department.

Accounting systems will be evaluated as a part of the Department's administrative monitoring process, as well as in the Subgrantee agency's fiscal audit.

112.2 Production Records

The Subgrantee must maintain all of the required documentation supporting production for each Work Order in accordance with this policy. Records are to be filed by a unique Work Order Number and cross-referenced with the client name, the date the unit passed Final Inspection and the address of the weatherized unit.

It is incumbent upon the Subgrantee to require weatherization Contractors to maintain and submit documentation required by the program.

The Department requires that the Subgrantee submit a Building Weatherization Report (BWR) for every dwelling unit completed that has passed the Final Inspection. The BWRs are submitted to support the production data on the Subgrantee monthly report.

See *CT Weatherization Program Operations and Training Manual,* Section 700 CLAIMS AND REPORTS for detailed monthly reporting requirements, including a description of the supporting BWR form.

112.3 Program Income

Program Income is an amount of money received by the Subgrantee for activities which are not a part of the grant work but are supported directly by staff, equipment, materials, supplies, and so forth as funded by the weatherization grant. This includes most payments received by the Subgrantee for work conducted outside the program but utilizing weatherization program resources.

Program income is subject to the specific guidance provided in the DOE Financial Assistance Rule, 10 CFR 600, Subpart B Section 600.124 and Subpart C, Section 600.225 as appropriate. Program

income is to be treated as an addition to program funds and is subject to the same rules as appropriated funds.

Leveraged utility company funds and landlord contributions are *not* considered to be program income for purposes of the Connecticut WAP.

112.4 Landlord Contributions

The Subgrantee is required to seek a contribution towards the cost of weatherization from the property owner (landlord). The requirement applies to single-family dwellings, including small multi-family dwellings (up to 4 units) and some large multi-family dwellings (5+ units) weatherized under the 50% or 66% eligibility rules.

The amount of the contribution will be equal to twenty percent (20%) of the *material* costs per eligible unit. The maximum amount of the landlord contribution will be $500 *per eligible unit*.

Landlord/owner contributions to install weatherization measures in a unit are *not* considered program income or leveraged funds under the DOE regulations. However, such contributions must be applied to the cost of the specific job for which they are made and amount must be identified on the BWR. The Subgrantee's claim for that unit should reflect a credit for the amount paid by the landlord and is to be reported on the Financial Report concurrently as the unit is being submitted as a completion to the State.

112.4.1 Landlord Contribution Waivers

The landlord contribution can be waived on a *case-by-case* basis. Should a landlord request a waiver, this request and accompanying justification as to why a waiver is necessary must be submitted, in writing, to the Subgrantee. If the Subgrantee approves the waiver request, the documentation should be attached to the weatherization agreement form and kept in the client file.

112.5 Leveraged Funds

To the extent practicable, federal weatherization funds should be used to leverage funds that would not be made available in the absence of federal or state funds for carrying out weatherization activities. DOE permits States to use a percentage of their grant to undertake leveraging activities which may be used to supplement the program or run a parallel program. Allowable activities include:

- Paying for agency staff involved in leveraging
- Hiring a consultant to explore and develop partnerships
- Holding leveraging meetings
- Preparing technical materials
- Facilitating voluntary match funds from non-Federal resources

The Department has *not* set aside funds for leveraging purposes for the DOE WAP program.

112.6 Segregation of Funds

The State of Connecticut WAP is supported by the DOE WAP grant. Funds received from separate sources, even though they may each be used for the same purpose of weatherization, must still be maintained in separate accounts.

In no instance may weatherization funds be co-mingled with funds for any other program sources.

This policy does not preclude the coordinated use of funds from various sources, as allowed by the rules and regulations covering each of those funds.

112.7 Supplanted Funds

Weatherization funds may not be used to supplant other state or local funds which may be used instead, for the same purpose.

112.8 Capital Expenditure

The Subgrantee may not use weatherization grant funds for the purchase or improvement of land. Weatherization funds may not be used for the purchase, construction, or improvements of any building or other facility.

As defined by the DOE program policies, this does not preclude the use of funds for residential weatherization or other energy-related home repairs.

113 EQUIPMENT

Equipment is defined by federal and state regulation as an item of non-expendable, tangible personal property, having a useful life of more than one year and an acquisition cost which equals or exceeds a unit cost of $5,000.

A *unit* generally is an individual item but may also be an aggregation of items needed for the unit to function. The primary example of an aggregated unit is a computer system which requires a central processing unit, a keyboard, a monitor, and a printer to be useable.

Equipment purchased by the Subgrantee with funds awarded under the grant is property of the WAP. It may not be used for any purpose other than the defined program activities without written permission and instruction from the Department.

Equipment may not be purchased, transferred or disposed of by the Subgrantee without prior written permission and instruction from the Department.

In the event that a Subgrantee contract with the Department is not renewed, or terminates for any reason, equipment purchased with program funds must be returned to the Department as property of the WAP.

The Subgrantee must maintain records of the procurement of equipment, ongoing equipment inventory records, and records of the disposition of equipment.

113.1 Weatherization Equipment, Tools & Materials

Specialized equipment, supplies, tools and weatherization materials purchased by the Subgrantee with the funds awarded in the contract, regardless of the unit cost or the useful life of the items, are to be considered weatherization program property. Such property shall only be disposed of in a manner prescribed in written instructions by the Department.

Such items include, but are not limited to: blower doors, duct blasters, manometers, CO detectors, smoke detectors, refrigerators, insulation materials, laptop computers, specialized software, and so forth. Items also include computer equipment and general software purchased by and for the weatherization program.

In the event that a Subgrantee's contract with the Department is not renewed, or terminates for any reason, the specialized Weatherization equipment, tools or leftover materials purchased with program funds must be returned to the Department, as property of the WAP. At the instruction of the Department, such items must be delivered to another Subgrantee or another location, as required.

This policy does not refer to items purchased by the subgrantee's weatherization Contractor for use in the program, unless specific weatherization funds were granted by or through the Subgrantee for that procurement.

114 INVENTORY

The Subgrantee is required to track the purchase, use and disposition of all inventory acquired by it with weatherization funds. An inventory list maintained by the Subgrantee must be made available upon request and for annual monitoring by the Department in its administrative review.

A physical inventory of parts, materials, supplies and equipment is required quarterly and reported to the Department annually. *Discrepancies are identified in the Close Out Package and included on the financial page*

Daily records must be maintained to account for the inventory materials taken in and out of the Subgrantee's warehousing facility. It must be possible to track items used on the weatherization of an individual unit through inventory records, back to the point of purchase.

Specific staff person(s) must be designated as responsible for the following duties:

- Signing authority on Purchase Orders
- Maintaining inventory records
- Overseeing a quarterly physical inventory
- Authorizing the disposal of obsolete or damaged inventory
- Reconciling inventory records and authorizing adjustments

114.1 Inventory Schedule

The Subgrantee must maintain an up-to-date inventory schedule for all items purchased for use in the weatherization program. The following information must be available for review by the Department and is reported on the SUBGTRANTEE closeout report at the end of each contract year.

- IDENTIFICATION: the item name, brand, brief description, model #, serial #
- LOCATION: physical location of the item
- CONDITION CODE: a description of the condition of the item based on the condition codes provided by the Department
- AVAILABILITY FOR DISPOSITION: current disposition of the item, including availability of the item for disposal.
- ACQUISITION DATE: date the item was acquired by the program (with backup procurement forms)
- ACQUISITION COST: cost and source of funds (including the specific grant award number)

Inventory must be kept in a facility with clean and adequate space. The warehouse must be accessible. The building must be protected and secure.

The inventory is tracked by funding source (DOE, Other). The value of property in inventory is based on the purchase price. Property is reported in two broad categories of *expendable* and *non-expendable*.

<u>Expendable Property Purchased with Weatherization Funds</u>: Inventory items are considered expendable when they are to be used up in the actual weatherization of units. This category includes items such as weatherization materials, parts, building components, and installation items (smoke and CO detectors). Tracking includes:

A. Materials in Inventory

B. Purchased with DOE Funds, including
    1. Materials in Work-In-Process
    2. Materials Ordered but not Received

Nonexpendable Property: Inventory items are considered non-expendable when they are necessary and used to weatherize units. This category would include tools, equipment, and vehicles. Tracking includes:

A. Items purchased with DOE Funds

B. Items purchased with other than DOE Funds

114.2 Disposition of Inventory

The Subgrantee must keep complete records of the procurement, use, and disposal of items in its inventory.

Purchases for inventory must be fully documented. Backup documents must be available for review with the inventory schedule containing the following information:

- a justification for the procurement process used on the purchase
- documentation of the procurement of the item(s)
- documentation of prior approval, when required, and
- purchase order, invoice, receipt, other source document(s)

See *CT Weatherization Program Operations and Training Manual*, Section 118, PROCUREMENT, below, for additional information.

Use of weatherization parts and materials from the Subgrantee's expendable property inventory are to be tracked and recorded by individual weatherization job in which the item is used. Jobs should be identified by Work Order number.

Grantee may not purchase or maintain an inventory which exceeds an amount necessary for the performance of the program activities under the contract agreement.

Disposal of Equipment: Because equipment purchased with weatherization funds is considered the property of the program, the Subgrantee must notify the Department prior to disposing of equipment. The Subgrantee will be instructed as to how such equipment is to be disposed of. The Department will assist the Subgrantee in establishing the fair market value for which the item must be sold.

In certain situations equipment may be depreciated over time by the Subgrantee. Upon request, the Subgrantee shall submit all relevant depreciation schedules with its independent audit report.

See *CT Weatherization Program Operations and Training Manual*, Section 114, Equipment, for definitions and additional information.

114.3 Inventory Reports

Although the Subgrantee must track inventory throughout the year, at the end of the grant year, a closing inventory report is to be submitted along with the agency's fiscal and programmatic closeouts. The reports, submitted on pages (spreadsheets) provided by the Department, include inventory schedules and summaries which must be certified by the authorized Subgrantee administrator.

For the year-end report, the Subgrantee must conduct a physical inventory which will detail the quantities of inventory items and show any discrepancy between book inventory and actual counts.

The Department will provide the packet of pages to be completed, along with the due date for submission. The packet will include:

1. Summary and Certification for the Inventory of Non-Expendable Property (Word)
    a. Schedule of Property Acquired with DOE Funds (Excel)
    b. Schedule of Property Acquired with *non*-DOE Funds (Excel)
2. Summary and Certification Expandable Property Purchased with Weatherization Funds
    a. Physical Count of Materials in Inventory.
3. Summary and Certification of Expendable Property Purchased with DOE Funds, including:
    a. A summary of DOE expendable property installed in dwelling units not reported as completed prior to end of program year
    b. Materials in work-in process with attached detailed schedule of items, quantities and costs of materials in each job. An excel spreadsheet is provided by the State.
    c. Materials ordered but not received with attached detailed schedule of all materials ordered but not delivered prior to end of program year. This applies only to those Subgrantees that accounts for purchases when purchase orders are issued rather than when materials are received. An excel spreadsheet is provided by the State.
    d. The total of DOE expendable property in the inventory.

114.4 Inventory Reconciliation

The final report of inventory results from a year-end physical count of items in the Subgrantee inventory compared to the book inventories kept over the period of the contract year. The form in

the inventory packet is the Supplemental Reconciliation Form (with instructions) is used to determine inventory variances which may be reimbursable to the program. Up to two percent (2%) in materials variance is allowed when the closeout package is submitted at the end of a contract period.

115 CLOSEOUT

No later than forty-five (45) days following a termination of its contract or the conclusion of the annual contract period, the Subgrantee will submit its *final* closeout documents. Closeout documents are provided by the Department (in spreadsheet formats) for submission.

115.1 Final Status Reports

The Final DOE Monthly Weatherization Status Reports packet of reports includes final program statistics, Final Expenditure Report, the Inventory Close-Out Packet and Supplemental Reconciliation Form.

The Subgrantee's final Expenditure Report will include all remaining costs to be claimed for materials, program support, T&TA, liability insurance, pollution insurance, financial audit, and administration.

All units reported on and claimed for the year must be *completed units.* See *CT Weatherization Program Operations and Training Manual*, Section 706.2, Unit Completion Definition, for additional information.

The final reports on completed units and expenditures must, at the end of the contract period, comply with all cost category definitions, including expenditure limits. The expenditures must meet overall budget allocations, individual line item limits, the materials v. program support limits, and cost per unit limitations. See *CT Weatherization Program Operations and Training Manual*, Section 701, OVERALL COST LIMITATIONS, for additional information.

115.2 Final Inventory Report

The Final Inventory Reports packet of reports includes inventory summaries and agency certifications accounting for expendable and non-expendable property inventory. Subgrantee are required to complete an annual physical inventory of all property used for weatherization purposes.

See CT Weatherization Program Operations and Training Manual, Section 115.3, Inventory Reports, above, for additional details.

115.3 Disallowed Costs

The total final claim must be offset either by the Subgrantee or by the Department with credits for:

1. Any amount in excess of the total contract.
2. Any amount which exceeds the limit of ten percent (10%) on a specific line item.
3. Any amount which exceeds the allowable average cost per unit over the period of the contract.

4. Any amount which causes the agency to exceed the amount ratio between materials and program support cost categories.
5. Subgrantee settlement of disallowed costs found in an audit.
6. Subgrantee settlement for incorrectly expended funds that cannot be transferred to a correct cost category, as determined by the Department's fiscal monitoring.
7. Any other amounts as determined between the Subgrantee and Department.

In the event that a contract is terminated, the Subgrantee must return to the Department in full any unexpended funds within thirty (30) days, or such funds may, at the discretion of the State, be carried over and used as part of a new contract period if a similar contract is to be executed.

See *CT Weatherization Program Operations and Training Manual*, Section 700, CLAIMS AND REPORTS, for additional details on cost categories, as well as monthly claiming and reporting.

115.4 Final Supplemental Reconciliation

The Final Supplemental Reconciliation form is only to be completed to detail any variances in the final inventory for the grant year.

See CT Weatherization Program Operations and Training Manual, Section 115.4, Inventory Reconciliation, above, for additional details.

116 ADVANCED FUNDING

A funding advance may be available to the Subgrantee. Advance funds are available on a one-time basis and are not guaranteed in future funding rounds, or from any other funding sources.

An advance payment of up to 25% of the total contract is issued to the Subgrantee upon the approval and execution of the contract.

The advance of funds will be subject to administrative monitoring by the State.

The advance payment is generally drawn down during the last quarter of the program year or sooner depending on Subgrantee performance. There is usually no advance remaining by the end of the contract period. If there is an unspent advance, Subgrantee will be directed to refund the State.

117 PROCUREMENT

The Subgrantee is required to purchase all goods and services in an open and free competition which results in the best product or service being received for the most reasonable cost.

117.1 Procurement Regulation

The Subgrantee must have agency procurement policies and procedures in place, updated and approved by its governing board, which will ensure that all purchases under the weatherization grant – supplies, materials, equipment and contractual services - are made in a manner that is transparent and competitive. The procurement procedures must meet all guidelines set by the

Department, the State of Connecticut and the Department of Energy. Applicable procurement regulations include:

- DOE Regulations at 10 CFR Part 600, Financial Assistance Rules, Subpart B
- General Statutes of Connecticut, Title 4a, Administrative Services

117.2 Types of Procurement

All purchases with weatherization funds, no matter the cost, must be made on a competitive basis and documented by the agency's accounting records. The procurement method to use usually depends on the level of funds to be expended and the complexity of the item or service. In most cases the lowest cost item is selected, however higher priced items may be selected when there is a reasonable justification, as noted below.

See *General Statutes of Connecticut*, Title 4a, Sec. 4a-57, Competitive bidding or competitive negotiation for purchases and contracts, for the specific state statute.

117.2.1 Small Purchase

Small purchases utilize relatively direct and informal procurement methods for securing services, supplies, or other items that do not cost more than $5,000 in the aggregate. *All* items are to be purchased on a competitive basis but the formality of the purchase process may vary according to Subgrantee's and State's procurement policies.

Unless otherwise stated for specific items, in other manual sections, small purchases do *not* require prior approval by the Department.

117.2.2 Invitation to Bid

All purchases with an aggregate cost of $5,000 or more require a more formal process. Such items or services for which cost is the sole factor, and no other comparative factors are involved, should be purchased through a competitive bid process, usually called the Invitation to Bid (ITB).

This price level also requires the *prior approval* by the Department before any purchase is made. (Note that other specific expenditures may also require prior approval.)

The Subgrantee's approved and current procurement policies and procedures must be on file.

An ITB is to be issued by the Subgrantee detailing the description and specifications of the item to be purchased. Specifications may not be written that limit the procurement to a particular brand. While reasonable or irrelevant variations in the bid item may be allowed for, and different brands of the same item must be considered, the ITB is used when *price* is the determining factor for selection. The ITB process then requires that the purchase be made from the lowest price quoted by a responsive and responsible bidder.

All bids received by the Subgrantee must be kept sealed and secured by agency purchasing personnel until the specified date and time of the bid opening.

If any or all bids are rejected for any reason other than price, sound documentation for such must be written and placed with other bid materials.

The bid packet that is issued must be fully documented by the Subgrantee, along with the selection process and subsequent purchase records. Invitations are issued to all prospective bidders at the same time. Strict deadlines and other requirements must apply to all bidders equally.

The following must be included in the bid materials for review and audit by the Department:

- Written, prior approval of the bid purchase from the Department;
- A written description of the item or service to be purchased, with detailed specifications, as applicable;
- Date, time, location and minutes of the bid opening;
- Selection methodology for the bid lowest price bid;
- A record of a minimum of three written invitations for bids;
- A record of all quotes received for the purchase;
- Detailed record of the reason for the rejection of any bidder;
- Approval of the purchase signed by the authorized administrative or financial agency official;
- Purchase record, receipt, invoice, etc.; and,
- Contracts or other agreements which result from and govern the purchase of the item or service, as applicable.

117.2.3 Requests for Proposal

Purchases of items or services with an aggregate cost of $5,000 or more for which price is *not* the sole determining factor, should be let in a competitive negotiation process usually referred to as a Request for Proposals (RFP). While cost is still a strongly determinant factor, the RFP can allow for several other factors on which to evaluate the proposal. This allows the Subgrantee more latitude in its criteria for choosing its purchases, particularly in purchasing the services of a Contractor.

This price level also requires the *prior approval* by the Department before any purchase is made. (Note that other specific expenditures at any level also require prior approval.)

The Subgrantee's approved and current RFP procedure is to be used for the purchase must be on file for review.

As there are numerous factors used in choosing weatherization contractors, an RFP process must be used by the Subgrantee to select individuals and companies for subcontracting weatherization program services.

Documentation of the process and subsequent purchase records must be maintained by the Subgrantee and made available for review and audit. RFP materials must include:

- Written, prior approval from the Department of the item or service to be purchased;
- A written description of the item or service to be purchased, with detailed specifications and other factors considered in the selection, as applicable;
- A record of a minimum of three written requests for proposals for the purchase;
- A record of all proposals received for the purchase;
- Approval of the purchase signed by the authorized administrative or financial Subgrantee agency official;
- Purchase record, receipt, invoice; and,
- Contracts or other agreements which result from and govern the purchase, as applicable.

117.2.4 Vehicle and Other Equipment Procurement

The Subgrantee must use either an ITB or RFP process to purchase equipment, including vehicles. Any purchase of $5,000 or more requires prior approval from the State and DOE.

117.3 General Procurement Information

All Subgrantees must establish written procurement procedures to govern local procurement activities.

Cost plus a percentage of cost purchasing is not allowed. Weatherization program expenditures cannot be made on this basis. Bids and quotes must be based on a firm fixed price.

117.3.1 Procurement Policy Review

The Subgrantee procurement policies and procedures, as approved by its governing board, must be available for review during the Department's administrative monitoring and for the agency audit, as applicable.

117.3.2 Specifications

One key to effective procurement is to describe in clear and concise terms the description and specifications for the desired item or service to be procured. Some suggested points to make clear, no matter what procurement process is applied, include:

- Complete description of the item or service,
- Special requirements regarding color, design, materials, parts,
- Quantity, minimum and/or maximum number of units, package sizes, as applicable,
- Minimum quality requirements,
- Special delivery requirements,
- Applicable warranty requirements,
- Cost breakdown requirements for the bid (e.g., labor/materials, single item/bulk).
- Any bonding requirements, if necessary for any project exceeding $99,999.99 will require:

- Performance bond 100% of contract price
- Payment bond 100% of contract price

When purchasing materials and parts for weatherization, care should be taken to meet DOE qualitative requirements.

See various sections of the *CT Weatherization Program Operations and Training Manual*, Section 300, WEATHERIZATION SERVICES, as well as the *CT Field Guides* for product standards.

117.3.3 Advertisement

Quotes, bids and requests for proposals must be advertised. Advertising ensures a more competitive process and will result in a more reasonable cost. Ads should be placed in a newspaper with the widest area circulation and far enough in advance to ensure the respondents have time to reply appropriately. Ads may also be posted in other local media and on internet sites related to the proposed service or item to be purchased.

Some of the information essential for a good ad includes the following.

- Subgrantee agency name, address, where response should be sent,
- Contact information for obtaining additional information,
- Purpose of the solicitation with a brief description of the item or service
- Directions for responding,
- Notice of any meetings or other means for help with responses,
- Deadlines for responses,
- Statement encouraging responses by small, minority-owned, women owned businesses,
- Statement of limitations on the response, i.e. response will or will not be accepted in certain formats (e.g. mail, email, fax),
- Statement that late responses will not be accepted, if applicable.

117.3.4 Minority and Women Business Enterprises

Subgrantees are encouraged to solicit competitive responses from small businesses, minority-owned businesses and women-owned businesses. This requirement should not be interpreted to mean preferential treatment is given to such entities in the award process. However, efforts should be made to identify such businesses in the area and ensure that they are notified of the availability of opportunities to bid on purchases.

117.3.5 Procurement Process Documentation

All procurement transactions, from start to finish, must be fully documented. Records of individual procurement transactions shall be maintained by the Subgrantee in sufficient detail to record the history of the procurement. Documentation must be made available to the State for administrative monitoring and be available for the agency audit.

Procurement records shall include, but are not limited to, the following:

- The rationale for the type of procurement process used (small purchases, price quotes, bids, requests for proposals)
- Documentation of the procurement process (requests, newspaper advertisements, responses, bidder meeting records, proposal documentation, evaluation forms, etc.)
- Evaluation records, tabulation of bids
- Basis for vendor/contractor selection or rejection
- Basis for purchase/ contract price
- Price or quote sheets for those procurements where a more competitive process is not required
- Appropriate written justification and authorization if the low bidder or highest scoring proposal was not selected
- Appropriate sign-offs by authorized Subgrantee staff
- Prior approval documentation from the Department, as required

See individual procurement process sections above for additional requirements.

117.3.6 Evaluation

The method to evaluate a response, of course, depends of the procurement type, the complexity of the purchase and the dollar level of the purchase. The evaluation, like the procurement process should be designed to ensure the best product for the most reasonable cost. In some cases the evaluation will simply be a determination of the lowest quoted cost. With more complex purchases, such as weatherization subcontracts, the Subgrantee will need to have an evaluation which not only scores the proposal based on price but that takes into account other qualitative factors such as the company's experience, resources, ability to deliver services within time frame request, and staffing.

For more complicated evaluations, such as with contractor proposals, the agency may want to set up an evaluation committee, including knowledgeable individuals from outside the agency to score the proposals. Care should be taken to ensure there is no conflict of interest with the evaluation committee members.

117.3.7 Protest Resolution

The Subgrantee should have a process in place for the resolution of protests from individuals or companies regarding the awarding of a purchase or contract. Generally, this would include a review by higher levels of authority within the Subgrantee agency followed by a formal letter to the protestor with the results of the review.

118 CONTRACTOR PROCUREMENT

A significant part of the successful delivery of weatherization program services depends on the selection of Contractors with the specialized experience and knowledge required to apply the wide range of weatherization measures to units in a safe and effective manner.

To ensure the best quality and the most reasonable cost, it is required that the weatherization Contractor be chosen through a well-designed Request for Proposal (RFP) process. The success of the Subgrantee largely depends on its initial choice and ongoing handling of the Contractors.

118.1 Contractor Requirements

To be successful, the Subgrantee must have a procurement process that results in Contractors who:

- Demonstrate knowledge of weatherization program requirements
- Demonstrate a capacity to implement program requirements
- Indicate professionalism and a respect for the dignity of clients
- Specify a warrantee for all proposed work and materials
- Document all required licenses, bonds, insurance and other requirements of program, state and local law, regulations or codes
- Indicate company compliance with all required building and other permits
- Have tools and equipment necessary to complete their work within the standards of the program
- Complete all work in accordance with DOE, Department, and Agency policies, standards, and requirements
- Use qualified, well-trained and properly certified and licensed individuals to perform the weatherization work
- Work within H&S standards set by the program, such as lead-safe work practices.

118.2 Debarment and Suspension

The contractor must certify that neither it nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from entering into this a contract or agreement by any Federal or State department or agency.

118.3 Contractor Types

In designing an RFP, the Subgrantee will likely need several versions targeted to each of the various types of Contractors that are needed. A basic RFP for weatherization services may have common parts designed to ascertain qualifications common to all Contractors, such as those listed above.

The Subgrantee will determine its contracting needs based on its use of in-house crews for weatherization, the volume of work that needs to be covered and the funds available for the work.

Additional sections of the RFP may then be added specifically directed to the requirements for the different Contractor types, based on the different measures to be contracted out. A typical list of Contractors needed for the weatherization program may include:

- Energy auditor, final inspector
- Air sealing and other building shell weatherization contractor
- Insulation contractor
- Window and door contractor
- Heating and ventilation, mechanical systems contractor
- Weatherization materials and parts contractor

See various subsections, including those on the Energy Auditor, in the *CT Weatherization Program Operations and Training Manual*, Section 300, WEATHERIZATION SERVICES, for more detailed requirements which should be defined in the RFP.

See all of the *CT Field Guides (Auditor/Inspector and Installer)*, in all sections, for the program's technical requirements which must be a part of the auditor's knowledge and experience base and required in the RFP.

118.4 Supplemental Procurement Process

The RFP process will result in a pool of Contractors available for work on mechanical systems in the unit. If the replacement of heating systems (including heat pumps), water heaters is called for in the unit, the Subgrantee must conduct a supplemental procurement process to select and assign the actual Contractor. This policy pertains to all replacements no matter the cost category or funding source (DOE and ARRA).

The supplemental process requires the Subgrantee to obtain written bids from three (3) of its mechanical Contractors. The bids are to be based on an *in-person* site assessment by each Contractor to determine the replacement requirements. This assessment will ensure that all Contractors are bidding on the same item. The job will be awarded to the lowest qualified and responsible bidder for that unit able to deliver the work in the timeframe required

The three bids are submitted to the Department for prior approval, as a part of the waiver packet on the *Standard Quote Form (SQF)*.

118.5 Bidder Assurances

It is strongly suggested that the Subgrantee require an authorized individual with the bidder organization to sign an assurances page agreeing to a list of assurances which are fundamental to the program. The list of assurances below correspond to policies covered in the *Connecticut Weatherization Program Operations and Training Manual* and should also become a part of any weatherization contract that results from the proposal process. A list of assurances may include the following:

- Bidder acknowledges and agrees that the bid includes the costs of furnishing all labor, materials, tools and special equipment required for weatherization work.

- Bidder assures that weatherization services will be conducted using equipment and materials as approved by the Subgrantee and the Department.
- Bidder assures that all weatherization measures will be conducted using standard weatherization industry work practices prescribed and approved by the Subgrantee and the Department.
- Bidder assures that its weatherization employees will participate in technical training, appropriate to the work it is providing, as required by the Subgrantee and the Department.
- Bidder agrees to maintain all required certifications and licenses required by the state, the locality, the Subgrantee or the Department.
- Bidder assures that it will comply with weatherization measures in the work order, including all drawings, plans and specifications determined by the Subgrantee based on the Energy Audit and the work priorities set forth in the state weatherization policies.
- Bidder assures that all weatherization work will be properly permitted and completed in conformance to applicable building and other codes.
- Bidder assures that the company will conform to all Federal, State and local codes, regulations and statutes.
- Bidder assures that it will cooperate in Subgrantee compliance with State Historic Preservation requirements.
- Bidder agrees to provide proof of insurance and bonding in types and amounts required by the Subgrantee and Department.
- Bidder agrees to maintain Workman's Compensation and Unemployment Compensation insurance as required by law.
- Bidder agrees to furnish the Subgrantee Agency with evidence of adequate liability insurance coverage in the form of a Certificate of Insurance that co-insures Subgrantee under this policy at the level of insurance required by the contract.
- Bidder assures that when working on homes funded under the ARRA, compliance will be maintained with the requirements of the Davis-Bacon Act.
- Bidder assures that no claims for reimbursement will be submitted for work outside of the measures set forth by the Subgrantee's work order, without prior, written modification of the order.
- Bidder assures that no claims for reimbursement will be submitted for reimbursement of any costs incurred for any work performed, until such time as Subgrantee has performed an inspection and has determined in writing that any such work has been performed in a satisfactory manner.
- Bidder assures that all funds received for weatherization will be documented and accounted for and using generally accepted accounting methods.

- Bidder assures that its company will make available all records of weatherization work including testing results as required by the Subgrantee and the Department.
- Bidder assures that no gifts, money, other financial remuneration, or gratuities from persons in the company have been provided to the Subgrantee, the Subgrantee's employees, officers, or other persons associated with the Subgrantee, the Department, or the State of Connecticut Weatherization Program.
- Bidder assures that the company does not discriminate against any applicants, personnel, clients on the basis of race, color, creed, religion, sex, age, national origin, disability or status as a Vietnam era veteran. This is in compliance with Title VII of the Employment Act, Americans with Disabilities Act, and the Veterans.
- Bidder assures that it is not debarred or suspended from doing business under any federal, State of Connecticut, or local grants. Bidder agrees to verify that the name of the contractor does not appear on the Excluded Parties List System (EPLS).
- Bidder agrees to provide criminal background checks, as required.
- Bidder agrees to provide a drug free workplace, as required.

119 CONTRACTOR AGREEMENTS

When subcontracting for WAP services and materials, the Subgrantee is required to use the contract templates provided by the Department: *Contractor Agreement for Services* and *Contractor Agreement for Materials.* The use of these templates ensures that all agency Contractors are administering the program with consistent and uniform contractual obligations and other legal requirements.

Amendments: The Subgrantee agreement with its contractor(s) may be amended or extended by mutual agreement of the parties at any time during the period of the contract. Such amendment must be completed in writing and approved by the authorized individuals representing each party.

Approval: The Contractor agreement(s) must be executed and signed by an authorized signatory and witness from each party, the Agency (Subgrantee) and the Contractor.

Termination: The agreements shall remain in effect for the time period and quantity specified unless the contract is canceled by the Subgrantee because the Contractor has failed to:

- deliver materials as described in the attachment, or
- deliver materials in agreed upon time frame.

Policy Compliance: An explicit reference to this manual and the various field guides will require the Contractor's compliance without the need for details in the contract. In addition to the specific requirements in the templates, the agreement must state that Contractors are required to comply with all Connecticut WAP policies, procedures and technical protocols as set forth in the:

- *Connecticut Weatherization Program Operations and Training Manual*
- *Connecticut Weatherization Installer Field Guide 2012*
- *Connecticut Weatherization Auditor Field Guide 2012*

119.1 Contractor Agreement for Services

The Subgrantee must contractually ensure that Contractor(s) deliver weatherization services at the contracted funding amount and within program requirements, including the assignment of qualified personnel furnished with appropriate equipment to perform weatherization in a quality workman-like manner, using prescribed technical protocols, and installing materials that meet or exceed program specifications.

The contract will require that all work meet the workmanship standards of the weatherization program. Standards of workmanship will be at the core of the T&TA that will be a part of the contractor's relationship with the weatherization program.

All weatherization work completed by the contractor must meet descriptions and specifications identical to those quoted in the approved proposal.

The Subgrantee's agreement addresses other important requirements of the Contractor, including but not limited to the following. The Contractor is required to:

- Indemnify and hold harmless the agency against liabilities, as specified.
- Furnish all labor and supervision of labor for a proper job.
- Furnish all equipment, tools and supplies for a proper job.
- Only perform the work authorized by the Work Order issued by the Agency to the Contractor.
- Commence work within ten (10) days of the issuance of an authorized Work Order and complete the work within the specified time (see below).
- Claim payment for weatherization work only after work is satisfactorily completed, inspected, and accepted as satisfactorily completed by the Agency. (Staged payments may be authorized by the Agency.)
- Be paid by the Subgrantee Agency within 30 days of the job passing inspection, as defined by the Agency's and Department's policies.
- Comply with laws prohibiting discriminatory practices against any person or groups of persons, as specified.
- Comply with Anti-kickback laws.
- Recruit employees from workforce training programs.

- Comply with wage and hour laws, including overtime.
- Provide safe working conditions for their workers.
- Permit inspection of all work by authorized local, state, and federal agencies.
- Guarantee all work for one (1) year from the date of final acceptance by the weatherization agency.
- Repair any and all damage resulting from the work performed under the agreement.
- Attend all trainings as may be required by the Agency, Department or DOE.
- Maintain current all required licenses and certifications applicable to the work under the Contractor agreement (see below).
- Obtain all necessary permits.
- Retain and allow authorized access to all records for a period of three (3) years from the final payment; or, until all audits, litigation or other actions are resolved.
- Certify that neither the Contractor nor its principals is debarred or suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation by a federal department or agency.
- Meet procurement requirements required under WAP policies.
- Comply with additional requirements for ARRA funded work (see below).
- Furnish proof of required insurance coverage (see below).

The Subgrantee and Contractor have the option to agree on a Contractor Agreement for Materials and/or Services on a job-by- job basis until the Subgrantee's procurement is completed and in place for the new program year. The limit allowed on such agreements is $10,000.

119.2 Contractor Licensure

Connecticut state statute requires proper licensure and certification to conduct certain types of work on the unit. The contract agreement must require, but not limited to, the following active licensure and certificates, as applicable to specific Contractors:

- Home Improvement Contractor's Certificate
- Heating, Piping and Cooling License
- Electrician's Licenses (various may apply)
- Plumbing and Piping Licenses (various may apply)
- Sheet Metal License

Licenses that are required under state statute are administered by the:

Connecticut Department of Consumer Protection
License Services Division

165 Capitol Avenue, Room 147
Hartford, CT 06106

See Connecticut state statute: Regulations of Connecticut State Agencies, Title 20-332 et. Seq. Professional Licenses Department of Consumer Protection (4) Occupational Licensing.

119.3 Contractor Insurance

The Contractor is required to have insurance coverage, including:

- Workman's Compensation, as required by state statute.
- Manufacturer's and Contractor's Public Liability Insurance Policies with minimum coverage of $500,000 for each occurrence of bodily injury and $500,000 for each occurrence of property damage.

119.4 Damages for Delays

The Contractor will incur a fifty dollar ($50) per day penalty for damages resulting from an unauthorized delay in the completion of the Work Order, beyond the specified time stated in the Contractor's agreement.

119.5 Contractor Agreement for Materials

The Contractor is required to furnish materials that meet or exceed standards required by the Connecticut Weatherization Program. The Contractor is required to:

- Provide only the materials on an authorized Agency Purchase Order.
- Deliver all materials in the agreed upon timeframe; comply with an assessment of any damages or cancellation of the order resulting from a delay.
- Warrant all materials for two (2) years, over and above any applicable manufacturer's warranty.
- Comply with all policies, procedures and regulations of the Connecticut WAP program.
- Indemnify and hold harmless the Agency, the Department, and the State, against liability, as specified.

The Contractor must also agree that the terms of the approved proposal, including accepted bids, quotes and prices are incorporated as part of the contract. A description of the materials to be provided is included in the contract, including:

- specifications
- quantity
- unit prices (including taxes)

For information about requirements related to materials and parts see:

- DOE regulations at 10 CFR Part 440 – Appendix A, Standards for Weatherization Materials.
- *CT Weatherization Program Operations and Training Manual*, Section 300, WEATHERIZATION SERVICES.
- *CT Weatherization Field Guides (Auditor/Inspector, Installer 2012)*

SECTION 200 CLIENT SERVICES

200 INTRODUCTION

The Subgrantee is responsible for maintaining a process that works with low-income households, particularly the most vulnerable, to provide effective client services throughout the weatherization process; from the initial application for services, through the performance of weatherization work and to the final inspection of the dwelling.

201 APPLICATION

The Connecticut Weatherization Assistance Program (CT-WAP) uses a single application procedure with the Connecticut Energy Assistance Program (CEAP). All households certified as eligible for CEAP are also income eligible for CT-WAP and may elect to be placed on the Waiting List for weatherization services. As weatherization slots become available, names are then drawn from the Waiting List, in the order of their certification date and weighted by the program's priority factors.

201.1 Where to Apply

The Subgrantee is responsible for maintaining convenient and equal access points for applying for services. Connecticut households (including individuals) apply for services at the local office of the Community Action Agency (CAA) that covers the area in which the household resides. Eleven CAA service territories are located across the State where income eligibility is determined.

There are five CAA's that provide weatherization assistance to all qualified households within the state. The five agencies provide weatherization services to households that reside in other CAA territories as listed below.

The current list of all CAAs includes (*indicates a CT-WAP subgrantee. Weatherization services to non-WAP agencies are served by the CAA* above it.):

*New Opportunities, Inc. (Waterbury area) (203) 756-8151
The Community Action Committee of Danbury, Inc. (203) 748-5422

*Community Renewal Team, Inc. (Hartford area) (860) 560-5800 or 1-800-798-3805; (Middletown area) (860) 347-4465
Bristol Community Organization, Inc. (860) 582-7490
Human Resources Agency of New Britain, Inc. (860) 223-2288

*ACCESS, Inc. (Willimantic - Danielson area) (860) 450-7423
Thames Valley Council for Community Action, Inc. (Norwich-New London area) (860) 425-6681

*Community Action Agency of New Haven, Inc. (203) 387-7700
TEAM, Inc. (Derby-Ansonia-Shelton area) (203) 736-5420

*Action for Bridgeport Community Development, Inc. (203) 384-6904

Norwalk Economic Opportunity Now, Incorporated (203) 899-2484

CAAs may have additional, satellite CEAP application sites during the primary application period.

201.2 Right to Apply

A household cannot be denied the opportunity to make a formal application for weatherization services. An application appointment process may be used, but no one may be deterred or unnecessarily delayed in applying for weatherization benefits. Applications for weatherization shall be made available at any time during the contract period.

Households may apply directly for weatherization benefits without participating in receiving CEAP benefits. The combined CEAP/ CT-WAP application is still used in this instance and income eligibility is still based on CEAP guidelines.

Any applicant/household member 18 years of age or over may sign the application.

Low-income members of an Indian tribe will receive the same benefits and assistance provided to other low-income persons within the State of Connecticut.

201.3 Uniform Application Process

As noted, the process begins with the intake of a combined application for both programs. Once the household's income eligibility has been determined for CEAP, eligibility for weatherization is automatic, but the household must request those services.

Procedure: In general, the application steps are as follows:

1. The household contacts the CAA in the service area where its residence is located for services under the CEAP and/or CT-WAP.
2. Depending on the agency procedures, the CAA issues an appointment time for the CEAP/ CT-WAP application to be completed; and gives the household a list of standard information needed to complete the application.
3. The potential client visits the CAA at the appointed time where the CEAP/CT-WAP application is completed, signed and dated by the applicant with assistance by the agency intake worker. If additional information or documentation is needed to complete the application, the CAA intake worker gives the household a checklist of what is required that the client must provide within ten (10) days.
4. Social security numbers and birth dates must be provided by the applicant for all members in the household.
5. The CAA determines the household's eligibility for CEAP benefits and notifies the applicant of its receipt or denial of those benefits.

6. If the primary heat source is electricity or natural gas, the client must provide a copy of the bill which must be in the applicant's name, or the name of a household member who is of majority status, or an emancipated minor.
7. This information should be included in the CEAP file and forwarded to the CT-WAP by the CEAP section/ agency. If not, the weatherization program staff must obtain the verification to ensure it is included in the client's eligibility files.
8. An eligible household is concurrently issued a CT-WAP weatherization participation card or similar form by the CAA, instructing the applicant to return the form to the originating CEAP agency or the appropriate CT-WAP agency.
9. To participate in the CT-WAP, the applicant must sign and return the card.
10. Following receipt of the household's participation notification card, the completed application and other required case materials must be sent by the "feeder" CAA to the CT-WAP subgrantee which covers the weatherization service area in which the household resides (if different).
11. The CT-WAP agency then scores the household's position on the Waiting List according to the CEAP certification date and the program priorities.
12. When a weatherization slot becomes available the next applicant is pulled from the Waiting List, in order, by the CT-WAP agency.
13. The applicant is then notified by the agency that his name has been pulled from the list.
14. The received application and other materials are reviewed by the appropriate CT-WAP staff for completeness.
15. The applicant is notified of what additional documentation may be needed to verify the information on the application.
16. The WAP Subgrantee staff then notifies the applicant of program acceptance or denial for weatherization services.
17. Denied applicants are given a right to appeal.
18. The energy audit, the weatherization work and the final inspection occur with eligible units.

201.4 Waiting List and Priorities

Because of the demand for weatherization services, a Waiting List for services may exist, comprised of households that have qualified for CEAP and requested participation in CT-WAP.

The Subgrantee is responsible for maintaining the Waiting List for its service area(s). The agency may develop its own tracking procedures for the Waiting List. The system must be reviewed and approved by the State. It must not only account for the length of time on the list (from the date of CEAP eligibility certification), but also the Connecticut program's priorities for serving the most vulnerable households.

The program's service priorities are defined in the State plan and approved by DOE. Priority factors used to determine the order of services must include:

FACTOR	DEFINITION
Elderly	A household in which at least one member is elderly; defined as 60 years and older.
Disabled	A household in which at least one member is disabled: Disability is established by any member(s) receipt of Medicaid, Social Security Disability, Connecticut State Supplement to the Aged, Blind and Disabled, or Supplemental Security Income. Other medically based documentation from a qualified physician, establishing a disabling medical condition may be used.
Children	A household with at least one young child; defined as a child *under* six (0-5) years old
Energy Use	A household which is considered a high energy user; defined as having an annual heating cost exceeding $2,500.

Note on definition of *Child*: DOE regulations allow the State to define children as "dependents not exceeding 19 years or a lesser age set forth in the State plan". DOE regulations also allows for States to use the LIHEAP eligibility. Connecticut WAP uses the LIHEAP definition of "a child under six years old" as approved in the DOE State plan.

202 HOUSEHOLD ELIGIBILITY DETERMINATION

As noted above, the Connecticut Weatherization Assistance Program (CT-WAP) uses the same guidelines as the Connecticut Energy Assistance Program (CEAP) to determine the household's eligibility for weatherization benefits. Once a household is approved for energy assistance benefits under CEAP, it is considered CT-WAP income eligible and need only request placement on the appropriate Subgrantee's list for weatherization benefits.

While the initial eligibility is determined by the energy assistance agency, in the end, it is the SUBGRANTEE weatherization office which is responsible for ensuring the household's eligibility for CT-WAP. Therefore, client eligibility must be checked again by the weatherization agency prior to the start of work. Most of the time, checking may simply be a matter of reviewing the files transferred by the CEAP agency to the WAP agency (or within the same agency) to verify that the household has been determined eligible for the CEAP. It includes ensuring the eligibility of the dwelling unit. In instances where the time has expired since the household's certification, it will require a complete re-determination of the household's eligibility.

Additionally, if an energy auditor or other program staff encounters discrepancies between the energy application and the actual household situation such information must be reported to the CT-WAP weatherization management. For example, the auditor may notice a difference in the type of housing stock reported or have questions about the number and type of residents in the house. The CT-WAP agency must follow up on such discrepancies to ensure that the household is eligible for services.

The eligibility determination by the WAP agency will *always* include establishing the additional eligibility of the property for weatherization, as discussed below.

202.1 Energy Assistance Program Eligibility

The U.S. Department of Health & Human Services (HHS), under the Low-Income Home Energy Assistance Program (LIHEAP), provides a block grant of funds to the Connecticut Department of Social Services (DSS) to operate the Connecticut Energy Assistance Program (CEAP). CEAP has components which provide regular and emergency energy assistance heating benefits, including:

- Connecticut Energy Assistance Program (CEAP)
- Contingency Heating Assistance Program (CHAP)

Since the eligibility for CT-WAP is based on the applicant's certified eligibility for CEAP, some basic information regarding CEAP guidelines may be helpful.

A household is financially eligible to receive energy assistance benefits if the total, annual gross income of the household is at or below sixty percent (60%) of state median income, adjusted for household size.

Income means all cash receipts earned and/or unearned (benefits) received by all members of the applicant's household. CEAP guidelines specify what actual sources of income, including a portion of liquid assets, are included in the eligibility computations, as well as which sources are excluded from consideration. Income computations and verifications are completed within the guidelines as set forth by CEAP. Applicants must provide proof of income and assets for all household members who have resided in the household at any time in the thirty (30) calendar days prior to the CEAP application date.

A household may also be deemed eligible for CEAP if the entire household receives cash assistance from one of the following programs administered by the Department of Social Services (DSS):

- Temporary Family Assistance (TFA) (Temporary Assistance for Needy Families)
- State Supplement to the Aged, Blind and Disabled
- Refugee Cash Assistance Program

A household with a *mix* of income - from both DSS programs and non-DSS sources - are considered eligible for CEAP only if the *combined* household income, from all sources, falls within the eligibility guideline.

Assets (CEAP): All households must provide verification of liquid assets. The liquid asset limit is $10,000 for homeowners and $7,000 for all other households. Households, whose liquid assets exceed the appropriate limit, may still be eligible for energy assistance if the household's gross income, when added to the excess liquid assets is within the income guidelines.

Liquid assets considered in these computations are:

- Current checking account balance
- Current savings account balance
- Current value of Certificates of Deposit
- Current value of equities, stocks
- Current value of bonds
- Current value of an Individual Retirement Account (if available without penalty to a household member who is at least 59 1/2 years old.)

The purpose of the liquid assets test is to ensure that winter heating assistance dollars go to households most in need; that is, to people without the financial means to heat their home.

202.2 CT-WAP Eligibility

DOE regulations permit a state program to make a household unit eligible for WAP once they are determined "eligible for assistance under the Low-Income Home Energy Assistance (LIHEA) Act of 1981, provided that such basis is at least 200 percent of the poverty level determined in accordance with criteria established by the Director of the Office of Management and Budget".

Based on this provision, once a household's eligibility has been established for the CEAP (LIHEA) program, the family is eligible for Connecticut WAP services, if requested.

The determination of CT-WAP eligibility is valid for a period of twelve (12) months. In Connecticut, this means that the first step in the WAP process, the Energy Audit, must begin within twelve months of the date of the family's certification for CEAP. A review of the family's eligibility should be conducted when the case is pulled from the Waiting List. If, when the name is pulled from the Waiting List, there is missing information or, if the twelve month period is expired, or is about to expire, the Subgrantee must have the household's eligibility for CEAP established before any weatherization services may commence. The re-determination of the household's CEAP certification does not alter its position in being drawn from the Waiting List.

For additional DOE guidelines and requirements see DOE Weatherization Program Notice 12-8, 2012 Poverty Income Guidelines and Definition of Income. This program notice explains DOE guidelines on income verifications, computations, inclusions and exclusions.

202.2.1 Eligibility Verification Procedures

The CT-WAP Subgrantee is responsible for maintaining a procedure for the accurate exchange of the names of eligible cases and of pertinent case materials between the CEAP WAP programs. This procedure may be required with the other local "feeder" CEAP agencies and/or within the Subgrantee's own agency, as applicable. Additional procedures must be in place to re-establish the household's CEAP eligibility for expired eligibility determinations or other eligibility issues.

CT-WAP Subgrantee staff has the responsibility to ensure that the household is eligible for weatherization services by reviewing and approving what was presented on the joint application for CEAP and WAP.

Eligibility information can be accessed and maintained in the CEAP software (e.g. *CAPTAIN, FuelWare*) where available for use. The CT-WAP staff should review the CEAP benefit award and certification date, the type of dwelling recorded on the application, the household members, and the number of individuals living in the home. Errors can affect the household's eligibility for weatherization services and should be checked carefully.

It is the responsibility of the WAP agency to have eligibility and other information available for review by the State or other appropriate agencies. Since the household's WAP eligibility is based on its eligibility for CEAP, a copy of the document(s) certifying CEAP is sufficient for the case file.

The WAP program staff may need to review and obtain relevant documents from its CEAP staff to ensure the WAP case is complete.

203 PROPERTY ELIGIBILITY

The Subgrantee must have procedures in place to ensure that the property to be weatherized is eligible. The property must be occupied by a household which has been determined eligible based on program guidelines. Furthermore, the agency must establish who actually owns and occupies the property, and obtain the necessary agreements to provide weatherization. Weatherization services may not be duplicated, and a unit may not be re-weatherized if it has previously received DOE funded CT-WAP services at any point after September 30, 1994.

203.1 Single-family Units

Single family dwelling units are eligible for weatherization if occupied by an eligible household, based on program guidelines, and not otherwise ineligible as detailed below.

203.2 Multi-family Unit

Weatherization of multi-unit buildings requires that a percentage of the occupants of the building be eligible based on the program guidelines defined above. The percentage depends on the number of units in the multi-unit building:

- For duplexes and up to four-unit buildings, 50% of the units must be occupied by eligible households.
- For complexes with five or more units, 66% of the units must be occupied by eligible households.

This also means that an application and eligibility determination are *not* necessary for the other, non-eligible, or empty units.

See the DOE regulations at 10 CFR 440.22(b) for additional information.

203.3 Rental Units

The Subgrantee may not refuse to weatherize an otherwise eligible rental property. Weatherization services are to be provided to owner-occupied and rental units alike with no priority given to either. Applications from households who are renting should be ranked and verified in the same manner as used with households who own the home in which they live.

203.4 Ineligible Dwellings

The weatherization of non-stationary campers, R.V.s or trailers is not allowed even if the owner (tenant) has a post office box address. (A manufactured "mobile" home that is in a fixed location *is* eligible.)

Dwelling units are ineligible to be weatherized if they are currently for sale, or will be for sale within 180 days of the date of the Weatherization agreement. Sale or loan status can be accessed electronically by the local agency.

Dwelling units are ineligible to be weatherized if they are in foreclosure or in a process of mortgage mediation.

Dwelling units are ineligible to be weatherized if in the opinion of the Subgrantee weatherization management they are in need of major rehabilitation. In some instances, depending on the extent and time needed, the weatherization of a dilapidated property may be deferred until the needed rehabilitation is completed.

203.5 Re-weatherization of Units

Weatherization program funds may not be used to re-weatherize a unit except as the previous weatherization was completed on or prior to September 30, 1994; and that it meets certain other criteria, as approved by the State. This applies regardless of who resided in the unit at the time, or since.

It is the responsibility of the Subgrantee to determine whether a unit has already received weatherization services and the date on which those services occurred.

Funding Note: The re-weatherization of an unqualified, previously weatherized unit will result in questioned or disallowed costs to the Subgrantee.

Since many other households have never received services, the State policy is that re-weatherization should not occur as a routine practice. Units are usually recommended for re-weatherization when there is a no heat request. An energy audit must be completed to determine any additional measures.

Reporting note: All dwellings previously weatherized under a federally funded program have already been counted and reported as a weatherized dwelling. Re-weatherized units will be reported separately as a Re-weatherized unit.

203.6 Proof of Ownership

Only the owner of the property or an authorized representative may authorize weatherization work on the eligible unit. Homeownership must be verified through contact by the CAA staff with the local assessor's office. If the client is not listed on the deed; or additional individuals (such as a spouse) listed on the deed are not on the energy application, further review is required to verify permission authority (and household makeup). This additional review may take the form of a client interview, followed up by documentation verifying what was said by the client (e.g., in a matter of divorce, the agency would get verification to that effect).

This step is critical, as weatherization work may not begin until home ownership is verified, proper permission is obtained, and all household information is deemed accurate. If it is discovered that an ineligible client is weatherized, costs will be disallowed by the State.

While the term "landlord" may be used, do not take for granted that the individual with whom the tenant is dealing is the actual owner of the property or has written authorization to sign for the owner. Ownership of the property must be verified in all cases, regardless of who is occupying it.

The owner or an authorized representative must approve all weatherization work.

203.7 Proof of Tenancy

If the unit to be weatherized is a rental, proof of the applicant's tenancy must be obtained. The preferable documentation to prove tenancy is a lease, rent receipt or a written statement. Such documents must include the applicant's name; the address of the unit to be weatherized; and the name, date and signature of the owner, landlord or other authorized representative.

203.8 No Undue Enhancements

The goal of weatherization is to reduce energy costs for the client. When determining the work plan on a rental unit, the Subgrantee should ensure that the benefits of the weatherization assistance accrue primarily to the low-income tenants in the unit.

Such measures as window replacement and door replacement should be used sparingly in rental units, and only as clearly warranted by the Energy Audit. Furnace and water heater replacement are not allowable measures in a rental unit. No undue enhancement to the value of the property should occur beyond the scope of the energy conservation work.

203.9 Weatherization Agreement

The Subgrantee must have procedures in place to ensure that written permission is obtained from the actual owner of the property prior to the commencement of any weatherization work.

Procedure: The consent to proceed must be obtained using the current version of the form *Weatherization Agreement.*

The agreement memorializes the owner's permission for weatherization personnel to conduct the energy audit and install appropriate weatherization measures. The owner agrees that such services will be performed within available funding, as cost-justified by the energy auditor or as required for health & safety (H&S) reasons; and within other determinations and limitations defined by agency policies and procedures.

The owner accepts responsibility to store and dispose of any construction waste leftover from the weatherization work in an appropriate and safe manner.

The owner affirms that the property is not under foreclosure, or for sale, nor will be for sale within six months of the date of the agreement.

The agreement must be signed by the owner of the unit and, where applicable, the tenant.

If the unit is a rental, additional stipulations apply, as follows.

203.9.1 Renter Eviction Limitations

The owner agrees that once the weatherization work is completed, there will be no eviction or removal of tenants, as long as the tenant complies with every ongoing obligation and responsibility owed to the owner.

If such eviction or removal occurs, the owner will be asked by the Subgrantee to justify the reason for the action. If no adequate justification for the eviction is forthcoming, the agency will initiate action against the owner in a demand letter to recover within a defined period, the full cost of the weatherization work completed on the unit. Follow-up action against the owner may include necessary legal action for the breach of the signed agreement.

Appropriate justification for eviction of a tenant may include factors such as recurring non-payment of rent, destruction of the property, or any legally valid reason for eviction as defined in state or local laws.

If the eviction does not appear to be justified, the Subgrantee should also refer the tenant to legal services available in the area for possible action.

203.9.2 Subsidized Units

The weatherization of a unit does not affect the status of a tenant who is in a low-income, federally subsidized unit. No change in the recipient's eligibility or the terms or status of the rental contract or agreement may be made under such programs because of the weatherization benefit.

This includes the Housing Choice Voucher Program (Section 8) administered by HUD.

203.9.3 Rent Increase Prohibition

For a period of two (2) years from the date the work is completed, there may be no increase in the rent charged for the weatherized unit solely as a result of the weatherization work.

The owner will be asked by the Subgrantee to justify any increase in the rent that occurs in the period. Unless increases can be shown to be related to specific matters other than the weatherization improvements, the Subgrantee may initiate action against the owner to recover the full cost of the weatherization work completed on the unit. Follow-up action against the owner may include necessary legal action for the breach of the signed agreement.

Possible justifications for an increase include factors that are beyond the value of the weatherization. An increase in the owner's property taxes may be an example.

Any dispute of the circumstances for a rent increase will be reviewed by the local agency's weatherization management to determine whether the increase is justified. The determination may also be reviewed by the State, if requested by the parties involved.

203.9.4 Landlord Contribution

In most instances, the Subgrantee must require the financial participation of the owner in the cost of weatherizing a rental property. The owner's share of the cost is to be twenty percent (20%) of the actual cost of the materials applied in the unit; however the maximum owner payment shall be capped at $500.

The Subgrantee must notify the property owner of the final value of the materials to be installed under the approved energy audit of the dwelling unit.

In multi-unit buildings - weatherized under the '50% or 66% rules' - the owner's participation will be on the same basis for each *eligible* unit. Again the share per eligible unit will be 20% of the materials or $500, whichever is less.

Exemption: Property owners who are themselves at an income level where they would be eligible for weatherization assistance will not be required to make a contribution to the weatherization costs. It is not necessary for such owner to actually apply for weatherization to establish eligibility, but the owner's income must be verified to be eligible for this exemption.

Under exigent circumstances, the State reserves the right to otherwise waive the requirement regarding contributions, on a case by case basis.

204 UNIT DEFERRAL

There are circumstances under which weatherization for an individual unit may have to be deferred, especially when the performance of services may present a H&S issue to the occupants or workers. The Subgrantee is required to have a deferral process in place that informs the owner and applicant as to the status of the application whenever it changes.

Procedure: If weatherization services are to be deferred, notification is to be made on the form, *Notice of Postponement of Services.* The form is directed to the owner of the unit who is responsible for the alleviation of the deferral problem. Where applicable, a copy of the notice is also sent to the tenant (applicant). The notice must identify the specific reason(s) for the deferral and include an adequate timeframe for the correction of the problem(s) by the owner. The form must be signed by the owner and the auditor, and a copy left with the owner, the other copy placed in the client's file. If there are concerns, the form can be completed by an agency representative and sent to the property owner by certified mail.

The Subgrantee should be prepared to suggest solutions including alternative resources which may be available to help alleviate each deferral problem.

Deferrals may take place during any phase of the weatherization process. The Energy Auditor, the Subgrantee or the weatherization crew may recommend the deferral of work on a unit at any point where a H&S risk to the occupants, or to the workers, is identified.

The decision to defer weatherization work is to be requested from, and approved by, the Subgrantee weatherization management. These requests and approvals must be fully documented in the case file.

See *CT WAP Operations and Training Manual*, Section 902, HEALTH & SAFETY DEFERRAL for detailed information regarding the deferral of work for reasons of the health and safety of the occupants and weatherization workers.

204.1 Deferral of Services

Some of the circumstances under which a unit is to be deferred include, but are not limited to:

- Any existing condition that could endanger the health and/or safety of the work crew and/or contractor and cannot be safely remediated within the scope of weatherization program funds.
- Problems with the building structure or the condition of its mechanical systems including electrical and plumbing systems that are in such a state of disrepair that failure is imminent.
- Extent and condition of lead-based paint in the house that would potentially create H&S hazards for the occupants or workers.
- Extent and condition of asbestos in the house would potentially create further H&S hazards for the occupants or workers.
- Elevated carbon monoxide levels where abatement is not possible using weatherization funds.
- Existing moisture and resulting problems such as mold that cannot be resolved.
- House with sewage or other sanitary problems that not only endanger the occupants, but the workers who would perform weatherization work.
- A contagious or otherwise dangerous health condition of an occupant.
- Occupant who is uncooperative, abusive, or threatening to crew, subcontractors, auditors, inspectors, or others who must work on or visit the unit.
- Evident illegal or dangerous activities that may be taking place in or about the property.

204.2 Deferral Resources

Deferrals should be referred to case work staff within the Subgrantee organization, where appropriate referrals may be made to alternative resources to alleviate the condition causing the deferral. The Subgrantee should establish lines of communication with other funding sources so that referrals can occur in an effective manner.

The following is a list of potential funding sources to help remedy situations in a home:

- U.S. Department of Housing and Urban Development (HUD) - HOME Program
- HUD - Community Development Block Grant

- U.S. Department of Health and Human Services - Community Services Block Grant
- U.S. Department of Agriculture - Rural Economic Community Development
- State-funded housing and rehabilitation programs
- Low-income program funds provided by local utilities
- City-funded housing and rehabilitation programs
- Donations or financial participation from landlords
- Donations from local churches or community groups
- Local Department of Health or Social Services Department

204.3 Deferral Resolution

If the issues specified on the *Notice of Postponement of Services* are not addressed by the property owner within the allowed timeframe, the Subgrantee may deny further weatherization services. In this instance, a written denial notice must be issued to the applicant by certified mail, as noted below.

Time extensions may be granted, if in the judgment of the agency's weatherization program management, the owner is making progress on the underlying issues and may be expected to resolve the problem within a reasonably extended time. Because such extensions tie up agency resources and prevent the use of funds on other eligible units, it is recommended that no more than two (2) extensions be granted.

Once the specified deferral issues are adequately addressed, the process may continue as authorized by the Subgrantee.

205 NOTIFICATIONS AND APPEALS

Since the initial eligibility determination is made by the CEAP agency, that agency's eligibility notifications are used initially with the application for energy assistance. The CEAP appeal process would also apply if assistance is denied.

However, once the applicant has been placed on the CT-WAP Waiting List, the receiving Subgrantee is required to notify the applicant of any subsequent actions on the case.

205.1 Eligibility for Services

The Subgrantee must notify the applicant when the name is selected from the Waiting List for weatherization services. A written notification should include an explanation of the subsequent weatherization program process, with particular attention to any additional requirements of the applicant for CT-WAP.

205.2 Denial of Services

If at any point after the applicant has been selected from the Waiting List the case is denied, the Subgrantee must provide a *written* denial notice to the applicant. The denial notice must clearly state:

- the reason for the denial;

- a citation of all applicable policy manual sections and/or federal regulations on which the decision is based;
- that the applicant has a right to appeal the decision;
- that the applicant has fifteen (15) business days from the date of the notice to appeal; and,
- the procedure for sending an appeal to the Subgrantee.

205.3 Appeal

Appeals received after the fifteen-day period should be returned with a notice stating that it will not be considered as it was submitted beyond the deadline.

The Subgrantee may use its own official procedure for hearing and appeals decisions. Appealed decisions are to be decided by an agency staff person, at least one level higher than the person who made the decision on the case eligibility. That person's decision should be communicated to the appellant in writing, no later than ten (10) business days following the receipt of the appeal. If the agency fails to meet this deadline, the appeal must be automatically forwarded by the agency to the State for action.

The appeal decision notice must clearly state the acceptance or denial of the appeal. If accepted, the weatherization process continues where it was left off.

If the appeal is denied, the notice must state:

- that the appeal has been reviewed and denied;
- that the appellant has a right to a final appeal to the State;
- that the appellant has an additional ten (10) business days from the date of the second letter to appeal to the State; and,
- the procedure for further appeal to the State, including the address of the Grantee for further appeal.

When the appeal is received at the State, the State weatherization program manager will review the case. The Grantee may request case file materials and talk personally to the Subgrantee staff or the appellant. The appellant and the Subgrantee will be notified of the State's decision within ten (10) business days of its receipt of the appeal. After the State decision is issued, no other administrative appeal steps will be available to the denied applicant.

Nothing in this process is to be construed as limiting an applicant’s right to seek additional legal and judicial remedy.

206 CLIENT FILE MAINTENANCE

Note: Client file maintenance for all Work performed and reported as DOE completed CT WAP sites must be in compliance with DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, CT WAP Weatherization Filed Guided SWS Aligned Edition and the current year State Plan/Master File.

The Subgrantee is responsible for maintaining a complete and unique file on each household whose application is moved off the Waiting List for weatherization services. All paperwork relative to the individual case must be labeled with a unique case number assigned by the Subgrantee.

Weatherization case files should include all notifications, referrals, forms, notes, correspondence and other documentation explaining the eligibility of the unit, the client's eligibility for services and the types of services to be delivered.

206.1 Computerized Records

The State encourages the use of computerized case file records. So long as the required information is accessible to the State in a clear and complete format there is no need to duplicate information in a database with printed copies in a hard copy case file.

If, for example, an accessible database has the capability of storing and retrieving documentation of the household's CEAP information, there would be no need to have additional copies in the file. In another example, the Energy Audit software may store data regarding the unit's weatherization audit possibly making a printout of documents from that database unnecessary.

Any forms that require an original signature from the applicant, the owner of the unit, the Subgrantee or other persons, must be in hard copy in the case file. Such forms may include permissions and agreements regarding weatherization services, for example.

The State will monitor Subgrantee program compliance using case file documentation as required. Whether in hard copy or a digital format, whether located in the WAP or the CEAP files, whether required for local, State or federal monitoring; all information must be readily available to establish the eligibility of a recipient, describe and justify the services rendered, and account for expenditures on each unit.

Funding note: Failure to properly document weatherization eligibility and services may result in disallowed or questioned costs and recovery by the State of expenditures in the case.

206.2 Case Eligibility Documentation

As the first step involves a determination by the CEAP agency, much of the original documentation will reside there.

A typical case file will include:

- A completed, consolidated application for the CEAP/ CT-WAP (both agency files should have a copy)
- Copies of documents used to verify the income of the household (CEAP agency file)
- Copies of all correspondence related to the case, including a copy of the notice of eligibility (both, according to which agency generates)
- Copies of all documents used to verify ownership of the unit (CT-WAP agency)
- Copies of all documents used to verify tenancy of the unit (CT-WAP agency)

- Utility consumption data, as applicable (CEAP/ CT-WAP)
- A Signed Weatherization Agreement (CT-WAP)

Since the eligibility for CT-WAP is determined by the household's eligibility for CEAP, the CT-WAP case file only needs to contain documentation of the CEAP eligibility, including the most recent date that the family was certified.

206.3 Weatherization Services Documentation

All information related to the weatherization services must also be documented in the CT-WAP case files. A typical file will include:

- Energy Audit on the unit with pre weatherization readings and prioritized measures
- Building Weatherization Report(s), all versions
- Blower Door Data Input Sheet/Work Order
- Job specifications and the work order sheet with Subgrantee's authorization to proceed
- Contractor's supplemental bid sheet(s), as applicable
- Modifications to the work order
- Subcontractor's documentation such as ongoing pressure diagnostic readings
- Contractor invoices showing all material and labor charges
- Agency summary of charges for labor and material, if a crew is used
- Receipts from client verifying the issuance of required pamphlets such as the information on lead based paint
- A signed Completion Certificate

206.4 Denied Case File

Cases where the file is closed and weatherization work has not been completed are to be maintained also, but kept separate from eligible cases. The case file will include:

- The completed application for the CEAP/ CT-WAP
- Notice of denial
- All correspondence related to the case
- Documentation of reason(s) used to determine ineligibility
- Written case notes as applicable
- Documentation related to a denied applicant's appeal, as applicable
- Notice to appellant regarding all appeal decision
- Copy of further appeal to the State, as applicable
- Copy of the State decision on the appeal, as applicable

SECTION 300 WEATHERIZATION SERVICES

300 INTRODUCTION

The Connecticut Weatherization Assistance Program (CT-WAP) approaches the unit as a whole, using advanced diagnostic tools and techniques to determine the measures that will deliver optimum efficiency for the most reasonable cost. In Connecticut the program weatherizes:

- Single family units and small multifamily buildings (less than 10,000 square feet, *and* less than 5 units);
- Mobile homes;
- Large multifamily complexes (larger than 10,000 square feet *or* buildings comprised of 5 or more units); and
- Homeless and Domestic Violence Shelters.

Section 300 of the *Connecticut Program Operations and Training Manual* provides state operational policies and procedures covering the determination and implementation of the Weatherization services provided by the Subgrantee.

It is the responsibility of the Subgrantee, under contract with the State to install the most cost-effective weatherization measures in a unit based on a proficient, detailed analysis of the unit's needs attained through a quality Energy Audit.

Note: all Work performed and reported as DOE completed CT WAP sites must be in compliance with DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, CT WAP Weatherization Filed Guided SWS Aligned Edition and the current year State Plan/Master File.

301 GENERAL WEATHERIZATION REQUIREMENTS

The Subgrantee has responsibility to implement weatherization services under the WAP in compliance with all applicable federal, state and local regulations, laws and codes which apply to the types and quality of materials, the standards of workmanship, installation procedures and qualifications of persons performing the work.

Weatherization program requirements and standards are further detailed in the following references:

- 10 CFR Part 600 financial assistance rules
- 10 CFR Part 440 including 10 CFR 440, Appendix A: "Standards for Weatherization Services"

- DOE Weatherization Program Notices
- Connecticut Weatherization Guidance notices
- State and Local Housing Codes
- State Licensing and Certification Requirements for various categories of weatherization workers
- Connecticut's WAP State Plan, ARRA State Plan,& Health & Safety (H&S) Plan
- **Connecticut Weatherization Field Guide SWS aligned Edition**
- Section 106 of 16 U.S.C. 470 the National Historic Preservation Act (NHPA)

301.1 Subgrantee and Contractor Staff Expectations

Subgrantee and contractor staff must behave in a professional manner at all times, as they function as WAP representatives.

Subgrantee and contractor staff must use all required Protective Personal Equipment (PPE) and to comply with Federal, State or Local codes or Program Policies; including, but not limited to OSHA and Lead Safe Weatherization.

Prohibited Activities

- Drinking, using illegal drugs, or the inappropriate use of prescription drugs while on the job or in interactions with the client.
- Harassment, including but not limited to, Sexual Harassment.
- Engaging in any discussion of work, or the performance of work, with the client either at no-cost or at-cost of the client outside of the scope of work with the client.
- Violence against self, other staff, or the client.
- Presence of weapons or firearms at the job site.
- All other illegal activities not specified above.

301.2 Workmanship

Weatherization work, whether conducted by the agency's own crews or by subcontracted personnel, must meet the standards of workmanship established by the program. Standard work practices are detailed in the **Connecticut Weatherization Field Guide SWS Aligned Edition and CT WAP Quality Work Plan** as the primary source for protocols and technical definitions of the work that is required. Program standards and protocols in the Field Guides must be adhered to and may only be altered by subsequent revisions of the guide, or by Connecticut Program Guidance Notices.

Workmanship standards include the following four basic requirements:

- use of qualified and trained personnel to conduct weatherization work;
- use of generally accepted weatherization protocols, methods, techniques and tools;
- installation of prescribed materials, parts and equipment; and
- Weatherization work conducted in a safe and healthy work environment.

The Subgrantee **must contractually require** its contractors to comply with these standards as well as detailed regulations such as those above.

Jobs and job sites should be monitored to ensure that agency crews and contractors abide by these general workmanship standards.

301.3 DOE Materials Standards

Note: all Work performed and reported as DOE completed CT WAP sites must be in compliance with DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, CT WAP Weatherization Filed Guided SWS Aligned Edition and the current year State Plan/Master File.

Weatherization contractors are required to install equipment, materials and parts which meet the standards set forth by the Department of Energy at 10 CFR 440, Appendix A: "Standards for Weatherization Services." This section of the federal regulations details standards for materials and technologies conformance in fourteen specific areas of weatherization, for the most part referring the contractor to industry standards for each measure.

For example, insulation installers must meet the guidelines set forth by the American Society for Testing and Materials (ASTM) in the areas of Thermal Insulating Materials for Building Elements. Similarly, standards for doors and windows are set by the American National Standards Institute. The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) sets the standards for work on heating, cooling, and ventilating systems.

These examples and standards of conformance are addressed in the DOE regulation cited above, as listed here:

- Fire Safety Requirements for Insulating Materials According to Insulation Use Thermal Insulating Materials for Building Elements
- Doors and Storm Window-Caulks and Sealants
- Weather-stripping
- Heat Exchangers
- Boiler/Furnace Control Systems

- Water Heater Modifications
- Waste Heat Recovery Devices
- Boiler Repair and Modifications/Efficiency Improvements
- Heating and Cooling System Repairs and Tune-ups/Efficiency Improvements
- Replacement Furnaces, and Boilers
- Chimneys and combustion gases venting systems
- Air Conditioners and Cooling Equipment
- Screens, Window Films, and Reflective Materials

The Subgrantee must institute policies to ensure compliance with these standards in its direct delivery of weatherization services and in any subcontracts it has for such services. Compliance by contractors must be contractually required and monitored by the Subgrantee.

Funding: Compliance with standards will be monitored by the State. Weatherization measures installed that do not comply with WAP standards shall result in questioned and/or disallowed costs for the weatherization work completed on a unit.

301.4 Weatherization Contractors

When contracting work, the Subgrantee must contractually require that the weatherization work is completed by contractor employees. This includes stipulation that the contractor may not further subcontract work without the specific, express permission by the Subgrantee. The contractor must also employ an adequate number of properly trained and supervised workers to accomplish the work. Those contractors completing the shell work must have a qualified Crew Chief/Supervisor at the work site at all times.

In conducting weatherization work the contractors must comply with all state and local licensing requirements. Skilled workers such as electricians, plumbers, and heating professionals must currently hold all required licenses and credentials.

Compliance with other federal regulations regarding employee qualifications is also a requirement. For example, under certain circumstances lead safe work must be completed under the supervision of an EPA Certified Renovator.

Contracted Energy Auditors are required to maintain a current certification from the Building Performance Institute, Inc. (BPI). These Auditors are also required to attend additional training as required by the State.

The Subgrantee must contractually ensure that its weatherization contractors comply with these requirements. The compliance should be verified and monitored by the Subgrantee.

Funding: Compliance with these qualifications will be monitored by the State. Weatherization measures installed by unqualified personnel, whether employed by the Subgrantee, or by its

contractors, shall result in questioned and/or disallowed costs for the weatherization work completed on a unit.

301.5 Training

Note: all training related to work performed and reported as DOE completed CT WAP sites must be in compliance with DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, CT WAP Weatherization Filed Guided SWS Aligned Edition and the current year State Plan/Master File.

In the belief that training is the key to a vital program, the WAP maintains an aggressive training regimen which places specific training requirements on the Subgrantee and its contractors.

The Subgrantee must ensure that its weatherization staff and contractors maintain the required level of training and certifications required for conducting the work.

The volume of work assigned to a contractor will, in part, depend on the level of expertise developed in its workforce. A company with better trained employees will be given more job assignments. Contractors whose work fails to meet the program standards because of the lack of required training will be at risk of less work volume, and even contract termination.

The Subgrantee must ensure compliance with training though its contract with the companies providing its weatherization services. Subgrantees are responsible for periodically reviewing the training compliance of individual company personnel.

Funding: Compliance with training requirements will be monitored by the State. Weatherization measures installed by untrained personnel, whether employed by the Subgrantee or by its contractors, shall result in questioned and/or disallowed costs for the weatherization work completed on a unit.

See *CT Program Operations and Training Manual,* Section 500 TRAINING for additional information.

301.6 Weatherization Tools

Weatherization work requires the expert use of a number of specialized tools. Proper attic insulation cannot be conducted without the skillful use of an insulation blowing machine, for example. Or, ongoing pressure diagnostics with use of the Blower Door and related tools are essential to effective air sealing. Underpinning the more sophisticated equipment are more basic tools such as those used in basic carpentry, plumbing and electrical work.

It is up to the contractor to provide the necessary tools for the job. The Subgrantee must require this contractually and periodically monitor the use of proper tools and equipment at the job site.

Some typical weatherization tools include:

AUDITING TOOLS: Blower Door (with frame, shroud, digital manometer, tubing, probes, smoke bottle), duct leakage performance tester (Duct Blaster), gas leak detector (Leakator), combustion analyzer (Bacharach), CO detector , draft gauge, moisture meter, exhaust vent flow hood, air flow meter, bore scope visual inspection equipment, infrared camera, digital camera, tape measure,

flashlight, pocket thermometer, non-contact voltage detector, circuit tester, volt/amp meter, vacuum cleaner, fire extinguisher, first aid kit, step ladder, calculator, clipboard, paperwork, and audit & notice forms.

PRESSURE DIAGNOSTIC TOOLS: Blower Door (with frame, shroud, digital manometer, tubing, probes, smoke bottle), probe (for zonal tests), hose kit, smoke bottle/ stick; duct leakage performance tester (Duct Blaster), exhaust flow hood, air flow meter, duct mask sheets, flex duct, pressure/flow gauge (DG 700).

INSULATION TOOLS: insulation blower machine, insulation foam sprayer (including 2-part foam equipment).

COMBUSTION APPLIANCE TOOLS: combustion analyzer (Bacharach or similar, with printer), gas leak detector, draft gauge, lighter (w/long handle), mirrors (clear-flame), soap bubbles, bleed jug and hose, copper tubing for analyzers, jumper wires, lag bolts or plugs

PERSONAL PROTECTION EQUIPMENT: safety glasses, polyethylene- coated suit (Tyvek), safety-toed footwear, work gloves, respirator, hard hat, full face shield.

OTHER: tape measures, flashlights, multiple screwdrivers, large pry bar, small pry bar, hammer, cordless drill and various bits, drill bit for sidewall inspection, pen and paper, digital pocket thermometer, high temp silicone, duct tape, tinsnips (right, left, center), 14” roll flashing material, crimper snips, extension cord, trouble lights, coveralls, gloves, dust masks, hard hat, full face shield, respirators, personal protection equipment (PPE), wrenches – open ended (assorted sizes), rags/hand cleaner, nut drivers – ¼”, 5/16” 3/8”, crescent wrench, self-tapping screws, small paneling nails, trash bags, extra batteries, recharging equipment, cleaning equipment, calibration equipment, drop clothes, traps, small plastic garden rake, hockey stick

See *CT Weatherization Field Guides SWS Aligned Edition* regarding the effective use of weatherization tools.

301.7 Job-site Health & Safety

The Subgrantee must have policies and procedures in place which require all standard precautions to ensure a hazard free job-site for the protection of its own crews, the crews of its contractors and the occupants at the unit. The health and safety of the household must be addressed throughout the weatherization process.

See *CT Program Operations and Training Manual*, Section 400 Health & Safety.

See *CT Weatherization Field Guide SWS Aligned Edition,* which also addresses workplace safety and client protection.

301.8 Health & Safety Measures

The Subgrantee is required to address H&S (H&S) measures necessary to ensure standard weatherization measures do not worsen health or safety issues in the unit. H&S issues must be addressed prior to installing weatherization measures including running a blower door.

See *CT Program Operations and Training Manual*, Section 400 Health & Safety.

301.9 Other Legal Compliance

Note: all contracts for work performed and reported as DOE completed CT WAP sites must be in compliance with DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, CT WAP Weatherization Filed Guided SWS Aligned Edition and the current year State Plan/Master File.

The Subgrantee must contractually ensure that its contractors conduct all weatherization activities in compliance with legal and regulatory requirements, including:

- Weatherization employees must maintain all certifications and licenses required by the State, the locality, and the Subgrantee.
- Weatherization work will be properly permitted and completed in conformance to applicable building and other codes.
- Companies must conform zoning codes in the performance of weatherization work.
- Weatherization work must be conducted in compliance with State Historic Preservation Office requirements.

301.10 Savings to Investment Ratio (SIR)

Each weatherization material and package of weatherization materials installed in an eligible dwelling unit must be proven cost-effective in order to qualify for DOE funding.

The Subgrantee must ensure that weatherization funding is spent on energy efficiency measures which will result in a Savings to Investment Ratio (SIR) of one to one (1:1) or more. This ratio is the number that results from dividing the energy cost savings of a measure over its expected lifetime, by the total cost of the materials and the installation of the measure.

As an <u>example</u>: The cost of insulating an attic is $1,000; and the projected energy savings is $150 per year (present value); and the insulation is expected to be effective for a life of ten years. The SIR equation would be ($150 x 10 years) / $1,000 which equals 1.5. This means that for every $1.00 spent on this measure, the savings would be $1.50. So, the SIR number is a ratio of 1.5:1.00 (read: “1.5 to 1”). Since the result (1.5) is more than the threshold SIR of 1:1, the measure is deemed cost-effective and allowed.

<u>Procedure</u>: As the Auditor makes weatherization recommendations for the unit, information on each proposed measure, including cost information, is inputted in the *Weatherization Assistant 8.9 (NEAT, MHEA)* audit software. The software will then determine the SIR number for each measure. Only those measures with an acceptable SIR (one or more) will be added to the initial output of measures from the software.

Not only does the SIR prove the cost-effectiveness of the individual measure, it directs the Auditor in ranking measures, in the order in which they are to be installed. For example, perhaps sealing a large bypass gap into the attic costs $1.00 for every $3.00 saved (because it costs so little for the job compared to the effect on heat loss). So, the SIR calculates a 3:1 ratio. The air sealing measure in this case will be listed before the insulation work above, since the comparative ratings indicate a higher cost-effectiveness ratio for the air sealing. The Auditor's recommended measures when run through the program's software will be accepted and ranked by priority, in this way, based on the comparative SIR ratings.

In addition to the SIR rating for individual measures, a cumulative SIR rating will be calculated on the entire package of measures for each unit. The package of measures must also prove out at an overall rating of 1:1, or better.

The cumulative SIR rating for the package of measures must include the total, additional Incidental Repair costs in the unit.

Neither exempt H&S measures nor DOE pre-approved General Heat Waste (GHW) measures are included in meeting the SIR threshold. In some instances H&S measures must first be evaluated and, if found to be cost effective, categorized as energy efficiency measures.

Funding: A Subgrantee's payment for an energy efficiency measure that has not been shown to be cost-effective, by both the individual and the overall SIR calculations, is *not* an allowable cost. Such costs will be disallowed in a weatherization monitoring or fiscal audit.

301.11 Historic Preservation

Services provided under WAP must comply with the laws governing alterations of historically significant properties. For any structure with federal historic significance or homes built fifty (50) or more years ago, the Subgrantee must submit certain information to the Connecticut State Historical Preservation Office (SHPO) for review. That office will conduct a "Section 106" review of the unit to ensure compliance with the requirements of the National Historic Preservation Act (NHPA).

With the understanding that much of Connecticut's housing stock is aging, State agencies and State Historic Preservation Office (SHPO) have entered into a programmatic agreement that specifically provides *exemptions* to the review requirement. Exemptions include:

- Homes built less than 50 years ago.
- Mobile homes or trailers, regardless of date of construction.
- Homes that require exempt weatherization measures *only*.

The exemption for weatherization includes many of the common measures used in the program, but only as long as they are installed in a certain way. So the Subgrantee must consult the Weatherization Program Guidance No. 6 regarding these specific measure exemptions. Note that these measures exempt the property if they are the *only* measures being installed.

Based on a survey of submittals to the State Historic Preservation Office, the Section 106 review is most often triggered by the replacement or installation of windows or doors.

The State recommends that audits be performed on all homes prior to submittal to SHPO to determine the scope of work and see whether or not it is subject to further inquiry.

301.11.1 SHPO Submission

The following information will be needed for the Section 106 historic preservation review by the SHPO.

- At least one recent, clear, digital photograph showing the full front of the property. This photo should be taken recently and may not be a photograph from a website like Vision Appraisal.
- The full address of the property including street number, street name, city, and zip code.
- A completed Section 106 Submittal Form
- The date of the unit's construction.

The information may be submitted by email attachment to: arrashpo@ct.gov. A copy of the email must also be sent to your State Weatherization Program Monitor. The subject line of the emails should be in the following format:

(State agency) (Community Action Agency) – program acronym (e.g. DSS – CRT – ARRA-WAP)

Additionally, you must send the State SHPO coordinator a completed excel spreadsheet that details date of submission, property address and agency.

Hardcopy requests may be sent to the attention of: SHPO Coordinator, State Historic Preservation Office, 1 Constitution Plaza, Second Floor, Hartford, CT 06103. Again copies should be mailed to your State program monitor and the State SHPO coordinator.

After submittal, SHPO will review the property to determine if weatherization will affect the state's cultural resources. SHPO has up to 30 days from the date of receipt to conduct this review. Please do not contact them during this time. The Subgrantee will receive a response from the SHPO stating their findings, which must be kept in the client file along with copies of all documentation submitted to the SHPO for review.

Should the non-excluded property be deemed historic by SHPO, the Subgrantee must work with the State to come to an appropriate weatherization plan for the unit that is both compliant with SHPO and aligned with the policies of the DOE Weatherization Program.

A Subgrantee's failure to comply with federal historical preservation laws in the weatherization of properties may result in questioned or disallowed costs to its program.

See Weatherization Program Guidance No. 6, *Compliance with SHPO-DSS-OPM Historic Preservation Agreement,* Date: September 9, 2010. This Guidance contains additional

information regarding the exemption of properties where only certain measures are to undertaken.

See National Historic Preservation Act (NHPA), 16 U.S.C. 470 et seq.

See DOE Weatherization Program Notice 10-012, *Historic Preservation Implementation*, Date: February 11, 2010

301.12 Waiver / Standard Quote Form

For certain weatherization circumstances, WAP requires that the Subgrantee submit a "waiver" of the normal measures, a request for prior approval of the additional work from the State. Waiver requests must be used in the following situations:

- When more than five (5) primary windows are to be replaced, provided they each achieve an individual SIR of 1 or more.
- When more than twelve (12) storm windows are to be installed, provided they each achieve an individual SIR of 1 or more.
- When more than one (1) primary door is to be replaced, provided the doors achieve an individual SIR of 1 or more.
- When more than one (1) storm door is to be replaced, provided the doors achieve an individual SIR of 1 or more.
- When a heating appliance, including oil tank is to be replaced.
- When a domestic water heater appliance is to be replaced.

General Procedure: A completed waiver packet is to be assembled and sent to the Subgrantee's assigned field monitor for the initial review. The monitor will contact the Subgrantee if additional information is needed to complete the packet. The completed packet will then be forwarded with the monitor's recommendations to the appropriate State manager, for a final determination. State management staff will process waivers expeditiously to ensure prompt weatherization service delivery. The determination will be communicated verbally and in writing to the Subgrantee Weatherization Director by the State field monitor. The State's goal is to produce the final determination of approval or denial within **ten (10) business days** of the receipt of the request, provided no additional information is necessary.

The State determination can only be made if the packet is completely and accurately submitted. For example, the BWR submitted with a waiver packet must be the CONTRACTED BWR with "actual" pricing displayed, to ensure that the installation of the heating system or domestic water heater does not cause the unit to exceed the maximum expenditure limit of $10,000 and all weatherization measures achieve an individual SIR of 1 or more. See the information below for the requirements for the various types of waiver packets.

Documentation, including waiver packet materials, digital photographs, and State approval/denial notices must be kept in the client file for each unit.

Procurement/SQF Form: With heating system, domestic water heater, and incidental fuel oil storage tanks replacements, it is required that all local and state WAP procurement procedures be strictly followed. Under the waiver process, a minimum of three written price quotes are required. To the extent possible, each quote should be for items meeting the same specifications which should be clearly stated by the Subgrantee when requesting quotes from vendors.

To standardize the process, the State has developed the *Standard Quote Form (SQF)*. The SQF will ensure uniform proposals across vendors and reduce follow-up questions which delay approval of the waivers. Use of the SQF is *mandatory.* The SQF must be completed by each vendor, in full. Completion of the SQF by Subgrantee staff is strictly prohibited. In completing and signing the SQF, the vendor is agreeing to all costs of purchase and installation of the item as described on the SQF. This form becomes the legal binding document of the minimum requirements the contractor agrees to perform for the stated dollar amount.

Funding: A measure that is installed without the prior approval of the State shall result in questioned or disallowed costs for the entire measure.

301.12.1 Window or Door Waivers

A waiver is required for windows or doors when:

- More than five (5) primary windows are being replaced.
- When more than twelve (12) storm windows* are to be installed.
- More than one (1) primary door is to be replaced.
- More than one (1) storm door is to be replaced.

*Up to twelve (12) storm windows may be installed per dwelling unit without prior approval from the State provided they each achieve an individual SIR of 1 or more.

The waiver packet must contain the following:

- A written waiver request, signed by the weatherization manager, listing the reasons for each replacement.
- Clear, digital photos* of each component (window or door) to be replaced (sent to the monitor via e-mail).
- The Contracted BWR for the item, with “actual” price(s).
- Verification that the home was submitted to SHPO, if required (e.g., if the home was constructed 50+ years ago).

*Note: clear digital photos must be taken of every window or door that is to be replaced, whether or not a waiver is required. These pictures must be kept in the client’s file.

301.12.2 Heating Systems/Domestic Water Heaters/Fuel Oil Storage Tanks Waiver

A heating systems waiver is required for heating system replacements when:

- When a heating unit is being replaced.
- When a domestic water heater is to be replaced.
- When a fuel oil storage tank is to be replaced as an incidental heating system replacement measure.

The waiver packet must contain the following:

- A written waiver request, signed by the Subgrantee weatherization manager/coordinator, listing the reasons for each replacement.
- A Contracted BWR, with "actual" price(s).
- All heating system evaluation and testing results; including the Clean, Tune and Test (CTT) efficiency reports
- Verification of the ownership of the dwelling unit
- Standard Quote Form (SQF) for quotes from each of three vendors.
- Detailed digital photos (at least 3) of the current heating system, domestic water heater, or fuel oil storage tank clearing showing the cause for replacement to be electronically sent to the monitor
- Verification of Energy Star ratings compliance on the proposed replacement heating system.
- For any proposed *new* vendor:
    - Contractor's License
    - Contractor's Liability Insurance
    - A copy of the contract

301.13 Home Energy Solutions/ Income Eligible

Major Connecticut regulated utilities operate the ratepayer-funded Home Energy Solutions–Income Eligible (HES-IE) program to assist certain income eligible electric, natural gas and oil heat customers - renters and owners - to reduce their energy bills by making their homes more energy efficient.

Weatherization clients are eligible for HES-IE services where they are available. Formerly known as WRAP, the HES-IE program provides certain General Heat Waste measures that are coordinated with other measures by the local Subgrantee, operating under a separate agreement with the utility companies.

The following measures may be provided under the utility HES-IE program.

- Faucet aerators
- Low-flow showerheads
- Weatherstrip
- Caulking (interior)
- Door sweeps
- Pipe insulation
- Compact Florescent Light bulbs (CFLs),
- Lamps
- Gaskets (for switches and outlets)

In some Connecticut municipalities the local utility company does not operate a HES-IE program. In those areas, WAP will provide the above GHW measures, to the extent that they have been pre-approved under the DOE State plan.

Note: all Work performed and reported as DOE completed CT WAP sites must be in compliance with DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, CT WAP Weatherization Filed Guided SWS Aligned Edition and the current year State Plan/Master File.

Refrigerator Replacement: Under certain criteria and where available, the HES-IE program may provide replacement refrigerators to WAP clients. After testing the present appliance, the Energy Auditor makes a recommendation to the utility company, where the final determination is made regarding replacement.

Insulation (attic, sidewall): The cost of insulation measure by a WAP Subgrantee is reimbursed fifty percent (50%) by the HES-IE program, where available.

302 HOME ENERGY AUDIT

The Energy Audit is the most critical process in weatherizing a unit. The audit determines the planned measures, in priority, which will lead to successful reduction in energy costs for the client. A complete Energy Audit must be performed by the Subgrantee on each unit prior to the commencement of any weatherization work to the unit.

This section defines the requirements for the home energy audit for single dwellings, mobile homes, and small multi-family housing units. Small multi-units are defined as “dwellings that have less than 5 apartments and/or have a square footage of 10,000 square feet or less” and three (3) stories or less.

Large multi-units consisting of more than 5 apartments and/or have a square footage greater than 10,000 are addressed in *CT Program Operations and Training Manual,* Section 800 LARGE MULTI-FAMILY UNITS

Using advanced diagnostic techniques in a whole-house approach, the Auditor will produce a list of cost-effective weatherization measures to improve the functionality of the home's living environment by, aligning the unit's thermal boundary and pressure boundary, and optimize the exchange of fresh air through the unit, while reducing heat loss.
Procedure: Connecticut home audits are conducted using the NEAT or MHEA, *Data Collection Forms.* This form, the Auditor's notes, unit diagrams, and digital photos will all be assembled by the Auditor to make recommendations for the weatherization measures. Audit results are entered by the Energy Auditor that performed the audit into the DOE approved Weatherization Assistant 8.9 computerized audit software, to perform the SIR analysis and assist in the formulation of a Work Orders for the unit.

The completed audit recommendations must always be submitted for further review by a second party. Generally, this would be the Weatherization Coordinator, supervisor or other knowledgeable staff person assigned to the review. After the plans are approved, the actual assignment of measures to individual installers should be made by someone other than the Energy Auditor.

Once the installer has been determined by the Subgrantee the audit information is entered in the software using that installer's specific price information.

Subgrantees must have procedures in place that ensure that all Energy Auditors, are properly qualified and that they complete the Energy Audit using the required technology according to testing protocols established by DOE and CTWAP.

Technical Note: These operational policies are not intended to provide the correct technical protocols or techniques to be used by the auditor or the weatherization installers. They are not intended to define the use of weatherization tools and equipment; including the proper use of personal protective equipment. Such information is only found in obtaining required certifications, participating in ongoing weatherization training and in reading the two *Connecticut Field Guide SWS Aligned Edition.*

> **Note: all Work performed and reported as DOE completed CT WAP sites must be in compliance with DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, CT WAP Weatherization Filed Guided SWS Aligned Edition and the current year State Plan/Master File.**

Health & Safety Note: In certain circumstances, an Auditor may encounter H&S issues that must be addressed prior to any weatherization measures. The health and safety of both the family and the weatherization worker is of prime importance. These issues must be addressed before any weatherization measures are installed.

See *CT Program Operations and Training Manual,* Section 400, HEALTH & SAFETY for detailed information on these issues, including program funding restrictions.

Funding: Although a portion of the cost for WAP Energy Audits is paid from ratepayer funds administered by participating utilities, all Energy Audits conducted by the Subgrantee under contract with the State must comply with *all* WAP policies and protocols. Audits performed that are not in compliance with all program policies and protocols shall result in disallowed costs, both for the amount expended by WAP for the energy audit and for the WAP expenditures for the installation of subsequent measures based on that audit.

302.1 Audit Timeline

All applicants eligible for weatherization assistance must have an Energy Audit completed on their unit within twelve (12) months of the certification of their eligibility. There will be no extensions of certification given for audits that are unable to be performed within this timeframe.

If more than twelve months have passed, the client must be re-certified by the original, certifying Community Action Agency (CAA) under the guidelines established for that application period, in order to determine if the energy audit can be performed.

302.2 Energy Auditor

Energy Auditors are on the front line of the weatherization program and often the main point of contact with the program for weatherization clients. Their interaction with a client sets the tone for all subsequent contact. It is expected that Auditor, who is a representative of both the Subgrantee and WAP, maintains a courteous, informative and professional manner at all times.

302.2.1 Auditor Qualifications

Note: All auditor requirements are further defined in regard to work performed and reported as DOE completed CT WAP sites and must be in compliance with DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, CT WAP Weatherization Filed Guided SWS Aligned Edition and the current year State Plan/Master File.

The Subgrantee has the responsibility to use only Energy Auditors with the qualifications to conduct an effective audit. When hiring or subcontracting for the job, Subgrantees must take into consideration the individual's training and experience in areas such as energy conservation, building science, home construction, or other appropriate fields.

All individual Energy Auditors employed by the Subgrantee, or its contractor, after September 1, 2010 are required to hold a certification from the Building Performance Institute as a Building Analyst. Energy Auditors used by the program must maintain this certification while employed or subcontracted by WAP.

It is the responsibility of the Subgrantee to maintain records confirming that all certification and training is current. This requirement will be monitored by the State. Individual auditors will not be granted use of the Weatherization Assistant 8.9 audit software until proof of this certification is received by the State.

Energy Auditors are required to attend training as required by the State or the Subgrantee. Optional, additional training may also be made available. Attendance records for all training must be maintained by the Subgrantee for review by the State monitor.

Funding Note: Use by the Subgrantee of an Energy Auditor without the proper certification shall result in disallowed costs, both for the audit and for subsequent measures based on that audit.

302.2.2 Contractor Auditors

Subgrantees may use contractors to conduct the Energy Audit. Contractors must meet the same qualifications, including BPI certification, as agency employed auditors. In case the contract is with a company employing several auditors, it is the Subgrantee's responsibility to ensure that the company only assigns WAP audits to individuals in the company who are currently certified and meet other qualifications.

All WAP contractors, including subcontracted Energy Auditors**, must be approved** by the State prior to contracting with the Subgrantee.

Subcontracted auditors are required to attend all training as *required* by the State, or the Subgrantee. Optional, additional training may also be made available. Attendance at all training must be recorded and maintained by the Subgrantee for review by the State.

All subcontracted Energy Audits must be conducted using the policies, training, protocols, and equipment required by WAP. Subgrantees must include these requirements in their agreements with subcontracted Energy Auditors.

Use of a subcontracted Energy Auditor by the Subgrantee without the proper certification shall result in disallowed costs, both for the audit and for subsequent measures based on that audit.

302.2.3 Separation of Duties

Note: All auditor requirements are further defined in regard to work performed and reported as DOE completed CT WAP sites and must be in compliance with DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, CT WAP Weatherization Filed Guided SWS Aligned Edition and the current year State Plan/Master File.

In no instance may the Energy Auditor be employed by, or in any way represent the company which performs any of the weatherization installations, or any other work, on a given unit.

Within the Subgrantee's organization, the individual assigning weatherization installation to a given crew or subcontractor must be different than the individual who conducted the Energy Audit.

302.3 Energy Audit Steps

Note: All auditor requirements are further defined in regard to work performed and reported as DOE completed CT WAP sites and must be in compliance with DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, CT WAP Weatherization Filed Guided SWS Aligned Edition and the current year State Plan/Master File.

The Energy Audit has been developed in compliance with DOE regulations, as well as best practices identified by the state and each Subgrantee. While a given unit will vary in terms of the measures necessary to achieve an energy efficient home, the Subgrantee is responsible for ensuring that a comprehensive Energy Audit is conducted, whether by its own or its subcontracted personnel.

Any questions or problems encountered in the execution of the Energy Audit on a given unit should be discussed among the Subgrantee staff, the State field monitor and technical staff.

302.3.1 Client Refusal of Certain Measures

As all weatherization measures interact in the overall plan for the unit, the client is not allowed to choose or refuse individual measures. In the instance that a client refuses any measure, an attempt must be made by the Subgrantee personnel to explain the need for the measure as well as the advantages to the client in installation of the measure(s).

Walk-away: The client's refusal to allow the installation of measures, except as noted below, is a reason for a walk-away, where no measures will be installed in the unit. By refusing the installation of any measure the client risks losing all State assistance for a two term period.

Exceptions: The Subgrantee may, at its discretion, allow for the refusal of minor measures such as those for baseload reduction or general heat waste.

The client may also refuse to allow the installation of sidewall insulation. There is the slight possibility of damage to the structural integrity of a dwelling to which individual clients may not be amenable. In this case, the Subgrantee has the responsibility to educate the client on the benefits of sidewall insulation. The client's refusal of sidewall insulation must be documented on the form, *Sidewall Insulation Waiver,* which must be signed and dated and kept in the client's file

302.4 Audit Preparation

Preparation time is important so that the Auditor arrives with the proper knowledge of the unit, the requisite paperwork and the equipment needed to properly analyze the unit.

Note: all proposed Work to be performed and reported as DOE completed CT WAP sites must be in compliance with DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, CT WAP Weatherization Filed Guided SWS Aligned Edition and the current year State Plan/Master File.

Subgrantees should have a standard Auditor's Packet made up of the information and forms needed for the Auditor to effectively complete the audit. Some of the common forms in such a packet may include the following:

- Weatherization case file copies: Approved Energy Assistance Application (EAP), EAP Award Letter, Request for Weatherization (either a 'yellow card' or similar document), eligibility determination, utility bill summary, other
- Owner Verification from the Assessor's Office (typically a Unit Parcel Summary from Vision Appraisal or other website).
- *A blank Data Collection Sheet*
- Blower Door Air-Sealing Input Sheet/Work Order.
- Weatherization Agreement (property owner agreement)
- Brochure: A Brief Guide to Mold, Moisture and Your Home (EPA)
- Brochure: The Lead-Safe Certified Guide to Renovate Right (EPA)
- Brochure: Energy Savings Tips (HES)
- Smoke Detector & Carbon Monoxide Disclaimer Form (DSS Form, Rev 01/06)
- Mold Disclaimer Form(State Form, Rev 01/06)
- Notice of Postponement/Deferral of Services (State Form, Rev 01/06)
- Sidewall Insulation Waiver (State Form, Rev 09/10)
- Connecticut Lead Pre-Renovation Form (Lead paint compliance form, as applicable)
- Utility Company WRAP Forms
- Subgrantee's Forms and Brochures

The Auditor should arrive at the home with all specialized tools and equipment necessary to effectively evaluate and determine the necessary weatherization measures.

Once the Energy Auditor has become familiar with the case, a call is made to the client to initiate the audit appointment. This is a good time to clear up any questions about the family's circumstances

or to obtain information about the condition of the unit. The auditor should begin to explain the audit process with this call.

Note: During the initial scheduling contacts, it is imperative that any known, client health and safety concerns be identified prior to the site visit.

The auditor will make the appointment at a mutually agreed upon date and time. Auditors should also confirm the audit visit on the day before the appointment.

302.5 Unit Identification

The Energy Auditor must identify the unit and its occupants using DOE definitions. The type of unit being audited as well as the unit occupants can make a difference in the auditor's recommended measures. Unit types and occupant types are also collected for required statistical reporting purposes.

302.5.1 Unit Classification

The Energy Auditor must identify the type of unit under the Connecticut protocols. The following DOE defined unit types are to be identified:

- Owner-occupied, single-family, site-built
- Single-family, rental, site-built
- Multi-family rental
- Owner-occupied mobile home
- Renter-occupied mobile home
- Shelter, group home
- Other (specify)

302.5.2 Unit Occupancy Types

The occupancy classification of the client is also identified by the Subgrantee's for eligibility and reporting purposes. DOE regulations identify the following unit occupancy types.

- Elderly household
- Disabled household
- Native American
- Children (household with children under 6 years old
- High residential energy user (greater than **$2,500** annual energy cost)
- Household with a high energy burden

- Other (specify)

302.6 Licensure Restriction

It is the responsibility of the Subgrantee to ensure the proper testing is accomplished to ensure the safety and efficiency of the all combustion appliances.

Because of state licensing restrictions, Energy Auditors are restricted to conducting *passive monitoring*. Passive monitoring limits the non-licensed HVAC professional or auditor to evaluation that can be done without invasive testing that may constitute an "alteration" of the appliance.

Connecticut state law requires licensure by the State Board of Occupational Licensing in several areas relevant to working on combustion appliances and heating systems, including the following:

- Heating, piping and cooling
- Plumbing
- Electrical work
- Duct work (sheet metal)

For example, proper draft testing involves the drilling of a small hole (later patched) in a flue pipe to accommodate the draft probe.

Certain liabilities may result from a non-licensed individual turning on the appliances for monitoring their operation.

In some cases, a qualified Energy Auditor may 'work around' restrictions. For example, the requisite hole may already be drilled.

Another possibility is that a unit may require a Clean, Tune & Test order where a properly licensed HVAC contractor will be able to either conduct needed testing or, at least properly prepare the appliance for later, comprehensive combustion appliance monitoring by the Energy Auditor.

No measure or activity recommended or required in this operational manual is intended to circumvent or contradict compliance with applicable State licensing requirements.

302.7 Audit Software

The recommended measures by the Energy Auditor will depend on the issues identified and the solutions available within the Connecticut program. The Auditor must develop a thorough knowledge of the measures that are allowable under the program, which is only learned through certification, training, and studying the written policies and technical protocols. The Audit software will also guide the Auditor through the process of evaluating the data and recommending measures.

CT WAP uses the software *Weatherization Assistant 8.9(NEAT, MHEA)* as a tool for the Auditor's final determination of the measures to be taken in the unit. This software, produced by the Oak Ridge National Laboratories is approved by the Department of Energy for use in Connecticut

Every authorized Energy Auditor in Connecticut has been granted access to *(NEAT,MHEA),* with a personal login to the software that allows for secure operation and effective tracking of the audit for each unit.

To ensure a comprehensive weatherization plan tailored to each unit, the Subgrantee must allow adequate time for the Auditor to properly enter job data into NEAT, MHEA.

The Energy Auditors are required to personally input their own audit details, in order to ensure the accurate entry of the audit details into the *NEAT, MHEA* system. Logins may not be shared with other local staff. Audits may not be given to other office staff for input. Care must be taken by the Subgrantee to institute procedures that ensure this data integrity and security.

302.8 Unit Applicability

The standard Connecticut audit is entered into *HomeCheck* for all single-family units, mobile homes, small multi-family dwellings and group shelters. A small multi-family dwelling means a building less than 10,000 square feet; *and* comprised of no more than five (5) individual units.

Information on Large Multi-unit dwellings is found in *CT Program Operations and Training Manual,* Section 800 LARGE MULTI-FAMILY UNITS.

302.9 Building Weatherization Report (BWR)

Note: all proposed Work to be performed and reported as DOE completed CT WAP sites must be in compliance with DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, CT WAP Weatherization Filed Guided SWS Aligned Edition and the current year State Plan/Master File.

The audit results and recommendations are entered into the *NEAT, MHEA* screens from the Energy Auditor's *Data Collection Form* and other audit notes on the unit. The software will then assist the Auditor by analyzing the data submitted and determining the acceptable measures, reject others and prioritize them by cost-effectiveness.

The *NEAT, MHEA* program will produce the initial audit report as the Building Weatherization Report (BWR). The BWR will include:

- Audit data, including key test results.
- Accepted weatherization measures in order of priority, based on cost-effectiveness (including incidental repairs as part of each measure)
- Approved General Heat Waste measures (DOE pre-approved measures not subject to SIR)
- Approved H&S activities (also not subject to the SIR)
- Client energy education or other steps already taken by the auditor

must be documented in order to produce an accurate and thorough BWR audit report. It is only with the auditor properly following these steps that the Subgrantee and the State can ensure that SIR calculations are accurately computed in compliance with DOE regulations. See *Weatherization Assistant 8.9 (NEAT, MHEA)* manual for additional data entry instructions.

NEAT, MHEA screens the Auditor's proposed energy reduction measures to determine the SIR for *each measure*. The individual measures that meet the required ratio of 1:1, or better are then accepted and prioritized according to each projected cost-effectiveness rating. The higher the SIR

number, the higher the priority. Any individual measure that falls short of the SIR standard is not allowed to be performed on the home.

NEAT, MHEA also computes an overall SIR rating for each unit's overall "package" of measures which also must compute to a SIR of 1:1 or more. If the overall SIR standard is not met, the audit must be completely reviewed, changed according to priority and re-entered.

Anytime the approved measures subsequently change, the entire list of measures must be re-entered in order for the software to properly prioritize individual ratings and compute the new overall rating.

Funding: Failure to accurately obtain an installed measure through *HomeCheck that achieves the appropriate SIR* will result in disallowed costs to the Subgrantee.

302.10 Second Party Review

Once the Audit Report is completed, the Energy Auditor **must submit the measure recommendations for a second party review** by a program manager, or another person in authority, designated by the Subgrantee. This approval applies to any changes to the BWR, also.

The reviewer's responsibility is to compare the information on *Data Collection Sheet,* and all other audit notes, to ensure that it is correctly entered in*NEAT, MHEA.* The reviewer may also fine-tune the recommendations based on such factors as the budget available for the unit, agency policies, or the weatherization installers available for the work. The reviewer's changes must be coordinated with the auditor but the reviewer should be a staff person with the final authority (a supervisor, for example).

The second party review is a **required** step in the process, which must be completed with each audit and documented in the client file. Only after the reviewer has approved the measures listed on the BWR, may the weatherization proceed. It is suggested that the reviewer also be the person who actually assigns the weatherization Work Order to the agency crew or contracted installers. **(In no instance may the individual who assigns the weatherization work be the same individual as the Energy Auditor.)**

Procedure: The Reviewer reviews the measures to ensure they were entered correctly, by carefully viewing all of the data on the different screens in*NEAT, MHEA.* There must not be an "error message" or "blank cell" under the "Description" column. If there is an error message/blank description on the Cost and Savings Screen-"All Item" View, you need to double click into the measure(s) and make the necessary correction(s) before going to the next step.

302.11 Supply Library Pricing in NEAT, MHEA

Note: all proposed Work to be performed and reported as DOE completed CT WAP sites must be in compliance with DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, CT WAP Weatherization Filed Guided SWS Aligned Edition and the current year State Plan/Master File.

Note: The Weatherization Assistant Users Manual Version 8 will serve as the primary source for NEAT, MHEA use in CT WAP.

Note: All Proposed work screened in the NEAT,MHEA software will utilize the CT WAP PY 2015 Setup library with no exceptions.

As the price of some measures may vary with the assigned installer, once the installer is chosen, the prices must be assigned using the appropriate Supply Library in the *audit software*. At this point the BWR is designated as "contracted". The reset, actual price(s) on the Contracted BWR could make a difference in the acceptability and priority assigned to the measures.

If an individual measure pricing does not achieve the required SIR threshold that measure must be *purged* from the BWR and cannot be installed.

If the price(s) result in the package of measures not meeting the overall SIR, the entire audit must be reviewed and re-entered, as explained above.

Note: Prices reset for H&S measures or general heat waste measures are not subject to the SIR threshold and will not affect the continuation of the weatherization work. Incidental Repairs are calculated as a part of the cost of the package of measures.

302.12 Generating the Work Orders

Once the Contracted BWR is finalized, the Subgrantee may distribute the approved Work Order(s) to the appropriate agency crew or contracted installer. Only those Work Orders actually generated by the NEAT, MHEA audit software are to be distributed.

303 SUBGRANTEE PRODUCTION REQUIREMENTS

It is crucial that Subgrantees have a process in place to ensure that production numbers are realized. The State maintains a strong interest in tracking performance of Subgrantees in the production of weatherized units. DOE continues to closely monitor the State's production through the Quarterly Program Reports, the Quarterly Financial Status Report, and the Annual Training and Technical Assistance, Monitoring and Leveraging Reports.

Production goals are determined yearly based on the funding available for Program Operations and the average cost-per-home. Subgrantees and the State will work together to determine the number of dwellings that will be weatherized yearly. It will be the responsibility of the Subgrantee to ensure that those goals are met in its service area.

303.1 Weatherization Timeframes

After an audit is completed, agencies are expected to complete all work on a home within three (3) months. The following circumstances will allow an additional two (2) months added on to the timeline, if a delay is caused by:

- Primary windows being replaced are on back order.
- Unit submitted to the State Historic Preservation Office) is still under review.
- A waiver request submitted to the State for approval of a heating system, domestic water heater, or oil tank are still under review.

Failures to complete the unit within the five-month timeline will not prompt an additional extension. The Subgrantee must contact its State monitor if it is determined that a unit will need longer than five months for its completion.

All Audits, installed measures, and final inspections completed, and reported, for any one completion must be done within the program year. Failure to do so will result in disallowed costs.

A review of client eligibility should be conducted and recertification completed if the Client Application was completed more than twelve (12) months from the completion date of the weatherization work.

303.2 Production Schedule

It is up to the Subgrantee's program staff to coordinate the weatherization activities in each unit to ensure the job is done properly, in the agreed upon time frame and within the program year timelines.

The scheduling of several jobs at a time, as well as outside work schedules, may affect the availability of any given crew or contractor. Likewise, the family's schedule or the owner's schedule may have an impact on the job timing and duration. Other factors such as time of year, the weather, and work site accessibility may all enter into the difficulties of coordinating the work. Factors such as Subgrantee's contract and budgetary status may enter into the production schedule.

It is up to the Subgrantee's program management to take all of the factors into account in order to maintain an ambitious schedule which will meet the overall production goals of the program.

Subgrantee contractors must be contractually required to complete units within the time frame established for each unit. Any anticipated delays in the completion time frame on the part of the contractor should be communicated to the Subgrantee in writing, prior to accepting a job. Subsequent changes in the schedule must also be requested in writing and addressed as an official modification of the Work Order.

303.3 Work Order

Note: all Work performed and reported as DOE completed CT WAP sites must be in compliance with DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, CT WAP Weatherization Filed Guided SWS Aligned Edition and the current year State Plan/Master File.

It is the Subgrantee's responsibility to determine what measures are going to be implemented in a given unit. The Subgrantee's technical experts and administrator, analyzing the audit information and the available unit budget, recommend measures on the Work Order(s). The ordered measures must be:

- justified by the results of the audit;
- in conformance to weatherization program protocols, standards and guidelines;
- ranked in order of the comparative cost-effectiveness ratings;
- based on costs categories as allowed within program guidelines; *and,*
- within the available budget, including the limitations of the average cost-per-unit.

When the Work Order(s) are complete, the Subgrantee assigns the job to the most appropriate agency crew or contractor. The contractor may not commence any weatherization work until written authorization is received from the Subgrantee in the form of an executed, signed Work Order.

Funding: Any production ordered by the Subgrantee which does not meet the program criteria shall result in questioned or disallowed costs and repayment of funds.

304 WEATHERIZATION

Note: all Work performed and reported as DOE completed CT WAP sites must be in compliance with DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, CT WAP Weatherization Filed Guided SWS Aligned Edition and the current year State Plan/Master File.

The remaining sub-sections establish policies for the core of the weatherization program services which may be called for by the Energy Audit. All weatherization measures must be installed by qualified personnel employed by the Subgrantee or one of its contractors. The list of measures, which will vary in their applicability to a given unit, are applied in priority of their cost-effectiveness and according to a coordinated work plan devised and approved by the Subgrantee. The goal of the plan for the unit is to safely and effectively improve efficiency in the unit and save money for the low-income client. Weatherization measures may require ancillary activities such as allowable H&S measures, or incidental repairs. All weatherization activities, including the occupant's role, need be fully explained to the client. All units must pass **Certified QCI Final Inspection** before they can be claimed. Whether measures are installed by its own employees, or by a contracted installer, the Subgrantee has the responsibility for the quality of all measures.

This manual spells out the operational policies that govern the various weatherization measures available to the Subgrantee. Written technical protocols, on the other hand, are only contained in the two field guides being adopted by the Connecticut WAP. The guides include:

Connecticut Weatherization Field Guide

SWS Aligned Edition

These field guides are the authoritative resource for how to properly install weatherization measures.

304.1 Measures

Typical weatherization measures include the following areas:

SECTION/ AREA	MEASURES	LOCATIONS
305 AIR SEALING	Stuffing, sealing, caulking, foam (board, spray), weatherstripping, ventilation H&S, Blower Door directed	Windows, doors, attic, basement, rim joist, mud sills, rubble foundations, penetrations, by-passes, top plates
306 INSULATION	Fiberglass, cellulose, wrap, foam (board, spray)	Attic, sidewall, basement, crawl space, knee wall, pipes, ducts
307 DOORS AND WINDOWS	Glass repair/ replace; caulk, weatherstrip, locks, ltd replacement	Exterior doors and windows
308 HEATING SYSTEM	Clean, tune, & test; parts replacement & retrofit; duct sealing, repair & insulation, H&S	Combustion appliance zone

SECTION/ AREA *Cont'd*	MEASURES	LOCATIONS
309 WATER HEATER	Clean, tune, & test, parts replacement & retrofit; vent repair; plumbing; insulation	Combustion appliance zone
310 OTHER MEASURES	Baseload; general heat waste, H&S	Unit wide
311 INCIDENTAL REPAIRS	Component repairs, limited replacement, carpentry, painting, cleanup	Where necessary for integrity of the WX measure
312 MOBILE HOME	Air sealing, insulation, repair/sealing, W&D, mechanical systems, ductwork, H&S	Unit wide
313 CLIENT EDUCATION	Education by client worker, auditor, installer, inspector	Unit wide
314 FINAL INSPECTION	Inspection, testing, evaluating the installation against the work order/ audit	Unit wide

304.2 Weatherization Testing

Subgrantee Weatherization policies must include the following testing during the weatherization, as applicable in a given unit.

- Zonal pressures attic and crawl space
- House-to-garage wall assembly leakage tests
- Worst Case CAZ Depressurization (Draft Test) must be performed daily after altering the building shell
- Room-to-Room Pressure Balance (on forced air heating plant)
- Gas Pressure Test (done by HVAC contractor on replacement, tune/repair)
- Combustion Analysis/CO in Flue (done by HVAC contractor on replacement, tune or repair)
- Natural Draft (done by HVAC contractor on replacement, tune or repair)
- Duct Static Pressure Test (done by HVAC contractor on replacement, tune or repair)
- Combustion appliance combustion-air confined space calculation

304.3 Pre-Weatherization Steps

As a review: *Before* any weatherization work on the unit commences, the following steps must have been taken:

1. The Subgrantee has determined the household's eligibility for services.
2. The Subgrantee has a timely and complete, approved signed application on file, as well as all other required documentation.
3. The Subgrantee worker has explained the weatherization process to the family. The family and/or the owner have signed necessary permission and release forms.
4. A full Energy Audit has been conducted producing the Subgrantee's written Work Order(s), formulated according to the results of the audit.
5. All H&S issues have been ameliorated either by the agency or by the homeowner <u>prior to any weatherization work</u>.

A Work Order is assigned by the Subgrantee to the appropriate crew or subcontractor(s) which details (a.) the ordered weatherization measures in order of priority, (b.) the time frames for the completion of the work, and (c.) a signature of the authorized Subgrantee's staff person authorizing the work to proceed.

305 AIR SEALING

Air leakage can account for 25-40% of the heat loss in a typical unit. The location of major air leakage and air sealing solutions should be given a high priority by the Energy Auditor, as well as the Air Sealing installer. Measures are inexpensive and cost-effective. If done correctly, major air sealing has a relatively large savings to investment (SIR) ratio.

Using air sealing techniques guided by pressure diagnostic methods, air sealing activities, in tandem with proper mechanical ventilation, will ensure that the optimum volume of airflow and good air quality are maintained in the finished, weatherized unit and within the established pressure boundary.

Air sealing must be conducted using techniques, tools and diagnostic protocols prescribed by the Connecticut WAP field guides. Such techniques as zonal pressure diagnostics as well as tools such as the Blower Door, Duct Blaster, and Infrared camera are mandatory as they are important in proper air sealing. Just as importantly, installers must be thoroughly trained on their use.

Air Sealing in Multifamily Units under 10,000 sq. ft: For those units that are addressed under the 50% or 66% multi-family unit rules, where an eligible unit may have an adjoining ineligible unit, only the building shell of the adjoining unit may be addressed as part of the whole-house weatherization of the eligible unit(s). Building shell measures may include basement and attic air-sealing.

Exception to Blower Door Use: This requirement can only be waived if there is a justifiable health or building safety concern (e.g. friable asbestos that cannot be encapsulated). In such cases these concerns must be documented on the BWR.

Procedure: All test results are entered into the applicable HomeCheck data screens must be documented on the audit data input sheet in the client case file.

Incidental Repairs: Incidental repairs are often needed to ensure that air sealing is effective. Such repairs are allowable within budgetary limits, and so long as their need can be demonstrated in terms of the integrity of the weatherization measure involved.

Health & Safety: H&S issues within the home can be worsened by certain air sealing measures. Air sealing should only be completed after any such issues have been successfully addressed, particularly issues with regard to possible indoor air quality hazards such as carbon monoxide and moisture. Ventilation work done in conjunction with air sealing may be charged to the H&S cost category as detailed in *CT Program Operations and Training Manual,* Section 400, HEALTH & SAFETY.

See *Connecticut Weatherization Field Guide SWS Aligned Edition* for specific protocols, theories, techniques and tools used in air sealing.

305.1 Blower Door Directed Air Sealing

The Connecticut WAP policy requires that a pre- and post- weatherization, single point Blower Door test be conducted in all single-family units (including mobile homes) and in all multi-family apartments under 10,000 sq. ft. and less than 3 stories not including the basement. If the basement is used as living space, then it must be counted as a 4th story in that case this multifamily unit cannot be weatherized using the NEAT, MHEA audit tools. The testing must document the infiltration rate with a house to outside pressure differential of 50 Pascals negative or equivalent. (Multi-point tests are not necessary.)

Although the Energy Auditor will identify areas where air sealing is needed, ongoing air sealing using the Blower Door, the Duct Blaster, or other tools must be done by the installer, along with standard pressure diagnostics techniques that effectively guide the work.

The installer may need to use more sophisticated techniques such as zonal pressure diagnostics or infrared camera to locate less obvious, though major leaks as the air sealing continues.

The air sealing installer must re-test and record progressive Blower Door readings after each step of major air sealing. A final installer reading must be taken and recorded at the end of the weatherization job.

The pre-weatherization blower door test infiltration rate represents the beginning point for the air sealing installer. The goal is air sealing as tight as possible and add mechanical ventilation, if necessary, for *optimal* air quality level. (Use the CT ASHRAE 62.2 – 2013 spreadsheet to help calculate the need for mechanical ventilation.)

All readings are to be expressed in cubic feet per minute at a pressure of negative fifty (50) Pascals (cfm 50) or equivalent.

See *CT Weatherization Field Guide SWS Aligned Edition* for additional methodology.

305.2 Air Sealing Measures

The Subgrantee must ensure that a thorough and complete air sealing job is done by its crews and contracted installers.

Major air leakage areas, both those pinpointed in the energy audit and ones that appear as air sealing continues, must be addressed within CT WAP funding restrictions. Ineffective, minor air sealing should not be pursued by the installer.

Air sealing measures include but are not limited to:

- Sealing attic chases, bypasses, top plates, and gaps
- Sealing large holes, bypasses, and chases leading to outside of the conditioned space.
- Sealing plumbing, electrical, and HVAC penetrations through the ceiling, flooring, and exterior walls, using proper materials for high-temperature surfaces.
- Sealing ducts in unconditioned spaces.
- Installing weatherstripping and thresholds.
- Caulking around windows and doors.
- Re-glazing or replacing broken window glass.
- Repair of doors and windows.
- Adding sufficient mechanical ventilation in accordance with ASHRAE 62.2-2013 requirements

Generally speaking, because of the high exfiltration pressures in the upper areas of the building due to the stack effect, the attic/living space interface is the area that should be addressed first. Many leakage areas in the attic are actually part of a series leak that may begin in the basement or living area. In most cases, these leaks can be sealed in the attic and there is no need to seal the other areas. If one cubic foot of air cannot leak out of the house then one cubic foot of air cannot leak in. Potential leakage areas include: attic accessways, open top plates in interior partition walls, balloon framed buildings, chimney and plumbing chases, kneewall/floor junctions in finished attics and drop soffit ceilings.

There are significant opportunities for air-sealing around leakage areas in foundation walls, around interior bulkhead doors, basements including basement windows. Plumbing chaseways and bathtub cutouts are of particular concern. Leaking ductwork can also significantly affect the overall air leakage of a dwelling.

Opportunities for air-sealing within the living space of a dwelling, besides the obvious, include the following: draft-stopper kits for fireplaces, repairing large holes in walls and ceilings, especially those that may be hidden by a suspended ceiling, openings behind built in counters and cabinets, leaky wall outlets and light fixtures.

Materials used must be appropriate to the area being sealed. For example, chimney chases must be sealed with fire retardant materials such as flashing and high temperature caulk. Large openings should be covered with a solid material such as plywood, sheetrock or rigid foam board. These materials must be fastened in place and sealed along the edges. Smaller cracks and holes can be filled with expanding or non-expanding urethane foam or caulk.

305.2.1 Two-Part Foam

Spray polyurethane foam used under the appropriate circumstances can be very effective in air sealing. Air sealing using single or two part spray foam may only be performed by crew or contractor staff that have received training by the spray foam manufacturer (OEM) and are certified to perform such installations by that OEM.

<u>Funding</u>: Pricing for two-part spray foam has not yet been approved and the final decision will be determined by the Department of Energy and Environmental Protection (DEEP) under the regular Weatherization Assistance Program.

305.3 ASHRAE 62.2 Ventilation Standards

DOE and the Connecticut WAP have adopted the ventilation standards set by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) in its handbook section ANSI/ASHRAE Standard 62.2-2007, *Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings* ("ASHRAE 62.2").

Effective April 1, 2012, Subgrantees are required to use AHSRAE 62.2 – 2013 ventilation standards to determine the amount of mechanical ventilation that may be required in a unit.

To determine the proper level of air flow in the unit, the Energy Auditor must perform a pre-blower door test before any weatherization measures are installed. The final ventilation need will be calculated using the actual post blower door reading AFTER all weatherization and air sealing

measures have been installed, using the same CT Excel spreadsheet to calculate the actual ventilation airflow needed. "**AIR SEAL TIGHT – VENTILATE RIGHT"**. If this calculation is negative then no mechanical ventilation is necessary. If this calculation is positive, then consideration must be given as to how best to provide the required additional ventilation.

There are many ways to address the need for additional ventilation if the ASHRAE 62.2 - 2013 CT spreadsheets indicates more ventilation is required. Below are two examples of providing mechanical ventilation:

- Whole-Building Ventilation – installation of a fan, or a combination of fans, which will provide the minimum ventilation needed for proper air flow as calculated by the standard.
- Local Ventilation Exhaust – installation of local, intermittent exhaust fans in the kitchen and each bathroom, as specified by the standard, to reduce the possible levels of contaminants and moisture in each of those rooms and the living unit.

Health & Safety: Because particularly air sealing affects the ventilation rates through the unit, any existing or future indoor air quality issues are likely to be made worse by the weatherization work. Thus the correction of this through mechanical ventilation is considered a H&S activity. The details of utilizing the ASHRAE Standard may be found in the H&S section of this manual.

See CT *Program Operations and Training Manual*, Section 413, INDOOR AIR QUALITY/ ASHRAE 62.2 - 2013 for additional H&S information.

See *Connecticut Weatherization Field Guides SWS Aligned Edition,* –for additional technical information regarding the ASHRAE 62.2 – 2013 standard.

305.4 Air Sealing Funding

Air sealing is an allowable energy conservation measure which may be charged to the Program Operations cost category. As such, the cost is a part of the average cost per unit.

Air sealing that is conducted by unqualified installers or that does not use required techniques and tools is likely to be ineffective in reducing air infiltration in the unit. Costs may be disallowed for ineffective air sealing, as measured in final or other inspections by State monitors.

Subgrantees are allowed to bill up to three **(5)** hours of airsealing per dwelling without prior approval from the State monitor. If more than five hours are necessary, the agency may contact the monitor for approval, which can take the form of a phone conversation.

Reimbursement for blower door guided air-sealing, unlike other measures that are reimbursed based on actual cost, will be based on an hourly rate of $105 that will include both material and program support.

Of that amount, $30 per hour will be allocated to the material cost of the job, and $75 per hour will be allocated to the support cost of the job. The Audit will determine the maximum amount that can be spent on each job.

The following materials will be included in the $30 hourly rate:

- Urethane foam
- Interior caulking
- Miscellaneous materials for covering large holes such as sheetrock, plywood, flashing, insulation board, cardboard, nails, screws and other hardware.

Subgrantees should be aware, however, that the State intends to monitor the CFM reduction and hours billed very closely to ensure that they are acceptable for what a two-man crew is able to do in that time period. Airsealing that produces little to no reduction in a large time period will result in disallowed or reduced costs. Therefore, it is important that agency auditors, crews, and airsealing contractors attend training regularly to improve their skills and that agency staff be available to provide technical assistance on an as-needed basis for those contractors who are unable to produce appropriate CFM reductions.

306 INSULATI0N

Insulation is a critical measure to make a home energy efficient and a major priority for the Weatherization program in nearly every unit.

Insulation comes in several different types which are used according to the need and location within the unit. The three most common insulation materials are fiberglass, cellulose and foam (sprayed closed cell and rigid board). Fiberglass may be used in a batt form which can be laid in the attic, attached to an open wall or attached under a floor. Cellulose insulation is blown in using an insulation blowing machine, may be used over an attic or in dense packing the space between wall studs. Other applications are available for specific needs and minor insulation measures may also be effective when the budget permits.

CT WAP has adopted the following insulation type preferences and R-value specifications for the most the common applications, based on program and industry standards:

LOCATION	R-VALUE	INSULATION TYPE
Attic	R-49	Cellulose, fiberglass, blown
Knee Wall	R-11	Fiberglass batt, blown C or F
Attic Hatch	R-19	Fiberglass batt, foam board
Attic Door	R-11	Fiberglass batt, foam board
Sidewall	3 lb. min. dens.	Cellulose, blown, dense pack
Basement (ceiling)	R-19	Fiberglass batt
Crawl Space (ceiling)	R-19	Fiberglass batt
Mobile Home	Various	See MH Manual section

The Subgrantee must consider attic, sidewall and other insulation measures as a part of its overall approach to all single family units.

Air sealing must be completed in a given location prior to the installation of insulation in that area.

Safety or repair work must also be done first; for example, electrical repair, roof repair, fire safety barriers, air vents, leak repairs, recessed light box covers, and so forth.

Multi-family Units less than 10,000 sq. ft: Units eligible under the multifamily rules (50% and 66%) must also have insulation considered as a measure. In this instance, insulation choices such as attic, sidewall and other locations will be approached for the entire building shell.

Ineligible side-by-side duplex units may not be eligible to receive sidewall insulation; this will depend upon the location of the eligible unit, within or amongst the ineligible unit. The state monitor must be notified of this condition.

Funding: All insulation measures are considered energy conservation measures, which are charged to Program Operations costs and considered a part of the average cost-per-unit. In some areas, a portion of the insulation costs are reimbursed out of HES-IE funds.

Health & Safety: Because of fire hazards, care must be taken to see that insulation is installed safely. Although addressed elsewhere, two specific areas are important to address here:

Clearance: Never install insulation against any building component that presents a fire hazard. A three inch (3”) clearance must be left around all masonry chimneys, metal flues and ceiling recessed light fixtures. If loose-fill insulation is used, metal blocking must be permanently attached around the component, to a height of at least four inches (4”) above the height of the insulation. Mineral fiber blocking may be substituted if it is at least equal in height to the loose fill insulation and it extends at least twenty four inches (24”) in all directions.

Wiring: Never install insulation against live knob and tube wiring. Open junction boxes and frayed wiring, present a significant fire hazard. Such wiring may be dammed off, but that only bypasses the root problem, and makes the insulation less effective. Fixing wiring circuitry, including the replacement of live knob and tube wiring, may be conducted as an allowable H&S measure. Only a qualified electrician, currently licensed by the State of Connecticut, may repair or replace electrical wiring.

Also see *CT Program Operations Manual* Section 400, HEALTH & SAFETY for additional information.

306.1 Attic Insulation

Installed correctly, at proper depth, evenly, with no voids, gaps, misalignment, or compression issues, attic insulation provides a thermal barrier which effectively prevents loss of valuable heat from the unit. Insulation must be installed to bring the attic to the R-value level prescribed by program policies (above). Proper vents or baffles must be installed in each rafter bay at the soffit area to prevent the blocking of the soffit vent and/or to prevent the insulation from touching the underside of the roof sheathing.

Other, specific attic characteristics may exist that will require a different approach to insulation, if called for in the audit. A walled stairway up to the attic will need to be sealed and insulated. A partially finished attic may be formed by the construction of knee walls which will require additional batt insulation on the attic side (as well as additional air sealing); and insulation in the collar beam and the “cathedralized” areas formed by the ceiling. In the case of cathedral ceilings, the insulation

of the smaller cavity between the ceiling and the roof may require other special techniques. These additional insulation measures vary from unit to unit.

See *CT Weatherization Field Guide SWS Aligned Edition* for detailed protocols regarding the installation of attic and related insulation measures.

306.1.1 Prior Attic Measures

Several important measures must be addressed in the attic *prior* to the insulation.

Access to the attic is needed for the effective installation of insulation. An attic door or a hatch is required for access. A structurally sound surrounding dam that is able to support the weight of weatherization workers is required with a hatch, to contain cellulose insulation. Existing or installed attic hatches and doors must also be sealed and insulated.

Air sealing of the upper pressure boundary in the attic, usually the attic floor, prior to insulation will ensure its maximum effectiveness.

Sealing and insulating duct runs through the attic should be completed before insulation is installed.

Attic ventilation is required in the number and configuration called for in WAP protocols.

See *CT WX Field Guide SWS Aligned Edition* for protocols on all attic related measures.

306.2 Foundation Insulation

Additional savings may be made by installing insulation at the base of the unit, adjacent to the lower air barrier(s), such as rim joist, mud sills, and 3” of foundation walls. An important step for the Energy Auditor is to determine the lower level thermal and air boundary, below the first floor.

Zonal pressure diagnostics can help identify the current connection between the unit and areas underneath.

306.2.1 Basement

Basements are usually considered a part of the conditioned space of the unit. Basements ceilings are insulated only if they are outside of the desired thermal boundary, the location of which is determined by the location of heating appliances, water heaters, plumbing and heat ducts. In most instances, the basement is “inside”.

In limited circumstances, the auditor may determine that a basement is outside, or should be adjusted to the outside. For example, a basement that does not contain the heating appliances and is not used, perhaps with an outside entrance, may be more appropriately outside. In this case, the basement may be considered “outside”. The ceiling areas of the basement would be air sealed and insulated with fiberglass batt between the joists to the R-value indicated in these program policies (above). In this case it is important that any underneath ducts or pipes that do exist are carefully insulated and sealed.

<u>Rim joists</u>: Air sealing and insulation should also be done in conditioned basement to fill in the sill “box” (formed where each end of the floor joists meets the rim joist, sill plate, and 3” of

foundation wall below the sill plate to seal any air gap between the sill plate and the foundation it sits on).

306.2.2 Crawl Space

If there is a crawlspace, the auditor should define the crawlspace walls, or the floor above the crawlspace as the thermal and air boundary, and call for air sealing and insulation accordingly.

Where a combination of basement and crawlspace exist, the auditor must decide whether to establish the boundary where the two meet. Again, the extension of heating pipes or ducts through the crawlspace will help to determine the plan to establish the thermal and air boundary.

Vapor Barrier: If insulation is installed above a crawlspace or basement with dirt floors, a moisture barrier must be installed, provided there is no evidence of moisture, water flow canals in the dirt floor, or the use of a sump pump.

See *CT Weatherization Field GuideSWS Aligned Edition* for detailed protocols regarding the treatment of foundation and lower level insulation.

306.3 Sidewall Insulation

The program requires insulation in most sidewall cavities wherever it can result in significant savings, and when done with the permission of the owner of the unit.

To be effective, sidewall insulation must be uniformly dense packed in the exterior side walls of the unit. Insulation is to be tube-blown in all wall areas, into wall cavities with a depth of at least three and one-half inches (3 ½”), and taking into account building framing features to ensure uniform coverage. Because of its superior air sealing qualities, cellulose insulation is to be used to the minimum per cubic foot density called for in the program policies (see chart above).

Please note that sidewall insulation may not be installed if live knob & tube is present. As stated above, it is an allowable measure to disable knob & tube wiring; three quotes must be obtained from electrical contractors currently licensed in the state and with the approval from the State monitor prior to the start of work. If knob & tube wiring is then disabled, sidewall insulation may be installed in the unit.

See *CT Weatherization Field Guide SWS Aligned Edition* for the sidewall tube-filling instructions.

Batt insulation is to be used where there is an open wall cavity to fill. In this instance, the wall insulated to the R-value called for in program policies (see chart above).

306.3.1 Preparation for Sidewall Insulation

Since the pressure of dense packed sidewall insulation is significant, several procedures must take place before considering this measure.

Prior to insulating, the auditor and installer must assess numerous areas including: the structural integrity of the walls, the locations of possible electrical hazards, existing gaps in the interior walls, moisture problems, and hidden areas where insulation will blow through.

All necessary corrections must be made before proceeding to insulate the walls of a unit. Possible leakage areas may be sealed or blocked to prevent the escape of insulation. If there is a danger of an area giving way to the pressure of the insulation, the area should be insulated but not to the dense pack standard. Areas that are not dense packed must be clearly noted by the installer on the Work Order.

See the *CT Weatherization Field Guide SWS Aligned Edition* for additional information regarding preparatory steps to sidewall insulation.

306.3.2 Sidewall Insulation Waiver

Because there is the slight possibility of damage to the structural integrity of a home, the owner of the unit has the ability to refuse sidewall insulation. The Energy Auditor is responsible for obtaining this refusal from the owner.

Care must be taken by the Energy Auditor and other agency staff to educate the owner on the benefits of sidewall insulation, prior to the signing of the refusal form. The signed refusal form must be kept in the client file, and the frequency at which sidewall insulation is refused will be monitored by State staff if it becomes an issue.

See *Connecticut Weatherization Field Guide SWS Aligned Edition* for insulation protocols and methods.

306.4 Water Pipe Insulation

Insulation should be recommended for heating and domestic hot and cold water pipes in unconditioned basements and crawlspaces.

If the ceiling is not to be insulated, pipe insulation is not recommended.

See *Connecticut Weatherization Field Guide SWS Aligned Edition* for pipe related protocols and methods.

307 WINDOWS AND DOORS

Traditionally a common weatherization measure, air sealing around doors and windows is no longer considered as effective as other such measures. Still, these measures are another means of limiting the infiltration of air in the unit. Such measures may include air sealing, repair of components, and, on a very limited basis, replacements.

As with all other air sealing, window and door measures must be done in accordance with the Work Order. They must meet the SIR threshold. And they are conducted using intermittent blower door directed techniques.

See *Connecticut Weatherization Field Guide SWS Aligned Edition* for protocols and methods related to windows and doors.

Health & Safety: Weatherization work, including the repair or replacement of windows and doors does *not* qualify as an H&S measure. However secondary work may qualify when it is needed to make the weatherization safe. Specifically, window and door work in areas which are laden with lead-based paint will require extra steps to ensure the health and safety of both the crew and the occupants. See *CT Program Operations and Training Manual,* Section 400, HEALTH & SAFETY.

Incidental Repairs: Window and door work is one of the more likely areas to require incidental repairs to ensure the integrity of the weatherization measure. Such work may include repair or replacement of window and door components. For example, repairing the framing in areas (including incidental painting) may include such components parts as jambs, sills, wells, etc. Repairs to the existing sash may also be incidental, as with repairing a muntin so that a glass pane seats well.

State Historic Preservation Office (SHPO): Window and door replacement is an area that may have more obvious impact on compliance with the SHPO rules. SHPO information must be submitted with a window/door waiver request.

Funding: Window and door weatherization is considered air sealing and may be charged under the Program Operations cost category. Thus it is included in the average unit cost calculations. Repairs to make the weatherization work effectively, **must** be charged as Incidental Repairs and **must** fall within limits on those costs. Ancillary activities to make the work safe can be charged as H&S and **must** fall within limits on such costs.

There are more specific funding procedures and restrictions on charging for *all* work on windows and doors under the CT WAP. See *CT Program Operations and Training Manual,* Section 700 CLAIMS AND REPORTS for additional information on cost categories related to door and window work

Disallowed Costs: Failure to comply with procedures for the repair or replacement of windows and doors may result in Subgrantee disallowed costs. Requirements include:

- Meeting SIR, cost-effectiveness thresholds (on reset prices when called for).
- Obtaining prior Department approval for replacements,
- Use of required H&S measures when working with lead based paint,
- Obtaining proper clearance by SHPO; and,
- Charging for window and door measures within specific CT WAP guidelines.

307.1 Window and Door Repairs vs. Replacement

The Connecticut WAP expectation is that the majority of existing windows and doors are in good enough condition that they can be successfully weatherized. Subgrantee protocols must ensure that every effort is made to weatherize existing primary windows, storm windows, primary doors and storm doors, *as is*, or with only necessary repairs.

Replacement windows and doors may only be installed if they are primary, separating conditioned living space from the exterior.

Except as affects energy efficiency, the replacement component should not be superior in style or quality to that being replaced. All replacements should fit within the cosmetic look of other existing unit components inside and outside; come in white or another harmonizing color; or, be appropriately stained or painted on both interior and exterior sides, including tops, bottoms and jambs.

The replacement of primary windows and doors should only be considered when the item is actually missing, or when the existing window or door is *beyond repair.* Repairing the item must be demonstrably more costly than replacing it.

Procedure: The replacement of a window or door requires that *each* of the items achieve an *individual* SIR ratio of 1:1 (based on prices reset with the assigned contractor price).

Moreover, a waiver is required for windows or doors when:

- More than five (5) primary windows are being replaced and no attic and wall insulation is being installed.
- When more than twelve (12) storm windows are to be installed.
- More than one (1) primary door is to be replaced.
- More than one (1) storm door is to be replaced.

See *CT Program Operations and Training Manual,* Section 301.12, Waiver / Standard Quote Form

307.2 Primary Window Measures

Exterior window air sealing weatherization includes any work that will reduce the infiltration of outside air into the unit. Such measures include traditional work such as caulking and weatherstripping but may also include other measures to make the window fit tighter.

The Energy Auditor must use the Blower Door and visual inspection to locate and diagram window areas to be addressed that will have a major benefit. As with all air sealing, further minor work should only be completed after other weatherization work, and considering the continued availability of budgeted funds for the job.

Funding: Window air sealing measures are considered Program Operations costs. They are part of the average cost per unit calculation. Certain measures that have the effect of air sealing may not be charged as such under the current program cost definitions. For example, the replacement of sash locks, while having a tightening affect, **are charged as Incidental Repairs** with the justification that they are necessary to enhance the effectiveness of other window air sealing measures and have received an SIR of 1 or more within the package of measures.

307.2.1 Window Sealing Measures

Window air sealing measures include:

Exterior window panes: Re-glazing the perimeter of the glass pane is an effective measure to prevent air infiltration and increase comfort inside the unit. Broken or significantly cracked glass should be consistently replaced. Please note that glazing must be done by a licensed professional in the State of Connecticut.

Air Sealing: Air sealing may be needed between the stop and the jamb or around the perimeter casing.

Window weatherstrip: Weatherstripping the windows between the sash and the sill, or the sash and the jamb using nailed or stapled strips, which permit the window to operate.

The installation of a permanent weather-stripping product which has a minimum effective life of at least five (5) years is required when doing this measure.

Weatherstripping of windows should not take place until primary windows have already been otherwise sealed, repaired, and properly adjusted.

Sash Repairs and Replacement: The sashes in an exterior window may be repaired or replaced as an air sealing measure. When doing so, the installer should make every effort to ensure the new sash kit or sash repair fits cosmetically with the existing window(s) including paint and stain colors(charged as Incidental Repairs).

Sash Locks: All exterior windows must operate tightly to ensure an air tight fit. Loose sash locks should be tightened or reset in a different location.

Window/ Storm Window Replacement: Replacement may be made within the limits discussed previously.

307.3 Primary Door Measures

Air sealing weatherization around exterior doors includes any work that will reduce the infiltration of outside air into the unit. Such measures include traditional work such as replacing sweeps and weatherstripping; but may also include other measures, such as thresholds, to make the door fit tighter. For example, a door that "rattles" may need to be re-hung or may require a new lockset and strike plate to pull it tighter in the frame.

Funding: Door air sealing measures are considered Program Operations costs. They are part of the average cost of the unit. As with windows, some door measures that have the effect of air sealing may not be charged as such under the current program cost definitions. For example, the replacement of door locksets and striker plates, while having a tightening affect, are charged as Incidental Repairs with the justification that they are necessary to enhance the effectiveness of other door air sealing measures and have received an SIR of 1 or more within the package of measures.

307.3.1 Door Sealing Measures

Exterior door air sealing measures include:

Sweeps: Sweeps, made of aluminum and vinyl, must be installed on exterior doors, as needed.

Thresholds: Deteriorated and worn thresholds must be replaced, as needed to ensure a tight fit for the door to the door framing.

Door Window Panes: See windows measures (above).

Air Sealing: Air sealing may be needed between the stop and the jamb or around the perimeter casing.

Locksets: New locksets should be installed on any exterior door where the lockset is loose and not able to securely hold the door closed and tight. A new lockset has the added advantage of increasing the security of the unit (charged as Incidental Repairs).

Door/Storm Door Replacement: Door replacement may be made within the limits discussed in the Manual previously.

308 HEATING SYSTEMS

A comprehensive evaluation of the heating system is a required part of the Subgrantee's weatherization Energy Audit. The Subgrantee is responsible to have the system fully tested and evaluated, both in terms of its efficiency and its safe operation.

Based on the audit findings, the weatherization program may cover a range of measures related heating systems, including;

- Comprehensive testing to ensure proper operation, venting, and combustion air for all combustion-fired appliances.
- Cleaning and tuning of heating appliances to ensure safe and efficient appliance operation.
- Repair and retrofits of heating appliances and heating system components (ducts, pipes, thermostats, burners, pumps, fire chambers, etc.).
- Replacement of heating appliances and system components, when justified.

The Subgrantee must have procedures in place to determine that the heating system is in safe running order *prior* to the commencement of all other weatherization work. Weatherization work on the building shell should not be done until H&S issues are corrected; including, gas leaks, high CO readings, venting problems, or moisture issues.

All work on heating appliances and systems must comply with the material and installation standards of the manufacturer, the HVAC industry standards, and DOE regulations. DOE materials standards are detailed in 10 CFR 440, Appendix A, *Standards for Weatherization Materials*. In addition, per State standards, only Energy Star-rated combustion appliances are to be used.

Testing Specifications: Unless otherwise called for in the standards, all evaluations and settings are to be completed on heating systems in conformance to the specifications recommended by the Building Performance Institute, Inc.

Licensure: Connecticut state law requires state licensure by the State Boards of Occupational Licensing in several areas relevant to working on combustion appliances systems. These requirements must be maintained in choosing contractors for heating system work.

In most instances heating systems will require tuning, repairs or retrofits to operate efficiently and safely. In fewer instances, replacement of the heating system can be considered where the heating appliance is inoperable or "red tagged". Replacement requires a waiver process for prior approval by the Department.

For the technical aspects of testing and servicing heating appliances see *Connecticut Weatherization Field Guide SWS Aligned Edition*.

Funds: Heating system appliance work will frequently have the effect of *both* improving energy efficiency and making the appliance safer.

All work on a heating system must first be screened for the SIR ratio as an energy efficiency measure. If it fails to meet the SIR threshold it may qualify as a measure conducted as H&S. The cost category for charging heating system work depends on how it is classified by this procedure.

308.1 Energy Audit

The work ordered on the heating appliance will depend on inspection and testing. In some instances, the Energy Auditor's evaluation may be incomplete because of Connecticut licensing restrictions. In such cases, the Subgrantee must coordinate with the heating contractor to ensure all required testing is completed.

The complete Energy Audit will provide information and recommendations based the evaluations of the heating system, in the following areas:

- The condition and operability of the appliance: gas or fuel lines, burners, valves, power supply, other electrical, heat exchanger, fan, thermostat, blower operation, combustion air analysis.
- The condition of combustion gases venting systems: chimney, flue.
- The condition of the air distribution system: ducts, pipes, supply and return
- Safety factors: CO evaluation, draft, heat exchanger, clearance from combustibles, gas leak, oil leak, water leak, other appliance disrepair or deterioration.

Work on the systems will be ordered from a licensed contractor based on the findings of the audit. In some instances, the Subgrantee may have to enlist the contractor in detailed testing to fully determine the needs of the appliance(s).

308.2 Clean, Tune and Test (CTT)

The CT WAP features work on all *primary* heating appliances including, gas or oil-fired furnaces, boilers, water heaters, and space heaters. The efficient operation of a forced air, gas, or oil-fired system can be effected by the blower operation, duct leakage, duct insulation, the balance between supply and return air, proper flue venting, oil nozzle size, oil pump pressure, and much more.

In conjunction with a Clean, Tune, and Test, the heating technician must complete a Burner Combustion Efficiency Report documenting the Steady State Efficiency of the system. The goal of the CT WAP is to achieve 70% steady state efficiency with all heating appliances, unless with oil fired heating systems an improvement of 5% can be achieved with an oil burner replacement Heating system can only be replaced if the system is inoperable or 'red tagged'

A Clean, Tune, and Test (CTT) must be conducted by a licensed contractor on primary gas and propane fired central heating systems if the process has not been done within the past five (5) years. A CTT is required for all oil-fired central heating systems if the process has not been done within the past year. All Heating System "Tune Up" or CTT must first be screened for SIR as an Energy Conservation measure. In the event that SIR cannot be achieved, the CTT may be completed for H&S reason if health and safety concerns are identified.

The CTT contractor will also drill holes at the required distance from the draft hood, in the furnace/boiler and domestic water heater flues, if the hole is not present at the time of the audit, so that the Energy Auditor can complete draft testing the appliances under the worst case conditions.

During the Clean, Tune, and Test process the technician may find certain conditions that make the system unsafe or inoperable. For example, the fuel pump or the circulator may be faulty, or the tank may be leaking. Such problems should be discussed with the Subgrantee or state monitor first. Photographic evidence must be made by the HVAC technician to document the problems found with the heating system to share with the agency or state monitor before any repairs are made. Additional materials and labor involved must be documented separately on the combustion efficiency report.

308.3 Duct Insulation and Sealing

All duct runs and connections are to be repaired as called for in the Energy Audit according to CT WAP protocols.

Duct Repair: Duct sealing may be needed at any point on the run, especially where there is a joint. Duct sealing must be done prior to the insulation. Unlike insulation, there may be benefit to sealing ducts in areas within the thermal envelope, as sealing affects the proper ventilation of the heating system. Duct sealing is done on existing duct joints with mastic.

Duct replacement is usually done with flexible ducts, supported with hangers. Duct replacement should not be done through unconditioned areas unless absolutely necessary and approved by the agency or state monitor.

Duct Insulation: Insulation is required on any section of a supply or return duct that runs outside of the thermal barrier. Ducts are insulated with fiberglass sheets with a foil, vinyl or other facing, and to the minimum R-value recommended (see chart). The insulation is attached and sealed with a good quality reflective duct tape or other suitable fastener.

Note that in Connecticut sheet metal work requires a licensed contractor.

See *Connecticut Weatherization Field Guide SWS Aligned Version* for duct related protocols and methods.

308.4 Hydronic Systems

Hydronic systems that heat with the circulation of hot water or steam may need additional system checks for leaks and service of additional parts that regulate the heat medium circulation. Baseboard fins may need cleaning. Radiators may leak or need adjusting and balancing, steam traps, or air vents may need to be rebuilt or replaced.

See *Connecticut Weatherization Field Guide SWS Aligned Edition*

308.5 Primary Space Heaters

A vented space heater used as the *primary* heat source is treated the same as other primary heating system in terms of repair/replacement, funding and safety testing. This policy applies to vented natural gas-fired space heaters, vented propane-fired space heaters, and oil-fired space heaters (which are always vented).

A vented, primary space heater, is to be checked for safety (gas lines, CO). Repairs may be made as needed.

Replacement: A vented, primary space heater that is inoperable and cannot be repaired must be replaced. Replacements of primary space heaters may be made with existing equivalent or direct vented, sealed combustion space heater with prior approval from the monitor via the waiver process.

Deferral: Weatherization work may not be conducted to the dwelling unit where the *primary* heat source is an *unvented* space heater; including, an unvented natural gas-fired space heater, unvented propane-fired space heater or unvented kerosene space heater, and the space heater cannot be replaced under DOE such as a heating unit in a rental dwelling. Under this circumstance the unit should be deferred until the appliance can be replaced.

See Weatherization Program Notice WPN 08-4 which is consistent with the IRC and IFGC codes on how to best address eligible dwelling units containing space heaters.

308.6 Electric Space Heaters

CT WAP and DOE do not permit DOE-funded weatherization work on primary source, electric space heaters, except for limited expenditures as an incidental repair.

In the unlikely event that an electric space heater is the primary heat source in the unit, WAP funds may be used to replace the appliance with a direct vented, sealed combustion gas space heater or, another heating system as determined in the waiver request process.

308.7 Secondary Heating Systems

The CT WAP does not repair or replace secondary heating systems.

Where vented, secondary heating systems exist, the Subgrantee must test the system to ensure that it is properly working and not creating a H&S problem such as high CO or improper drafting. If properly working no additional consideration is required. If malfunctioning, the Subgrantee must inform the client that the system must be repaired or removed prior to weatherization. Walk-away is required if the client refuses to repair or remove the malfunctioning secondary vented heating system. The reason for the walk-away must be documented and signed by the auditor and client and kept in the client file.

Where unvented, secondary heating systems exist, the Subgrantee must recommend the system's removal and proper disposal **prior to weatherization**. If the occupant intends to keep the unvented heating system, weatherization services **must be deferred** until the unvented heating system is removed. If the client intends to replace the secondary space heater, the recommendation should be to use only a code-compliant unit with an oxygen-depletion sensing safety shut-off system.

308.8 Heating Appliance Thermostat Retrofit

CT WAP protocols call for the replacement of the existing thermostat with a new, more efficient type only if the change would migrate the home from a manual thermostat to a programmable one, the existing thermostat is inoperable, or in conjunction with a new heating system. In appropriate circumstances the replacement should be a programmable, 'set-back' thermostat.

The CT WAP serves a variety of clients, from young children to senior citizens. Care must be taken to ensure that clients receive an energy efficient thermostat that also complies with their lifestyle and understanding of technology.

While, in most cases, programmable thermostats are recommended, there are cases when they would not be energy-efficient (or welcome in a client's home). Successful programmable thermostat replacement will only be possible with proper client education, instruction on the new unit and an evaluation the client's ability to utilize the device.

Training is critical to receive a cost-benefit from the device and to ensure proper use, especially in homes with clients who have never used a programmable device. User error may result in situations where the home is accidentally programmed to be at a higher than desired temperature, which would render the measure inefficient.

Even after education about the device has taken place, some clients, especially those with limited abilities with technology, may still require a traditional, mechanical thermostat.

Funds: Replacement may only be done if it will realize a SIR of 1:1 or better. Then the device can be charged in the Program Operations cost category.

308.8.1 New Thermostat Installation

A new thermostat is to be a standard part of any new heating system installation. In the case of heating system replacement, thermostat selection and installation is the responsibility of the contractor that is replacing the heating system. In these cases, the Subgrantee must ensure that the same training and product selection standards are met, so as to not create an additional expense.

In no case should thermostats be claimed separately from the heating system on units where a heating system is replaced.

308.9 Other Heating Appliance Retrofits

Oil Burner: When replacing an oil boiler/furnace burner the type of burner should be changed from an existing gun burner to a more efficient retention burner, only if it will not damage the existing heating system.

308.10 Heating Appliance Replacement

Replacement of the heating appliance should only be considered when the current appliance is inoperable or 'red tagged'. Inoperable, even condemned ('red-tagged') units may still only require repairs to properly function. When needed, the Subgrantee should enlist the assistance of CT WAP technical advisory and monitoring staff, along with an HVAC contractor to assist in making this determination, if necessary.

Heating appliances may only be replaced in eligible owner-occupied, single-family, two-family or three-family dwelling units. Only the owner's heating system can be replaced and one heating system replacement per owner-occupied dwelling is allowed.

The replacement of a heating appliance may be done as an Energy Efficiency or H&S measure, as follows:

- Health & Safety: A new heating appliance may be installed as a matter of the H&S of the occupants due to high level of heating degree days in the region.

  When the heating appliance is inoperable or 'red tagged' it is an allowable H&S cost, provided the unit has at least one resident who is considered **vulnerable**, which is defined as a person who is either 60 years of age or older, disabled, or a child under the age of 6. Replacement of the heating source for the purpose of H&S must be fully justified by the Subgrantee. The expenditure for a replacement in this case is charged to the H&S cost category.

  Energy Efficiency: Because Connecticut's energy costs are some of the highest nationally, the replacement of a heating appliance may be found to be cost-effective. Even if the Energy Audit calls for replacement of the heating system on the basis of H&S, Subgrantees must first complete the cost-effectiveness analysis for heating appliance replacements where possible, through the NEAT, MHEA audit tool software, to determine if the replacement meets the individual savings to investment ratio (SIR) of 1, or greater. If the system achieves an individual SIR of 1 or greater, the unit may be replaced and no vulnerable threshold needs to be met.

Funding: If the replacement is justifiable as an energy efficiency measure, it must be completed under the Program Operations cost category. In any instance where the replacement meets the required savings-to-investment ratio (SIR), the measure should be treated as a weatherization energy efficiency measure and the measure would be included as a part of the average cost-per-unit calculation.

Otherwise, if the replacement qualifies as being replaced for H&S reasons, it may be charged accordingly to that cost category.

The cost of an incorrectly sized appliance may be questioned by State monitors and program auditors.

Prior Approval: Heating appliances and systems may only be replaced after the Subgrantee has received prior approval from the State using the Connecticut Heating System Waiver Packet. See *Program Operations and Training Manual,* Section 301.12 *Waiver and/or Standard Quote Form.*

308.10.1 Heating Appliance Specifications

Only Energy Star ® rated appliances may be used for replacements, with the following efficiency rating:

- Natural Gas/ LP Gas Furnaces (direct vent sealed combustion) rated at 90%
- Oil Boiler/Furnaces rated at 85%
- Gas Boilers/Furnaces rates at 82%

The Energy Auditor's recommendations and justifications are to be considered when the Subgrantee formulates the Work Order. If the unit is to be replaced, the Subgrantee has the

responsibility to see that the correct size unit is used, that duct work is appropriate, and that an overload of the electrical system does not occur.

Proper sizing of the appliance must be performed using a standard method, one approved by the Department, such as the "Residential Load Calculation" (Manual J).

Note: NEAT, MHEA utilize manual J calculations

The Subgrantee is also encouraged to work with the State technical expert, as well as the HVAC contractor, to determine the proper procedures and appliance to order.

Warrantee: Replacement heating appliances and connected systems must have the following minimum warrantee:

- One (1) year on installer parts and workmanship
- Five (5) year on all OEM parts of the appliance (Original Equipment Manufacturer)
- 20 years or more OEM on the heat exchanger

The cost of a replacement must include the cleaning of any operational integral central air unit which already exists.

The cost of replacement must include the disposal of the existing appliance and the disconnection of any humidification system. Under no circumstances will a humidification system be re-installed into a new heating system.

The owner must be provided with information and education by the HVAC contractor/installer, including all manufacturer materials for the appliance, the local contractor's contact information (name, address, phone, email) and verbal instructions on the proper operation of the unit (thermostat, filter replacement).

The Subgrantee should refer to the *Connecticut Field Guides SWSD Aligned Edition* to ensure that the installation is properly made and that all hazards associated with the installation are considered.

308.10.2 Utility Switching

As a rule, the Subgrantee may not change the type of utility (fuel) used by the appliance when replacing a heating appliance. If the Subgrantee feels that the switching of utility types is warranted, a written justification to do so must accompany the agency's waiver request and be approved by the State.

309 DOMESTIC HOT WATER HEATER

It is the responsibility of the Subgrantee to ensure that appropriate evaluation is conducted to ensure that the domestic water heater (DWH) is operating in a safe and efficient manner.

See *Connecticut Weatherization Field Guide SWS Aligned Edition* for the technical aspects of the work on water heating appliances

309.1 DWH Energy Audit

The work ordered on a DWH will depend on inspection and testing. In some instances, the Energy Auditor's evaluation may be incomplete because of Connecticut licensing restrictions. In such cases, the Subgrantee must coordinate with the DWH contractor to complete testing.

Connecticut state law requires that most activities associated with the repair and replacement of DWH are conducted by licensed contractors.

The Energy Audit will provide information and recommendations based evaluations of the domestic water heating system, in the following areas:

- Determination of fuel type (oil, gas, electric)
- Visible inspection for rust or corrosion
- Inspection and testing of gas lines for leakage
- Inspection of sediment trap, if so equipped
- Check of water temperature for safe level
- Check to see that the temperature pressure relief valve is properly installed, with a safety discharge pipe
- Check tank and water lines for leakage
- Evaluation under worst case configuration for spillage, improper draft, high carbon monoxide levels
- Check of electrical cable for frayed or damaged insulation
- Assessment of the need for pipe insulation and tank wrap

309.2 DWH Measures

Water heaters may require measures ranging from cleaning out obstructions in the vent, to repairs/retrofits and to full replacement.

Clean & Tune: If the water heater has not been serviced in the previous five (5) years a contractor should be called to clean and tune then appliance.

Note: DHW "Tune Up" or CTT must always be screened as an Energy Conservation Measure first. In some cases, replacements may be considered for cost effectiveness as well. Health and safety funding can be used where applicable as well.

The clean and tune is also required if the DWH:

- Is failing to operate, but does not meet criteria for replacement
- Is missing a component such as a venting assembly

- Fails to draft within acceptable limits under worst case
- Shows evidence of spillage
- Has a CO level that exceed acceptable limits
- Has evidence of burner malfunction or disrepair

See *CT Weatherization Field Guide SWS Aligned Edition* for steps in the standard C&T clean and tune protocol for DWH

309.3 DWH Repair and Retrofit

Repairs or retrofits, along with further testing may be made by licensed contractors at the same time as a standard clean and tune on the appliance.

These measures may include:

- Oil or gas Burner retrofit
- Venting repair or replacement
- Electric heating component replacement
- Repair or replacement of water lines
- Pipe insulation, tank wrap

DWH Insulation (gas, oil, electric): The DWH tank should be wrapped and the connecting water lines insulated, if they are in an unconditioned area where there is a possibility of freezing, and certainly if the appliance is outside of the thermal boundary.

Note that some newer insulated models should *not* be wrapped.

See *CT Weatherization Field Guide SWS Aligned Edition* for additional instructions and restrictions on the installation of DWH insulation measures.

Health & Safety: A malfunctioning water heater is dangerous both from the standpoint of a combustion appliance and from the fact that pressure build up in the appliance. Repair and replacement can be considered a H&S measure.

If the appliance fails the worst case draft test even after clean and tune measures further investigation must be performed to determine the reason for failure. For example, is the flue or chimney blocked? Is the failure due to confined space lacking combustion air?

If an unvented gas unit is found, it must be vented by a qualified contractor, as an H&S measure before proceeding.

If the water temperature exceeds 120 degrees adjust water to a medium temperature. Always obtain occupant permission before reducing hot water temperature setting to 120 degrees Fahrenheit.

309.4 DWH Replacement

Domestic water heaters may only be replaced in an owner-occupied unit. The replacement requires prior approval from the State. Fuel switching is discouraged, but will be considered on a case by case basis, if cost-effectiveness can be demonstrated.

If the unit is to be replaced, the Subgrantee has the responsibility to see that the correct tank size unit is ordered. The Subgrantee may work with the State, as well as the Water Heater contractor to determine the proper tank to order.

Health & Safety: Hot water heaters may only be replaced on a case by case basis if they have failed and are inoperable or if they are red tagged, following the established replacement procedure listed below.

Funding: The cost of a replacement DWH may be disallowed by State if it has not been approved prior to installation, if the appliance is not correctly sized, or if it is installed by an unqualified contractor.

309.4.1 Replacement Procurement

The replacement of a water heater appliance requires prior approval from the State. The waiver packet submitted to the state will include three supplemental bids from among the Subgrantee's list of approved contractors. A minimum of 1 year installer parts and labor warranty and a 6 year OEM warranty is required.

See *CT Program Operations and Training Manual*, Section 301.12 Waiver and/or Standard Quote Form for the required steps in prior approval.

310 OTHER MEASURES

In addition to the measures discussed so far the Connecticut WAP program offers a number of other measures that will improve the efficiency and safety of the household.

See the *Connecticut Weatherization Field Guide SWS Aligned Edition* for technical guidance on the installation these various measures.

310.1 General Heat Waste Measures

DOE has pre-determined certain general heat waste (GHW) measures to be cost-effective. These measures do not require a unit-specific auditor determination of cost-effectiveness. GHW measures are relatively low-cost and quickly installed; they would cost more to evaluate than to just purchase and install.

Those DOE-approved, presumptively cost effective materials include:

- Water heater wrap (i.e. insulating blanket);
- Water heater pipe insulation (on first six feet of hot water pipe exiting water heater);
- Faucet aerators;
- Low-flow showerheads;

- Limited weather-stripping and caulking to increase comfort (does not include regular air sealing work on Audit);
- Furnace or air conditioner filters.

Funding: Subgrantees may install up to $100 in GHW materials in eligible dwellings.

310.2 Smoke Detectors

Smoke detectors must be checked by the Energy Auditor in every unit and addressed on the Work Order as a H&S issue. Inoperable or non-existent units are to be replaced in appropriate areas according to the CT-WAP *Field Guide SWS Aligned Edition*. At a minimum one unit is placed on each floor, in a hallway and outside of the bedroom area.

The occupants must be educated on proper operation and maintenance of smoke detectors, including battery replacement.

310.3 Carbon Monoxide Detectors

Carbon Monoxide (CO) detectors must be checked by the Energy Auditor in every unit and addressed on the Work Order. Inoperable or non-existent units are to be replaced in appropriate areas according to the *Weatherization Field Guide SWS Aligned Edition.*

If the CO detector is inoperable or non-existent it may only be replaced as a H&S measure. Carbon Monoxide (CO) detectors are an allowable H&S measure, but only when one or more of the following conditions exists, and the client does not already have one in good working order:

- Fireplace or woodstove
- Vented heat and/or hot water combustion appliance
- Unvented gas cookstove
- Attached or basement garage

The occupants must be educated on proper operation and maintenance of CO detectors, including battery replacement.

310.4 Baseload Measures

Typically, addressing only the heating and/or cooling costs of a dwelling unit, accounts for only about half of that unit's energy expenditures. The addition of cost-effective electric base-load measures gives Subgrantees greater flexibility to help low-income households reduce their energy costs and to partner with sources of leveraged funds. The State, in partnership with the utility companies, addresses baseload measures such as CFLs under HES-IE. For those areas of the state serviced by municipal electric companies, CFLs may be addressed and they achieve an individual SIR under the NEAT, MHEA Audit.

310.4.1 Refrigerators

Weatherization Program Notice 00-5 issued October 6, 2000, added the use of replacement refrigerators to the approved list of measures using DOE WAP funds. Currently Connecticut does not allow for replacement of refrigerators with WAP funding.

Refrigerators are replaced by the HES-IE program for those areas that have utility funding.

310.4.2 Compact Florescent Light Bulbs

Weatherization Program Notice 94-5 issued on July 29, 1994, allows for the use of fluorescent light sources in the Weatherization Program. DOE has determined that replacement of indoor, screw-in incandescent light bulbs by compact fluorescent lights (CFL's) is an allowable weatherization measure. NOTE: Replacement of exterior lighting is not allowed.

311 INCIDENTAL REPAIRS

Weatherization funds may be used for Incidental Repairs (IR) when such repairs are reasonable and necessary to ensure the sustainability and effectiveness of weatherization measures. The category is not meant for all repair costs, just those related to the effectiveness of a measure or the package of measures. It is expected that the cost of IR activities will be reasonable and the need will be infrequent.

The cost of Incidental Repair is added to the overall package of measures and must be included in the calculation of the overall SIR test. Incidental repairs can only be considered if the overall package maintains an SIR of 1 or greater, and the repairs do not prevent the installation of weatherization measures that would otherwise have been installed.

As the expenditure of DOE funds on Incidental Repairs is limited, so is the scope of activities that can be done within a given unit. For example, needed roof repairs may qualify, but the size of such repairs will be small. Roof replacement is *not* possible. The Subgrantee must maintain controls over the expenditures in this category. Some examples include:

Example #1: An IR may include the repair of some components of a window needed to ensure the effective installation of weatherstripping. Likewise, the newly installed component on that window may require the application of matching paint.

Example#2: An IR may include minor repairs to the roof of a house made with multiple purposes; the repair may prevent moisture accumulation in the basement while also protecting the integrity of the insulation in the attic.

Funding: Incidental Repairs are charged to the Program Operations cost category. The need for each repair must be fully documented by the Subgrantee and maintained in the case file for review by program monitors and auditors. Failure to document and comply with the definition or funding limits on incidental repairs may result in disallowed costs.

Health & Safety: In some cases the Incidental Repair may have a coincidental effect on H&S issues. In example #2 above, for instance, the roof repair may prevent moisture and mold issues. In this case the repair could only be charged under the H&S category if so defined by the state. DOE has required that the State Plan identify any IR activities that will be charged to H&S. Furthermore, these activities must be consistently charged on all jobs, throughout the state.

312 MOBILE HOME

Most of the information contained in this manual, regarding measures, applies to the weatherization of mobile homes. However, mobile homes present variations in approach that are detailed below.

Mobile homes are common in some areas of Connecticut and the Subgrantees will find that weatherizing such units presents unique circumstances. Due to their elongated design and frequently loose construction, mobile homes are usually inefficient, relatively high energy users. Thus, mobile homes present many opportunities for air sealing, the installation and improvement of insulation, and improvements in the efficiency of mechanical systems.

Definition: Mobile home refers to a single-wide structure that is transportable as a single unit, is built on a permanent chassis, and is designed to be used as a dwelling without a permanent foundation. (The mobile home may or may not actually be placed on a permanent foundation.)

See *CT Weatherization Field Guide SWS Aligned Edition* for instructional and technical information regarding weatherization of mobile homes.

312.1 Mobile Home Energy Audit (MHEA)

The Energy Auditor will typically address the following areas in the evaluation of the needs in a mobile home.

- H&S issues
- Client use issues
- Structure soundness
- Air infiltration
- Existing insulation and needs (belly, wall, roof)
- Window, door repair
- Water heating
- Heating appliance, ventilation systems
- Indoor air quality tests and installation of smoke and CO detectors where applicable.

All standard audit testing is conducted with mobile homes. The following additional testing must be a part of the Subgrantee Audit procedures, as applicable.

Mobile Home Testing:

- Duct test with Pressure Pan Test
- Zonal Pressure tests on Belly, Water Heater Room and Attic
- Blower Door @ 50 Pa

Procedure: The Data Collection Sheet, which is also used for non-mobile units, is to be used by the auditor to document the needs of the unit.

312.2 Mobile Home Doors and Windows

Like all air sealing measures, caulking and weatherstripping around doors and windows can be effective weatherization measures for mobile homes.

If necessary to ensure the effectiveness of the air sealing, the repair of doors and windows may be completed within the policy on Incidental Repairs.

Replacement Limitations: The replacement of doors and windows is not cost-effective unless the existing component is deteriorated to the point of being the source of a major heat loss. The Energy Auditor must justify any recommendation for the replacement of doors and windows with a qualifying computation of the Savings to Investment Ratio. Prior approval is required for replacement.

312.3 Mobile Home Reflective Roof

Reflective roof coatings provide both insulating and air sealing qualities as applied to mobile homes. Use of these coatings is limited to jobs where the auditor has shown it to be cost-effective, with a SIR rating more than 1.0.

312.4 Mobile Home Deferral

The weatherization worker's health and safety are important, especially when the work scope requires the worker to be under the mobile home. Any dangerous or unhealthy conditions in, about or under the mobile home - trash, broken glass, animal feces, sewage, etc. – must be addressed before any work begins. If working conditions in a specific area cannot be made acceptable, work should be deferred until the situation is ameliorated.

Weatherization measures may not be applied to dilapidated mobile homes where extensive repairs are necessary; this is a walk-away.

313 CLIENT EDUCATION

Each of the various agents in the program has a part to play informing and educating the family on its role in energy conservation and in maintaining the improvements brought about by weatherization.

313.1 Subgrantee's Education Responsibility

The Subgrantee provides the case work which should initiate client interaction and education during the application process. Some important areas of responsibility in the beginning are:

- Provide an initial overview of the weatherization program, eligibility, rules, and the process.
- Provide written educational information such as "A Brief Guide to Mold, Moisture, and Your Home" as part of the client education process.

- Provide the EPA pamphlet “Renovate Right: Important Lead Hazard Information for Families, Child Care Providers and Schools” to all families in units built before 1978. (Obtain a signed receipt from the family.)
- Explain in layman’s terms the various weatherization services and how they will benefit the occupants of the home through improved comfort, safety, and cost savings.
- Coordinate weatherization job scheduling between the agency crew, the subcontractor(s) and the family.
- Be available to answer the family’s questions as the weatherization work progresses.
- Officially notify the occupants and/or owners of the unit with any reason for deferral of the work. Explain H&S or other issues which are the obstacle.
- Be prepared with the knowledge of resources available outside of the weatherization funding to help families ameliorate problems causing a deferral.

313.2 Energy Auditor Education Responsibility

The Energy Auditor can provide more in-depth information about the energy conservation measures which the family can take. Some important areas for the auditor to interact on include:

- Interact with the client regarding any energy problems that they have noticed; temperature discomfort, a non-functioning heating appliance, leakiness & drafts in the unit, high utility costs, and other indicators of weatherization needs.
- Provide brochures or other information not completed in the initial case work contact (above).
- Provide a simple explanation of the testing to be done in the unit, in terms of energy efficiency and savings results.
- Discuss and explain audit results including recommendations which the auditor may have for the occupants.
- Explain the general heat waste reduction and/or baseload measures in terms of energy savings.
- Explain the importance of installing and maintaining smoke detectors and CO detectors. Instruct how to check and replace batteries.
- Provide basic tips on energy conservation: room temperature set back periods, furnace filter change out (demonstration), water heater temperature set back, keeping doors and windows shut, and so forth.

313.3 Subcontractor Education Responsibility

The subcontractor has an instructive role to play, particularly when new equipment or materials have been installed. The subcontractor role includes:

- Explain the proper care and maintenance of any measures that the subcontractor company has installed.
- Explain and leave any manuals or other written materials for products the company has installed.
- Demonstrate to the family the operation of heating appliances or other newly installed equipment and parts.
- Inquire and answer any customer questions regarding the company's work.

313.4 Final Inspector Education Responsibility

Note: all Work performed, Inspected and reported as DOE completed CT WAP sites must be in compliance with DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, CT WAP Weatherization Filed Guided SWS Aligned Edition and the current year State Plan/Master File.

The Final Inspector has an important role to be sure that the family has an understanding of what weatherization was completed or installed. The inspector's responsibilities include:

- Interview the client as to the family's satisfaction with weatherization work, the improved comfort level, and decreased energy costs (if known).
- Inquire and answer any follow-up questions from the family regarding the weatherization work.
- Assess the family's knowledge of maintaining the weatherization work and re-instruct the client on any weatherization energy conservation techniques as needed.

314 FINAL INSPECTION

Note: all Work performed, Inspected and reported as DOE completed CT WAP sites must be in compliance with DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, CT WAP Weatherization Filed Guided SWS Aligned Edition and the current year State Plan/Master File.

A final inspection must be completed on each dwelling prior to submittal to the state for payment. It is a crucial part of the weatherization process as it provides the Subgrantee with the ability to correct installation errors and call for measures that may have been missed.

Once the weatherization work is reported by the crew/ contractor as complete, the Subgrantee will arrange for a Final Inspection.

One hundred percent (100%) of the weatherized units must pass the Final Inspection.

314.1 Final Inspector Qualifications

The Subgrantee is responsible for the final quality of work accepted. Connecticut WAP requires that all inspectors hold a current BPI certification as QCI. Inspectors are expected to maintain their certification as part of their condition of employment with the Subgrantee.

The Final Inspector must be an employee of the Subgrantee. The function may not be subcontracted, unless approved by CT WAP.

The Final Inspector may be the same individual who conducted the Energy Audit, on any given unit. The Final Inspection may not be conducted by any individual who directly worked as part of the installation personnel on the unit.

314.2 On-site Final Inspection Steps

Note: all Work performed, Inspected and reported as DOE completed CT WAP sites must be in compliance with DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, CT WAP Weatherization Filed Guided SWS Aligned Edition and the current year State Plan/Master File.

Procedure: To conduct the Final Inspection the following steps should be followed:

1. After all measures are installed, the Subgrantee should print two (2) Completion Certificates that will be signed during the final inspection process. See Appendix 2 for sample Completion Certificate.

2. The Inspector should schedule the inspection with the client at a mutually convenient time for both parties and confirm with the client prior to arrival at the dwelling

3. Prior to the visit, the Inspector should compare the Data Collection Sheet to the Installed Building Weatherization Report (BWR), making note of any measures that were called for but not installed in the dwelling

4. The inspector should arrive at the home *on time*, with all appropriate equipment (i.e. blower door, IR camera, digital camera, CO monitor, Leakator) and paperwork (i.e. completed data collection sheet, completion certificate, and additional notes on the site)

5. The Inspector should introduce themselves to the client and ask them about their experience with the contractor and/or crew that completed the work.

6. The Inspector must conduct a walk-through of the dwelling, including the attic, with both Data Collection Sheet and BWR in hand to see if any oversights occurred, and if measures are found in home as called for on Data Collection Sheet. At this time, and before using the blower door, the inspector must ensure that all H&S concerns were addressed by the Auditor and Installer.

7. The Inspector must inspect and evaluate all new heating appliances and water heaters to ensure that they are correctly sized, have been properly installed, and are properly working.

8. All new and existing combustion appliances must be evaluated for CO and draft to ensure that they are properly working prior to using the blower door.

9. The Inspector should set up Blower Door (unless there is a H&S safety reason not to do so), and conduct blower door readings. With the blower door still on, the Inspector should go through the dwelling with the infrared camera, examining cavities that were supposed to be insulated to ensure that they were done to standard.

314.3 Final Inspection Process

Note: all Work performed, Inspected and reported as DOE completed CT WAP sites must be in compliance with DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, CT WAP Weatherization Filed Guided SWS Aligned Edition and the current year State Plan/Master File.

The Final Inspection will include a visual examination of parts and materials used, as well as the workmanship of the installations. The Inspector will also conduct technical testing and/or evaluation to assess the effectiveness and safety of the work.

During the Final Inspection process, the Final Inspector will assess the range of weatherization work completed on the unit, including whether:

- The Auditor considered all Energy Efficiency measures and H&S issues.
- The Energy Audit called for comprehensive weatherization measures.
- H&S problems detected by the Auditor, or others were remedied or mitigated prior to the weatherization steps, as appropriate.
- All energy efficiency measures called for in the original Work Order, or as modified with the Subgrantee's approval, were conducted, and done in the order of priority assigned to each.

- Air sealing and other energy efficiency measures were completed correctly using standard program protocols with approved materials and parts.
- The inspection of the insulation work and review of the certificate of insulation show that insulation was properly installed within the manufacturer standards and at the levels, locations and types called for by weatherization program guidelines.
- Based on the inspector's pressure differential analysis the proper alignment of the unit's thermal and pressure (air) boundaries were achieved.
- Based on blower door guided pressure testing, air sealing was effectively completed.
- Optimal ventilation rates in the house were achieved in conformance with ASHRAE 62.2-2013.
- Based on the evaluation under 'worst case' configuration of the house the combustion appliances are operating safely in the weatherized unit.
- Based on Combustion Air Zone (CAZ) testing methods adequate combustion air is available for all combustion appliances.
- Based on testing with a gas detector, there are no gas line leaks.
- Based on the inspector's own testing, and/or the inspector's review of the test out results from the installer on any heating system or water heater replacements in the unit; such appliances were properly installed, properly sized, and test within acceptable energy efficiency standards.
- Based on testing, heating system energy efficiency levels were improved to at least a 70% level.
- Based on all testing and visual inspection all appropriate measures were considered and reasons were documented when measures were not installed.
- Based on a client interview the occupants have no complaints about the work completed and the occupants understand the actions needed to maintain the efficiency of the unit.

If all measures were done satisfactorily, the Inspector and client should sign the completion certificate.

If one or more measures were not installed to standard, the Inspector is required to arrange to fix measures prior to signing of completion certificate by either client or inspector.

Procedure: If measures were not called for that should have been, the Inspector must make note of them and re-run the software audit with all appropriate measures called for in the software audit. If these measures are matters of H&S or screen at an individual SIR of one (1) or more, the Subgrantee will arrange for the further installation by the Subgrantee's crew or by the appropriate contractor.

Once additional work is completed, the inspector must conduct another compete Final Inspection, following procedures outlined above.

314.4 Final Inspection Tests

Subgrantee Final Inspection procedures must include the performance of the following tests, as applicable.

General Tests:

- Blower Door @ 50 Pa or equivalent –
- Attic and Crawl Space Zonal Pressures
- House-to-garage wall assembly leakage tests on attached garages (garage door open and closed)
- Test Smoke & CO Detectors
- Pressure Pan Test (if work was done on ducts outside the thermal envelope)
- Exhaust Fan Flow Test (CFM) (on units that have been repaired or replaced)

Heating Appliance:

- Combustion Analysis/CO in Flue (on units that have been repaired or replaced)
- Combustion Spillage Test
- Natural Draft Test
- Clocking the Gas Meter (Natural Gas on clean and tune)
- Test for Fuel Leaks
- Heat Rise Test on Furnace (on units that have been repaired or replaced or if ducts have been sealed or filters have been added)
- Ambient CO Test in Mechanical Room and Living Space
- Smoke Test on Oil Furnace/Oil Water Heater (on units that have been repaired or replaced)
- Worst Case Draft Test
- Test heating system emergency Shutoff Switch
- Test for proper function of thermostat
- Recheck Room Balancing (on forced air heating plant)
- Space Heater (includes gas fireplaces) Combustion Analysis/CO in Flue
- Space Heater (includes gas fireplaces) Combustion Spillage Test

- Space Heater (includes gas fireplaces) Natural Draft Test
- Space Heater (includes gas fireplaces) Worst Case Draft Test

Water Heater:

- Worst Case Draft Test
- Natural Draft Test
- Combustion Analysis/CO in Flue (on units that have been repaired or replaced)
- Combustion Spillage Test

315 RE-WORK AND WARRANTEE

The Subgrantee is responsible to ensure that all weatherization work is completed to the level of quality that will pass the Final Inspection. This responsibility applies to work conducted by agency's own crews as well as that performed by agency contractors.

Any measures that do not pass Final Inspection must be addressed immediately. If problems are discovered after the unit has been reported as passing Final Inspection, additional work may not be conducted, and the State should be notified for instructions.

315.1 Final Inspector Ordered Reworks

It is the responsibility of the Subgrantee to have procedures in place to effectively and promptly address problems found in the Final Inspection.

At any point when the work does not pass the Final Inspection, or discrepancies between what was ordered and what was delivered cannot be reconciled, the Subgrantee Final Inspector should fail the unit and order necessary re-work.

At this point any payments invoiced by the contractor involved are to be withheld and the Subgrantee should immediately notify the contractor of the need and reason for a re-work. The return to the unit for the rework of weatherization measure may be given a reasonable amount of time to accomplish.

If the contractor submitted the work to the Subgrantee as "complete", the cost of any subsequent rework needed to pass inspection is to be the responsibility of the contractor. An additional Final Inspection of a unit required from a rework will be charged the subcontractor by the Subgrantee as a Re-inspection Fee of $150.00 to $300.00 depending on the extent of the re-inspection. The fee will be deducted from the subcontractor's invoice.

If the re-work is the responsibility of the Subgrantee crew, it should be re-scheduled immediately.

Rework Dispute: If the subcontractor refuses to rework a rejected measure, the Subgrantee should re-order the specific work by another subcontractor. The original company's invoice for that measure should be rejected. Other acceptable work would be paid for, but the company should then be disqualified from subsequent work in the program.

In the instance that a *technical* dispute over passing a measure cannot be resolved, the Subgrantee should call for a third-party inspection by the State QCI, monitor and technical expert. In that case the opinion of State will be binding on the resolution of the dispute.

Re-works or additional measures may require a modification in the Work Order and resets in the *NEAT, MHAE Audit Software.*

315.2 Go-Backs on Reported Units

As of as of January 10, 2011, Subgrantees may not "go-back" to a unit that has been closed out and submitted to the State for payment. As a result of a change in federal guidance, the ability for an agency to do additional work on a dwelling that was already submitted to the State, and reported to DOE as a completed unit, is significantly limited. This regulation pertains to all measures, including heating system and water heater replacements.

If a unit that has been reported as complete is found to need additional work or corrective action, it must be brought to the attention of the State program monitor. The monitor will work with the Subgrantee to correct the situation.

In any instance where a contractor failed to conduct work in conformance with program policies, the contractor should be contractually required by the Subgrantee to re-work the measure at the contractor's expense.

The limits on go-back re-works do not necessarily apply to measures that were not charged to DOE.

315.3 Warrantee

The Subgrantee must contractually require all contractors to provide a warrantee against defects in materials, manufacture, design, or installation of work performed under contract for the period of one (1) year from the date the unit passes the Final Inspection.

Any warrantee made by a manufacturer must be passed along to the owner of the unit.

316 SUBGRANTEE FINAL RESPONSIBILITIES

With the receipt of the Final QCI Inspection, it is an ideal time for the Subgrantee to review the entire case for its quality, compliance and accuracy. The Subgrantee is responsible for the quality of every aspect of the weatherization work completed on each unit, including:

- processing the application & accurately determining eligibility;
- arranging for an effective energy audit of the unit;
- devising an effective work order within program priorities and fiscal bounds;
- obtaining State approval where required;
- performing an analysis and writing a corrective action should the process fail to fulfill the requirements of the CT WAP;
- overseeing the actual weatherization work; and

- conducting a final QCI inspection that ensures the work is complete and correct and submitting it to the State for approval.

316.1 Completion Process

The Subgrantee may not report the unit as completed until it has passed the Final QCI Inspection. Before submitting the unit for claim the Subgrantee's must reconcile the work completed by matching the following information:

- the weatherization measures called for in the Work Order (based on the audit and including subsequently approved modifications), with
- state approval of waivers submitted where required, with
- the weatherization measures conducted by the Subgrantee, *and* the weatherization measures invoiced by each subcontractor, with
- the weatherization measures reviewed and passed in the Final QCI Inspection.

Likewise the Subgrantee must match each cost which the subcontractor invoices for each measure to the agreed upon price, as applicable; from the subcontractor's approved proposal, from a weatherization program price list or as a specific price negotiated between the Subgrantee and the subcontractor.

The Subgrantee may not claim the dwelling as completed until any discrepancies in the measures or their costs have been reconciled. After all discrepancies have been addressed, the unit is closed out in the software audit and submitted to the State for payment.

After the Final Inspection, no more work can be done on the home as it is considered closed. At this point, a dwelling is subject to monitoring by the State (in-progress monitoring by the State may also occur); therefore, it is crucial that Subgrantees consider all eligible Energy Efficiency and H&S measures available and within funding resources. Once closed out in the system, Subgrantees will be unable to complete additional work on the dwelling. When the dwelling is completed and ready for close-out the following steps should be taken:

1. After work is inspected by the Final Inspector, each measure must be flagged as installed, in the NEAT, MHEA system.
2. When entering installed dates into the NEAT, MHEA software the dates must be the specific date that the individual measures were installed by that particular crew/subcontractor.
3. Log the event by entering the final QCI inspection date.
4. Flag the unit completed by entering the date and then *print* the Installed BWR.

SECTION 400 HEALTH AND SAFETY

400 INTRODUCTION

While the primary goal of the Weatherization Assistance Program (WAP) is to improve the energy efficiency of dwellings owned or occupied by low-income persons, this must be accomplished in a way that is not detrimental to the Health and Safety (H&S) of occupants and weatherization workers.

Accordingly, Department of Energy (DOE) regulations allow for energy-related H&S expenditures. DOE WPN 11-6 further details qualifying factors of H&S activities:

- Costs must be reasonable as determined by DOE in accordance with Connecticut's approved State Plan; AND
- The actions must be taken to effectively perform weatherization work; AND/OR
- The actions must be necessary as a result of weatherization work.

WAP cannot provide solutions for all H&S issues that a household may have. To qualify, the activity must be necessary to ensure weatherization activities do not cause or exacerbate H&S problems for workers and/or occupants. Only H&S activities related to a weatherization measure are eligible. This means H&S activities will generally be conducted in specific areas where energy efficiency measures are identified for installation.

Moreover, only those activities specifically defined in the approved Connecticut H&S Plan, which are also listed in this policy manual, will qualify as H&S activities. Many activities are limited in scope and there are budgetary restrictions on the H&S cost category.

A complete H&S evaluation by the Energy Auditor is required for each dwelling unit. The Energy Auditor's H&S recommendations are to be made in conformance with the Connecticut H&S State Plan, utilizing the forms and protocols developed for that purpose. H&S issues must be addressed prior to the start of any weatherization work.

The H&S inspection typically begins with a detailed visual inspection in several key areas of the unit, such as:

> **Note: all Work performed and reported as DOE completed CT WAP sites must be in compliance with DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, CT WAP Weatherization Field Guide SWS Aligned Edition and the current year State Plan/Master File**

OUTSIDE INSPECTION	Attic Inspection	Wall Inspection	Basement/ Crawlspace/Attached Garages Inspection
Ground slopes away from foundation Gutters in place and functioning Down spouts discharge away from foundation No cracks in foundation Roof, windows, doors provide weather tight protection Chimney in good shape	Recessed and canned lighting Chimney/flue shielding Wiring, incl. Knob and Tube Adequate ventilation Water leaks, Moisture problems Other	Wiring Water leaks Moisture problems Lead-based paint Knob & tube wiring Asbestos siding Other	Vapor barrier Wiring/electrical Water leaks Plumbing leaks Moisture problems Storage of VOC materials Other

Discovery and mitigation of potential environmental hazards in the unit are insurance against danger to occupants and weatherization workers. The Energy Auditor and work crew should note unsafe and unsanitary conditions in or about the unit including, but not limited to: mold and mildew, drainage problems, plumbing leaks, lead-based paint, asbestos, structural damage and wood rot.

Where H&S issues cannot be addressed by the program the Subgrantee may have to defer weatherization work until the issue is remedied. In this instance, the Subgrantee should have alternative solutions available to the client and casework personnel to assist in locating other resources. See Section 204, *Unit Deferral* for additional information. H&S issues and solutions are discussed in detail in this section. Also see *Connecticut Weatherization Field Guide SWS Aligned Edition*

401 ENERGY EFFICIENCY vs. HEALTH & SAFETY

H&S measures, in particular heating units and water heaters will frequently have the effect of improving energy efficiency *and* making the appliance safer. So, the Subgrantee usually has a decision to make as to where to categorize the measure and how to charge it to the unit costs.

The initial decision is made based on the potential energy efficiency of the measure being considered. Any measure that is recommended, from repair of the appliance to replacement**, must first be tested by the audit software as to its cost-effectiveness.** This uses the process of computing the Savings to Investment Ratio (SIR) rating of the measure. If the rating meets the minimum threshold of one (1.0 SIR), the decision is simple: It *must* be charged as an energy efficiency measure on the unit.

If the measure does not have the required SIR of 1.0 or more, the only way to install it is as an H&S measure. This can only be done *if* the measure qualifies in the H&S category *and* to the extent that funding is available.

Otherwise, the unit may need to be deferred until a way can be found to accomplish the measure outside of WAP funding. See Section 301.10 *Saving to Investment Ratio (SIR) and* Section 204, *Unit Deferral*

402 REGULATORY REFERENCES

Note: all Work performed and reported as DOE completed CT WAP sites must be in compliance with DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, CT WAP Weatherization Field Guide SWS Aligned Edition and the current year State Plan/Master File.

The primary reference for H&S policies is the current Connecticut Health & Safety Plan. Regulatory references underpinning the H&S plan are:

Federal regulations at 10 CFR Part 440.16(h) DOE programmatic authority; 10CFR Part 440.18(d)(15) DOE expenditure authority; and 29 CFR Part 1900 and 1926 (OSHA)

Weatherization Program Notices: WPN No. 11-06, *H&S Guidance*; WPN 11-06A, *Supplemental H&S Guidance* for the latest information on H&S

See *Connecticut Weatherization Field Guide SWS Aligned Edition* for additional technical clarification and guidance on H&S measures.

403 H & S TRAINING

H&S measures must always be properly considered and addressed for each unit. Subgrantee staff and weatherization workers must be trained and knowledgeable about how their work can affect the H&S of the unit occupants.

403.1 Training

Note: CT WAP Quality Work Plan(QWP) Training will be provided to ensure that all Work performed and reported as DOE completed CT WAP sites must be in compliance with DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, CT WAP Weatherization Field Guide SWS Aligned Edition and the current year State Plan/Master File.

The State has established H&S training requirements for key weatherization program workers, including; energy auditors, inspectors, weatherization installers, program management, and others. Training includes identification of the range of H&S issues, and requirements for Subgrantee responses under the program guidelines and possible resources outside of the program boundaries.

Worker safety is an important training component. Training will include DOE & State of Connecticut regulations, along with EPA requirements for addressing environmental hazards and OSHA requirements in areas such as proper use of personal protective equipment (PPE).

The State will maintain continuous monitoring of all related programs, methodologies used in WAP delivery and provides Subgrantees with training resource references and opportunities including, but not limited to, WAP-funded providers.

403.2 Certification

In some instances, Subgrantee weatherization staff, weatherization contractor personnel and all weatherization workers must possess the proper H&S related certifications to perform weatherization work.

These certifications include but are not limited to: Lead Safe Weatherization related certifications, OSHA 10, OSHA 30, proper state licensure for certain trades, EPA Certified Renovator. Proper certification is required prior to any crew or contractor performing work in the Connecticut Weatherization Program and verification of credentials on at least an annual basis is a Subgrantee requirement.

403.3 Tracking

Subgrantees must track training for employees and subcontractors. Mandatory training and certification for any weatherization position within the agency should be part of the agency's personnel policies and individual position requirements. Personnel records must be maintained for each weatherization position detailing compliance to these requirements.

Likewise, the Subgrantee must contractually ensure that subcontractors adhere to all mandatory training and certification requirements. The Subgrantee should monitor and track subcontractor training, and maintain subcontractor records readily available for State monitoring reviews.

The State holds trainings on H&S issues, including providing training courses relative to Lead Safe Work Practices, on an as-needed basis. It is an allowable expenditure of Training and Technical Assistance funds for Subgrantees and/or contractors to attend additional training in the area of H&S measures.

See Section 500, *TRAINING* for additional training information and requirements.

404 H & S MONITORING

During the Annual Administrative Review (AAR) State staff will review training and certification records as a part of its annual administrative review process. See Section 600, *MONITORING & QUALITY ASSURANCE*

In addition, the State will review weatherization client files to ensure files contain copies of all signed H&S disclaimers. Failure to meet H&S training and certification requirements, maintain complete H&S training records, and fully document client files will result in a compliance finding by the State at the time observed.

State staff will monitor the Subgrantee for compliance with training and certification requirements including Subgrantee records for training and certifications. Monitoring will include verifications that these requirements are followed.

The State also reserves the right to perform random assessments at work sites to determine if crews and contractors are utilizing safe work practices. Should State monitors notice failure to comply with State policy, OSHA standards, or H&S requirements, it will be a finding against the Subgrantee.

The State will monitor the use of the H&S cost-category very closely. Failure to properly allocate funds to the appropriate cost category will result in disallowed costs. Subgrantees must be well informed of allowable H&S cost categories.

405 H & S FUNDS

Weatherization program regulations allow for a separate cost category for H&S activities that meet defined criteria related to the weatherization work and are within the dollar limits defined in the State's approved H&S plan. Activities assigned to H&S costs are not subject to SIR analysis. H&S activities are not included as program operations costs and are not a part of the average cost per unit calculation.

405.1 H & S Cost Category

The State has implemented a separate Subgrantee cost category for H&S. When determining what costs can be charged to H&S, the Subgrantee must be aware of the following restrictions:

- Only specific activities in the approved Connecticut WAP H&S Plan qualify as H&S activities;
- To qualify, activities must be necessary to ensure that weatherization activities do not cause or exacerbate H&S problems for the unit occupants; and/or, ensure that they do not present a H&S issue to weatherization workers;
- H&S costs are reasonable; and,
- H&S activities will be needed in specific areas where related energy efficiency measures are identified for installation.

If the proposed H&S measure qualifies as an energy efficiency measure (i.e., has the effect of energy conservation and meets a minimum SIR rating of one (1), the measure *must* be installed and charged under that energy efficiency measure. A primary example of this would be a heating system replacement that meets an SIR of one or more.

Finally, some activities that have an H&S effect may be specified in the state plan as Incidental Repairs (IR). In such instances, IR measures will always be charged to the energy efficiency measure provided that measure meets an SIR of one (1) or more. If not, then the IR may be charged to the overall package of measures of the unit if that overall package of measures meets an SIR of one or more.

See Section 311, *Incidental Repairs* for the further definition of that cost category and DOE Weatherization Program Note 12-09, Frequently Asked Questions.

405.2 H & S Budget Caps

Connecticut budgets H&S as a separate program operations category and excludes these costs from the average cost-per-home. When addressing H&S issues, Subgrantees must take into consideration budget limitations including:

- Subgrantees must stay within the percentage allocated for H&S; and
- Subgrantees must maintain an average H&S cost per-unit based on a percentage established using Program Operations average cost per-unit.

The State will closely monitor use of H&S funds to ensure compliance with budget limits. Exceeding budget limits, including the H&S Average cost-per-home will result in disallowed costs.

See Section 702.9, *H&S* as a cost category.

405.3 State Waiver Requirement

There are several situations referred to in this section in which H & S measures require prior State approval. These include heating appliance replacement, domestic water heater replacement, and oil tank replacement. See Section 301.12 for further instructions on submitting a waiver request.

406 WEATHERIZATION WORK SAFETY

Weatherization work crews have a right to work in an environment that does not jeopardize their H&S. Occupants of the unit also expect that work be performed in a manner that will not endanger them and other household members.

The Subgrantee must have policies and protocols in place which require all standard precautions to ensure a hazard-free workplace. These precautions apply to the Subgrantee's crews and its subcontractors. Such safety policies, as well as the agency's subcontracts, must explicitly cite the requirement for compliance with federal regulations on worker H&S, including DOE and OSHA requirements, applicable state law, and local codes.

To maintain a safe work environment, the Subgrantee must enforce WAP deferral policies that require work postponement until H&S hazards are mitigated. Procedures must be in place to authorize program staff, energy auditors and weatherization workers to call for possible deferral whenever potential Hazards are identified. See *CT Program Operations and Training Manual;* Section 424 H&S Deferral.

The Subgrantee is responsible for weatherization workers' H&S throughout the implementation of weatherization services: office, warehouse, and job-site.

It is expected and required that crews, directly employed or subcontracted, are adequately trained and possess valid state licensure to perform all work associated with their contract. Other requirements include, but not limited to, proper protective gear, safe and well maintained machinery, tools and equipment, material safety data sheets (MSDS) for all hazardous items, worker safety training.

406.1 Regulations and Training

The Subgrantee must comply with all applicable H&S safe worksite regulations. Subgrantee employees, and subcontracted personnel, must be fully trained on H&S rules and regulations from applicable agencies including but not limited to DOE, EPA, HUD and OSHA. Training is required prior to weatherization personnel working at the job site.

The following regulations/procedures are applicable:

- OSHA regulations re: labor (29 CFR 1926, *Safety and Health Regulations for Construction).*
- OSHA regulations relating to toxic substances (29 CFR 1910, *Occupation Safety and Health Standards)*.
- DOE Weatherization Program Notice 11-6, *Health and Safety Guidance.*
- *CT Program Operations and Training Manual* Section 500, TRAINING

- *Connecticut Weatherization Auditor/Inspector and Installer Field Guide (2012)* for additional technical clarification on crew and contractor safety in the workplace.

Training requirements include periodic refresher sessions on various safety topics for all employees. A Subgrantee training log must be maintained by the Subgrantee that includes individual names, dates and training topics for its own employees as well as contractor personnel.

The State will monitor qualifications of crew and contractor personnel. Subgrantee charges for work performed by unqualified personnel on a weatherization job will result in questioned or disallowed costs under State fiscal/program monitoring or a Subgrantee fiscal audit.

Through internal and contract technical/monitoring compliance staff, the State's evaluation of workforce training needs and development of comprehensive training strategies is ongoing.

406.2 Training Funds

The State will, through Training and Technical Assistance (T&TA) funding, provide ongoing training on various H&S related topics. Such training is made available for program staff and contractors and their staff at no additional cost.

Furthermore, Subgrantees are allocated T&TA funds that allow for additional staff and contractor training as needed. The cost of these H&S trainings will be paid with T&TA funding. Subgrantee-sponsored trainings require prior State approval.

Purchasing equipment necessary to comply with H&S requirements is allowable under the Program Operations cost category. See Section 117 for more information and requirements for procuring equipment.

For additional information on how to charge for time of Staff and contractors to attend training, see Sections 501 *Training* and Section 703.3 *Training and Technical Assistance Cost Category.*

Subcontractors are expected to provide *all* of the equipment and supplies required for the job, as they bid, at their own expense.

406.3 Occupant Safety

The Subgrantee is responsible for ensuring that occupant H&S is considered prior to and throughout installation of weatherization measures. This is especially important if one or more of the occupants has an identified medical condition.

If it is determined that any of the work activities would constitute an H&S hazard, the occupant at risk will be required to leave the home during these work activities. If that is not possible, the work must be deferred until an alternative solution can be determined.

To ensure household safety, the ideal worksite will be set up so that occupants are not in any danger of injury while work is underway. Children in particular should be shielded; either, by the family removing them from the area, or by an arrangement that keeps them away from work areas.

Weatherization activities that can present an H&S issue for occupants include, but are not limited to:

- Air sealing using foam spray

- Insulation blowing and installation
- Sanding, planning, or removing lead painted building components
- Working with solvents, paints, caulks and sealants containing VOCs
- Using power tools, staple guns, other tools
- Installing certain materials such as glass, fiberglass, plywood
- Operating the blower door under certain configurations
- Leaving unattended ladders
- Monitoring activities around combustion appliance(s) which may cause CO spillage

Caution tape, cones and signage, such as where lead safety is required, should be used to demarcate areas where work is being performed. Workers must be cognizant of the presence of occupants and appropriately warn them of hazards.

The State reminds Subgrantees that careful review of Auditors' Data Collection Sheets, Field Notes and Proposed Measure installations must be conducted by trained Reviewers, prior to issuing all Work Orders.

> **Note: all Work performed and reported as DOE completed CT WAP sites must be in compliance with DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, CT WAP Weatherization Field Guide SWS Aligned Edition and the current year State Plan/Master File.**

406.4 Worksite Guidelines

On-the-job safety begins with a well-organized worksite where tools and materials are neatly and handily arranged. Refuse/debris should be packed up and discarded at regular intervals during the job. Workers should be responsible for safety in their work areas. Supervisory personnel should be aware of the overall operation, watching for potential hazards to workers and occupants. In areas where lead safety is applicable, the work must be isolated and conducted according to EPA lead-safe weatherization practices.

A supply of potable water must be kept in all work areas and job sites. Portable water containers must have taps and each worker must have his own drinking cup.

Tool Safety: The safe use of powered and manual tools is an important component of crew worker safety practices. Crews must be trained in the proper use of tools. Crews are required to don appropriate Personal Protective Equipment (PPE) when using tools or exposed to certain hazards where wearing appropriate PPEs affords them personal protection. Power tools and equipment must be protected with GFCI circuit breakers. Damaged or worn electrical cords must be discarded. All workers must be trained on the safe use of ladders.

Truck Safety: All weatherization vehicles must be properly maintained and inspected regularly to insure safe operation. A maintenance log documenting all service and repairs must be kept for each vehicle. The truck used for weatherization and/or insulation equipment should be well-organized and clean, packed so that

equipment and materials are secure and not likely to fall on the weatherization worker(s) or occupants. Trucks should have an ample supply of potable water, a first-aid kit, and a fire extinguisher.

On-site Documentation: Subgrantee and subcontractor crews must comply with OSHA HAZCOM training and requirements. Containers of hazardous materials must be labeled with appropriate warnings. MSDS for all materials being used at the job site must be available at all job sites in case of an emergency.

It is the responsibility of all Subgrantees to ensure that worksite guidelines are enforced for all personnel and Subcontractors performing WAP service delivery and or Inspection Services.

406.5 Personal Protective Equipment (PPE)

Subgrantees shall ensure that all worksite personnel have available and use PPE appropriate to the task undertaken. All Subgrantee personnel policies and sub-contracts with weatherization auditors, installers and inspectors must explicitly require the use of PPE.

Specific PPE required at a typical jobsite includes, but is not limited to:

- Safety glasses or protective eyewear
- Noise reduction ear plugs
- Polyethylene- coated suit (Tyvek)
- Safety-toed footwear
- Work gloves
- Respirator, properly NIOSH rated for the job
- Hard hats as necessary

See 29 CFR 1910.132 Occupational Safety and Health Standards Subpart I Personal Protective Equipment; ANSI Z-87.1-2003, and 29 CFR 1926.102.

406.6 Spray Polyurethane (two-part) Foam (SPF)

The Connecticut WAP has held trainings on use of low pressure two-part polyurethane spray foam (in certain situations) for air sealing. Due to the properties of this material, the Subgrantee and subcontractors MUST first receive certification training from the original product manufacturer and strictly comply with WAP protocols for its use and application. The Subgrantee must assure that crews and contractors obtain this certification in the proper care and use of this product.

Also, EPA has issued guidelines which must be followed when working within the conditioned space. Care must also be taken when working outside the conditioned space, near windows, doors or other openings, to prevent fumes from entering the conditioned space.

Prior to the start of work, the client must be notified of plans to use two-part polyurethane spray foam and about necessary precautions. When this material is being applied, all occupants must leave and not return for at least one hour after all spray foam applications have been completed. Continuous fresh-air ventilation must be provided to the space(s) where spray foam is being applied and not allowed to mix

with indoor conditioned air for the duration and the one hour after all spray foam activities have been completed. Subgrantee and contractor crews that install two-part spray foam must wear appropriate PPEs during the application process.

Note: The State neither mandates nor restricts the use of Spray Polyurethane Foam for air sealing. The State continuously monitors the USDOE and EPA guidelines in respect to the use of this material in residential applications and will provide guidance and develop ongoing training strategies.

The State reminds Subgrantees to always utilize appropriate client notification and document notice to vacate and re-entry. Subcontractors are reminded to comply with all applicable State and local code, in respect to ignition barrier installation in exposed areas.

See *Connecticut Weatherization Field Guide SWS Aligned Edition for further information on the use of this material in Weatherization applications.*

406.7 Lead-Safe Weatherization

Subgrantee protocols must designate that any house built before 1978 that has not been cleared by an official lead inspection contains lead paint hazards. The personnel on-site and the work practices must reflect this designation. See *Connecticut Program Operations and Training Manual* Section 418, *LEAD-SAFE WEATHERIZATION; Connecticut Weatherization Installers Field Guide (2012),* Chapter 1.5 LEAD SAFE PROCEDURES p. 28

407 CLIENT H&S EDUCATION

The client most be advised at the time of completion of the Request for Weatherization document, that they will be contacted by the weatherization provider for additional information regarding the site and occupants. The client will be contacted telephonically and surveyed via a scripted “New Client, Job Information" intake form which requires the occupants to reveal any known or suspected health concerns. A secondary review of this information shall be performed by the local weatherization coordinator and additional screening is done at the time of site specific audit.

Prior to the start of work, Subgrantees ***must*** provide clients with forms that identify all hazards potentially identified by the audit. There are several forms, hazard specific (Mold/Moisture and Carbon Monoxide), and generic (H&S Disclaimer) for all other potential hazards, that must be completed prior to the start of work. In addition, clients will receive publications/documents, when applicable:

- EPA Renovate Right (occupants of all pre-1978 buildings)
- EPA Consumer Guide to Radon
- A Brief Guide to Mold, Moisture and your Home
- Asbestos in the Home: A Homeowners Guide
- Renovation, Demolition & Asbestos-NHDES 2007

- Deferral of Services Notice

These documents must be signed by the client and the Subgrantee representative (e.g., Energy Auditor) and kept in the client file.

Whenever H&S measures (e.g., carbon monoxide detectors, smoke detectors, thermostats, heating systems and/or water heaters) are installed in a home, the Energy Auditor, Inspector, as well as the installer must provide comprehensive instructions relative to the operation and maintenance of the device or appliance.

Deferral: If the client refuses to sign any required document, no work may be done to the home, and the unit must be deferred until such time as the client agrees to sign the appropriate paperwork. See Section 420, Deferral.

See *Connecticut Program Operations and Training Manual*, Section 407 Client Education

408 COMBUSTION APPLIANCES

Appliances that combust materials have the potential to cause H&S issues if not operating properly. It is important that the Subgrantee perform analysis of each appliance for operational efficiency and safety. It is vital that the weatherization work itself does not cause or worsen the possible dangers posed by malfunctioning combustion appliances.

Combustion appliances that require analysis include but are not limited to:

- Furnaces
- Boilers
- Water Heaters
- Vented Space Heaters
- Oil Tanks
- Gas Stoves
- Gas Dryers

Combustible materials used by these appliances include natural gas, propane, oil, kerosene, and wood. All of these materials, when burned, produce byproducts which are dangerous if not properly vented to the outside. The Subgrantee has the responsibility to ensure that combustion appliances are operating safely and are properly vented. In instances where secondary heating sources such as unvented kerosene space heaters exist, the Energy Auditor must inform the occupants that they must be removed prior to weatherization.

408.1 Comprehensive Combustion Appliance Analysis

Combustion appliances must be individually assessed by the Energy Auditor to determine the condition, operability and efficiency of each one. At the same time, the appliances must also go through comprehensive technical analysis to ensure that they all operate safely together, even under 'worst case' conditions.

Such conditions are established by establishing the maximum depressurization of the zone in which the combustion appliances operate (CAZ). Comprehensive technical analysis is conducted with all of the appliances in operation, along with any other devices, such as exhaust fans which may exert a negative pressure; and, the most negative pressure configuration of the unit.

In terms of H&S, the comprehensive combustion appliance analysis must include:

- CAZ: to establish that an adequate supply of combustion air is available in the Combustion Appliance Zone (CAZ) for the safe operation of each appliance, performed under the 'worst case' conditions.

- Venting: to ascertain that all appliances are properly venting combustion gasses under the 'worst case' conditions that includes analysis draft pressure in the appliance (over fire draft) and the smoke pipe connected to the chimney flue (draft)

- CO Levels: Measuring carbon monoxide emissions from the combustion appliances to ensure that they are within acceptable levels. Procedures are performed to measure CO at ambient, worst case and natural conditions. See *Field Guide*, Section 1.1 Carbon Monoxide.

Additional safety analysis includes:

- Fuel Leakage: Testing for gas (natural or LP) leaks in the pipes that deliver fuel to the appliances, or look for signs of fuel oil leaks in pipes that connect oil storage tank to the oil burner.

- Fire Hazards: Inspecting for clutter, frayed wiring, and location of flammable materials and chemicals.

- Test Emergency Safety Switch(s) for combustion appliances

- Electrical Hazards: Including observation of grounding connector in face of power outlets, ground wire connected to grounding rod outside, , correct polarity of power outlets, use of extension cords, overloading of power outlets, observe wiring junction boxes missing covers and observe connections inside (do not remove any junction box covers), fuse types and sizes, element amperage [electric furnace], disconnect requirements and conduit requirements.

408.1.1 Licensure Restrictions

Connecticut state law requires state licensing by the State Boards of Occupational Licensing in the several areas relevant to working on combustion appliances, including the following:

- Heating, piping and cooling
- Plumbing
- Electrical work
- Duct work (sheet metal)

Since some analysis of combustion appliances may be considered to involve "alteration," the Energy Auditor may be restricted in the types of testing techniques that can be conducted on combustion appliances due to licensing requirements.

For example, proper draft analysis involves the drilling of a small hole in the smoke pipe to accommodate the draft probe. The Energy Auditor can only use existing hole(s) to conduct the technical analysis.

In any case, it is the responsibility of the Subgrantee to ensure the proper analysis is conducted to ensure the H&S of the occupants with regard to the proper function of the combustion appliances.

Subgrantees are reminded that when situations require that a licensed contractor be utilized to conduct efficiency testing, a standard CT Combustion Efficiency Report must be provided and filed with the Auditor's data collection calculations. See Connecticut State Statute: Regulations of Connecticut State Agencies, Title 20-332 (Professional Licenses Department of Consumer Protection (4) Occupational Licensing.

408.2 Combustion Appliance Issues

The danger with a combustion appliance may be attributed to numerous causes which justify H&S work under this category. Causes may include, but are not limited to:

- Non-existent, inoperable heating system or water heating appliance
- Fuel (gas, oil) leak in the delivery pipes leading to the appliance
- Leaking oil tank
- Serious structural damage to the combustion appliance; cracked heat exchanger, missing appliance sections (e.g. plenum, flue)
- Poorly adjusted boiler/furnace parts that cause high levels of dangerous flue gasses
- Non-existent, deteriorated, disconnected, improperly installed flue gas exhaust vents; including chimney and chimney liners
- Excessive flue gas spillage
- Inadequate combustion air as tested in the CAZ
- Inadequate drafting of flue gasses as tested under the worst case scenario
- Unacceptable CAZ depressurization limits

If actionable CO levels are found, the client must be informed of the potential danger and asked to sign a CO Disclaimer Form, which the Energy Auditor must also sign and date. A copy is to be given to the client and the original placed in the job file. If high CO levels are found the Energy Auditor MUST take immediate action including evacuation of any people in the building and notifying an HVAC tech or the gas company of the situation needing immediate attention, as well as notifying the Subgrantee’s management.

The Subgrantee must not continue with weatherization work until all combustion appliances are functioning properly.

Deferral: Repairs or replacement of H&S issues with combustion appliances may be beyond WAP's scope, because of budget limitations or the scope of work required. In such case, the WAP work must be deferred. See *Program Operations and Training Manual*, Section 414, H&S Deferral

408.3 Ambient CO Danger - Immediate Response

Upon first arriving at the unit, the Energy Auditor must take initial readings for the ambient level of carbon monoxide in the unit. If the ambient air reading is nine parts per million (9 PPM) or more, the following procedures must be followed:

- 9PPM – 35 PPM: Contact the client's fuel vendor immediately to alert him to the problem. If the appliance uses oil or propane, and the client does not have a vendor or, if the vendor does not do service work, the Energy Auditor must immediately contact the Subgrantee program manager to apprise him of the situation. The Subgrantee program manager must contact a qualified vendor to make repairs as soon as possible.

- 35 PPM – 50 PPM: This will be considered a serious situation. Energy Auditor will advise all occupants to vacate the building immediately. The steps above should be initiated.

- Above 50 PPM - This will be considered an emergency situation. Notify Fire Department immediately, then follow the steps. The State program monitor for that Subgrantee should also be notified of any such instances.

Procedure: The client must be notified immediately by the Energy Auditor of any potential or present danger. This notification must be acknowledged by having the client sign the *Carbon Monoxide Disclaimer* form. The Energy Auditor must also sign and date the form which is placed in the client file with a copy going to the client.

As testing of combustion appliances continue, additional ambient air testing should be conducted. If during the testing ambient CO air reading is nine parts per million (9PPM) or more, the above procedures must be followed.

As testing continues, the cause of the high CO levels will be discovered and should usually be alleviated as an H & S issue.

Note: Subgrantees are strongly encouraged to advise Field staff to document initial ambient CO readings and all subsequent readings in detail in Field Notes. Readings should be documented to include date, times, locations, devices used and calibration dates.

Additional restrictions may apply for secondary heat sources; however, Connecticut WAP does not allow for repairs or replacement of any secondary heat sources. If any secondary heat source is generating actionable CO levels, this condition must be addressed by the owner at his expense before weatherization work may begin. A deferral of up to 60 days must be issued; the energy audit may complete the energy audit, provided it does not endanger the H & S of the Energy Auditor or occupants of the unit. See Section 410.2 *Secondary Heating Sources.*

408.4 Combustion Appliance Safety Action Limits

The Connecticut WAP requires that Subgrantees use Building Performance Institute (BPI) action limits to determine acceptable levels when testing of combustion appliances. Weatherization limits can be found in the BPI tables and in the *Connecticut Weatherization Field GuideSWS Aligned Edition*These limits include:

- Combustion passive analysis for CO action levels
- CAZ depressurization limits
- Acceptable appliance spillage limits
- Acceptable draft test ranges

If combustion appliances exceed the action limits repairs must be ordered to correct the hazards. Weatherization work must not commence until such repairs are made.

408.5 Daily Checkout – Testing Out

Because weatherization work can affect operation of combustion appliances, a worst-case draft test must be completed at the end of each day's work: this is known as "testing out." Any appliance that fails a worst-case test before or after all weatherization work is completed should be made non-operational until the hazardous condition is corrected.

The State recognizes that this requirement was not mandated under previous WAP protocols. In addition, the State recognizes that some subcontractor Weatherization installers may not have the training and equipment necessary to conduct "worst case" CAZ testing in accordance with BPI standards.

The State reminds Subgrantees of the responsibility to assure that any required testing is conducted and documented in all cases with no exceptions. In cases where on-site installers do not have the capacity to conduct the required testing, the Subgrantee must be prepared to dispatch appropriate personnel to the site on demand. See *Connecticut Weatherization Field Guide SWS Aligned Edition* for additional information.

409 Heating Degree Days

In accordance with WPN 11-06, climate justification for heating system repair or replacement is required for those costs to be allowable as H&S expenses. Heating degree days were calculated through BizEE Degree Days software tool www.degreedays.net for a period of 36 months from January 2010 to January 2013. Based on this information:

- The central part of the State (Harford) averaged, among 3 weather station, 5,803 heating degree days;
- The south-eastern part of the state (Bridgeport) averaged, among 3 weather stations 5,860 heating degree days.
- The east-central part of the State (Norwich) averaged, among 2 weather stations, 5,620 heating degree days.

Connecticut's heating degree days average justifies heating system repairs or replacement as an H&S measure.

410 HEATING SYSTEMS

Connecticut's climate (with over 5800 heating degree days) may contribute to dangerous situations for families when heating systems are non-existent or inoperable. Additionally, gas, propane, oil, kerosene, and solid fuel heating systems, if not working properly, can create dangerous air quality issues.

Therefore, Connecticut allows for the repair or replacement of primary heating appliances as an H&S measure if it is unsafe, not functioning or inoperable. Repairs or replacement of secondary heating systems are not allowable weatherization measures.

410.1 Primary Heating Systems

The Connecticut WAP allows for replacement of heating systems used as primary heating sources as an H&S measure only if it is unsafe, not functioning or inoperable, unless these replacements produce an SIR of one (1) or more, in which case they can be replaced as an efficiency improvement measure following the waiver process.

H&S funding may be used to repair, or replace the following primary heating systems following the waiver process for replacement:

- Natural Gas and Propane Heating Appliances
- Oil Fired Heating Appliances
- Solid Fuel Heating
- Primary Space Heaters, Vented Combustion
- Unvented Combustion Primary Space Heaters
- Electric Heating Systems

If during the Audit or the Clean, Tune, and Test (CTT) process the technician finds certain conditions that make the system unsafe or inoperable, such problems should be repaired if possible under the H&S cost category unless they can produce an acceptable SIR of one (1) or more.

- Heating appliances may be replaced as an H&S expense if:
- The primary heating system is non-existent.
- The primary heat source is an unvented combustion appliance; or
- The heating system is inoperable; and
    - the repairs cannot be made to correct the H&S issue
    - The household has at least one (1) vulnerable person residing in it AND
    - the replacement does not produce an SIR of one (1) or more.

Care should be taken to ascertain whether a heating appliance can be repaired. State approval is required prior to replacing heating systems, including obtaining a **minimum of two (2) bids.**

Note: The State has retained technical staff specific to Technical and Monitoring Compliance Support and can assist Subgrantees on a case-by-case basis in evaluating Heating System Repair and Replacement options. See also, Section 301.12.2, *Waiver for Heating Systems*

Deferral: Subgrantees must ensure that expected cost of repairing or replacing a heating system can be done within the H&S per unit average. If the cost of repairs or replacement affects the Subgrantee's ability to stay within available funding limits, the job may have to be deferred until those issues are resolved by the owner or other funding source. See Section 424 H&S Deferral.

Refer to Section 408 in this manual and the *Connecticut Weatherization Field Guide SWS Aligned Edition* for additional details the technical analysis, repair or replacement of heating appliances.

410.2 Secondary Heating Systems

The Connecticut WAP does not allow for the repair or replacement of heating systems used as secondary heating source.

411 GAS/OIL FIRED DOMESTIC WATER HEATERS

The Energy Auditor or Licensed Plumbing and Heating Contractor must follow program protocols to determine that the unit's gas or oil-fired domestic water heater system is operating safely by performing technical analysis.

All gas and oil-fired water heaters must be monitored for draft and CO levels as well as checked for gas leaks or oil leaks. Requirements for evaluating gas and oil-fired water heaters can be found in the *Connecticut Weatherization Field Guide SWS Aligned Edition*

Gas and oil-fired water heaters must be repaired if not properly drafting, have high CO levels, gas leaks, non-functioning venting systems, or are rusted and leaking water. The Energy Auditor should first consider the possibility of repairing and replacing parts on a malfunctioning water heater before recommending replacement of the water heater.

Restrictions: Replacement of gas or oil-fired water heaters is an allowable H&S expense. Prior State approval is required. See Section 301.12 for the State approval procedure.

Deferral: Subgrantees must ensure that expected cost of repairing or replacing a water heater can be performed within available per unit H&S average cost. If the cost of repairs or replacement is "unreasonable" and will affect the ability of the Subgrantee to stay within available funding limits, then the job may be deferred until those issues are resolved by the owner or other funding source.

*Note: The State recognizes that replacement costs associated with repair and replacement of DHW appliances is directly related to site conditions. Subgrantees are reminded to provide documentation of all contributing factors when requesting prior State approvals.

412 GAS COOK RANGE

Gas-fired cook ranges can be a CO source if not in proper working order. Interference from food dropping into burners, or from aluminum foil placed over air vents in the oven, can produce alleviated CO in gas cook ranges. Gas lines can become leaky over time, in particular for ranges that are moved periodically for cleaning. Additionally, gas cook ranges that have electric igniters may have frayed wiring or other electrical problems.

The Energy Auditor must check gas fired cook ranges for gas leaks, electrical issues and excessive carbon monoxide in the oven and top burners.

BPI recommended limits and action level "standards" currently used by the CT WAP, with the following CO limits for gas ovens:

- CO limits of 100ppm to 300ppm - install a carbon monoxide detector and recommendation for service must be made to the client to be paid for by the client or other funding.
- Greater than 300ppm the unit must be serviced prior to other weatherization work at the client's expense or other funding.
- If greater than 300ppm after servicing, defer all Wx work until this condition has been addressed by the client permanently.

If gas leaks are found, the client must be informed of gas leaks, improper gas lines, and/or frayed wiring. Gas leaks must also be reported to the gas company by the client for follow-up.

Restrictions: It is not an allowable expense to replace or repair non-functioning or malfunctioning cook stoves and/or ovens using DOE funding.

Deferral: Should a cook stove or oven require repair or replacement due to H&S concerns, weatherization work must be deferred until the issue is resolved. See Section 421 H&S Deferral.

413 GAS DRYERS

If the dwelling has a gas dryer that is not vented to the outside, it is an allowable H&S measure to install proper venting.

413.1 CO Generation by Gas Dryers

Ambient CO must be checked in the space or room occupied by the gas dryer while in operation. This may be done by the Energy Auditor using his/her personal CO monitoring device while in the area of the dryer during its operation. If actionable CO levels are detected, shut off the dryer and evacuate the area until CO falls below any actionable levels; notify the client in writing of the condition the gas dryer is generating CO, and alert the client to call for service on the gas dryer at the client's expense or other funding. The dryer must not be used until appropriate action has been taken to preclude this generation of CO by the gas dryer.

413.2 Gas Leaks

Check all gas piping for leaks connecting the gas meter to the dryer. If any leaks are found notify the client to call the gas utility for repair at the client's expense or other funding.

414 CARBON MONOXIDE DETECTORS

For dwellings with combustion appliances or attached garages, the assigned weatherization installer must ensure operable CO detectors are in the unit in the number and locations throughout the home as specified in the *Connecticut Weatherization Field GuideSWS Aligned Edition*. Clients are to be educated as to the proper installation of batteries. Installation or replacement of inoperable CO detectors and/or batteries is an allowable H&S expense.

Restrictions: Replacing an existing operable alarm with a new alarm is not an acceptable H&S expense. If batteries are required for the alarm to function, replace the batteries.

Deferral: Carbon monoxide detectors are to be addressed immediately and are not a reason for unit deferral.

415 SMOKE ALARMS

The assigned weatherization installer must ensure the unit has operable smoke alarms in a number and in locations as specified in the *Connecticut Weatherization Field Guide SWS Aligned Edition* Clients are to be educated on proper installation of batteries. Replacement of inoperable smoke alarms and/or batteries is an acceptable H&S expense.

Restrictions: Replacing existing operable smoke alarms is not allowed. If batteries are required for the alarm to function, replace the batteries

Deferral: Smoke detector issues are to be addressed immediately and are not a reason for unit deferral.

416 WATER AND MOISTURE

Water and excessive moisture in a unit can cause H&S issues ranging from structural deterioration to formation of dangerous mold and mildew. To the extent that water problems will interfere with effective weatherization, or will be worsened by a measure, the underlying problems must be addressed prior to any weatherization work.

High levels of indoor relative humidity (over 60% for an extended period of time) encourage increased growth of molds and germs. The health effect of mold spores can be exacerbated by weatherization because of the reduction in air flow throughout the unit resulting from air sealing activities.

The sources of water and moisture problems vary greatly. They can be caused by excessive ground water penetration, poor drainage, poorly graded grounds, roof leaks, deteriorated guttering, leaky plumbing, and inadequate ventilation.

Evidence of H&S issues resulting from these problems is determined by the Auditor conducting a moisture assessment on all units. This assessment will check for the following conditions:

- Water stains or mold in the attic, especially on the underside of roof sheathing
- Evidence of excessive condensation on windows
- Water stains or mold on exterior wall surfaces and roofs
- Standing water in basements, or stains indicating periodic flooding

- Damp basements or crawl spaces with dirt floors
- The use of sump pumps in basements or crawl spaces
- Inadequately vented clothes dryers
- Inoperable or inadequately vented bathroom fans
- Inoperable or inadequately vented kitchens exhaust fans

Action: A copy of the EPA publication "A Brief Guide to Mold, Moisture and your Home" must always be given to the family by the Energy Auditor for the purposes of client education.

In less serious moisture-caused situations, the owner/client must be alerted to the situation. The areas of concern must be documented. See Connecticut WAP form: *Mold Disclaimer Form*. The client, and the landlord if applicable, should sign the form before weatherization work can be started. This form will be kept in the job/client file.

In more extensive situations the Subgrantee should take action to alleviate the cause of water or moisture damages. Such actions are to be taken only as they relate to the weatherization work and can be accomplished at a reasonable cost within the available H&S funding for the unit.

> **Note: all Work performed and reported as DOE completed CT WAP sites must be in compliance with DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, CT WAP Weatherization Field Guide SWS Aligned Edition and the current year State Plan/Master File.**

The following actions are allowable H&S measures related to water and moisture under Connecticut WAP.

Drainage: Minor re-grading of the perimeter grounds to correct improper drainage and reduce the excessive accumulation of water. Minor gutter system measures may be taken to correct water accumulation around the home perimeter. "Minor" is defined by the program as the repair or replacement of existing gutters and downspouts; or, the installation of non-existent gutters and downspouts. The maximum allowable replacement under this policy is a length of 25 feet.

Plumbing: Minor plumbing by a licensed contractor to fix leaks that are causing to water problems.

All actions, including the installation of a sump pump, that are to alleviate moisture problems and plumbing issues require the Subgrantee to obtain prior approval from the State. Such approval will require a waiver request by the Subgrantee. The request includes a description of the work, a justification connecting the plumbing work to the weatherization and three quotes from licensed plumbers for the job. The request is submitted to the Subgrantee's Program Monitor with a copy to the Technical Project Manager. The Subgrantee must have written approval from the State before commencing plumbing work.

Clothes Dryer Ventilation: The correction or installation of proper clothes dryer ventilation may alleviate moisture issues in the unit. Venting for clothes dryers to the outside of the dwelling, or the correction of existing dryer vents, including ventilation flex ducts installed to the outside are required H&S activities.

Bathroom Ventilation: Excessive moisture may also be remedied by the correction of bathroom exhaust fans. Fans should always be checked for cleanliness and operability. Fans must be vented to the outside to avoid moisture build-up in the house or attic. Repair or replacement of bathroom vents, including ventilation flex ducts, are required as an H&S measure. Bathroom replacement fans must provide a minimum of 50 CFM spot ventilation at a noise level of one sone.

Kitchen Exhaust Fans: To mitigate excessive moisture, kitchen exhaust fans must always be checked for cleanliness and operability. Fans must be vented to the outside to avoid moisture build-up in the house or attic. Repair or replacement of kitchen ventilation, including ventilation flex ducts to the outside, are required as an H&S measure. Kitchen replacement fans must provide a minimum of 100 CFM of spot ventilation at 2 sone.

Vapor Retarders: Install a ground moisture barrier, which is a piece of heavy plastic sheeting laid on the ground. Black heavy plastic film works well, but tough cross-linked polyethylene is even more durable. The edges should be sealed to the foundation walls with urethane adhesive and/or mechanical fasteners. The seams should be sealed as well.

Roof Repairs: Reasonable and LIMITED repairs of roof conditions that lead to water damage and moisture problems are allowable.

Actions to repair a roof for H&S reasons require the Subgrantee to obtain prior State approval. Such approval will require a waiver request by the Subgrantee. The request includes a description of the roof work, a justification connecting the roof work to weatherization, and three quotes from roofing contractors for the job. The request is to be submitted to the State monitor with a copy to the Technical Program Manager. The Subgrantee must have written prior approval from State before commencing roofing work.

Roof repair may also be justified as an Incidental Repair needed to ensure the effectiveness of the measure being installed such as installation of insulation. Determining where to charge roof work depends on the reason for the repairs. If the leaking roof was causing moisture and mold, the work would most likely be considered an H&S activity. If the roof work was necessary to ensure the integrity of insulation work, the job would better be charged as an Incidental Repair. See Section 311, *Incidental Repairs*

Funding: H&S funds may be used to mitigate the cause of water or moisture conditions where weatherization will further impact H&S risk to occupants, or will threaten workers. To the extent that the specific moisture is related to the weatherization work, reasonable mitigation of the causes of the problem may be considered H&S work by the weatherization installer.

The Subgrantee must keep in mind that some of the work under this category can be expensive. That is why roof work and plumbing work, for example, require coordination with and approval by the State. In determining whether to approve such work, the State will consider factors such as the connection with weatherization work, as well as the Subgrantee's current average cost of H&S in comparison with established limits.

In some cases, the moisture and water fixes may be necessary to reduce the long-term stability and durability of weatherization measures. In that case the activities could also be considered and charged as an Incidental Repair (e.g., replacement of a dry-rotted window sill, replacement of gutter or downspouts, roof repair).

Where additional funding is needed to alleviate the effects of moisture damage, the Subgrantee should inform clients of other community resources for the work. For example mold remediation is NOT an allowable H&S cost. In instances where mold is significant in the living unit and abatement is critical, the client should be referred to other partners such as the local office of the CT Department of Public Health (DPH).

Restrictions: Areas of active mold, mildew or water damage should be addressed but in most instances cannot be paid for with WAP funds.

Deferral: Weatherization work will be deferred until evidence of a serious water, drainage or moisture problems is resolved. Such evidence would include excessive mold, mildew, strong odors, standing water, or other unsanitary conditions present such as raw sewage. Weatherization services must be postponed until the problems are corrected. These problems will be documented on the "Notice of Postponement of Services Form" and a copy will be provided to the client. In the meantime, every effort will be made to refer clients to other programs that can assist in eliminating these problems.

Deferral: Defer weatherization services if the repairs to mitigate hazards are beyond the scope of the Connecticut WAP either because the cost is too high or the correction is not allowed such as major drainage issues or mold abatement.

See Connecticut WeatherizationField Guide SWS Aligned Editionfor more information

Note: The State reminds all Subgrantees to document all equipment and methodology utilized to conduct analysis of water and moisture conditions including the evaluation of ventilation devices. Field notes should document all subject conditions photographically and indicate date, time and location of analyses.

417 OTHER POLLUTANTS

The Energy Auditor must check for the presence of asbestos, vermiculite, radon, and volatile organic compounds (VOCs) which can be disturbed during the weatherization process and increase health hazards to the weatherization workers and the occupants. For instance, tightening a dwelling which has high levels of VOCs can exacerbate an already unhealthy condition. Disturbing friable asbestos when running the blower door may cause asbestos particles to become airborne causing potential health concerns for both the weatherization worker and the household.

417.1 Asbestos

Many homes contain asbestos, which was widely used into the late 1970's because of its fireproof quality and excellent insulation properties. In products such as pipe wrap, the material can become friable, meaning it destabilizes into microscopic particles when damaged which, when inhaled, can cause serious health problems such as pulmonary fibrosis and mesothelioma, a form of lung cancer that occurs in the chest and abdominal cavities.

Action: The Energy Auditor may come across asbestos in such components as asbestos siding, ceiling tiles and insulation wrap on pipes coming from a steam or water boiler, or as insulation on ductwork of a forced hot air furnace heating system. As with other potentially hazardous materials, if asbestos is in stable condition and will not be disturbed by the work, weatherization work can continue in areas away from the asbestos components. In some instances, certain weatherization measures may have to be bypassed

or modified to accommodate the presence of the material. Any presence of asbestos in or about the home is to be noted in the energy audit.

Asbestos should not be disturbed during weatherization work *under any circumstance, except* asbestos shingles on exterior siding, which may be removed and/or replaced as necessary to properly install insulation. Asbestos siding should never be cut or drilled through: it is recommended in these circumstances that insulation be installed through the interior of the home per WPN 11-6. If asbestos siding is suspected, the Energy Auditor must inform the client and discuss precautions that will be taken prior to the start of work.

Note: The State has developed no specific guidance in respect to installing insulation via penetrations to interior finished surface areas. Subgrantees are advised to examine all potential limitations to interior installation options including, but not limited to, interior hazardous materials testing and excessive installation costs prior to considering this option.

If asbestos insulation covering pipes and boilers is in good condition, the fibers will not be airborne. In these cases, it will be safe to work in the immediate area.

The State recognizes that the term "good condition" is subjective and encourages subgrantees to photo document all conditions found prior to conducting blower door testing in all cases and file accordingly.

When the heating piping distribution system or boiler/furnace wrapping or ductwork insulation is suspected as asbestos-containing materials, limited removal or limited encapsulation of the heating system by a licensed Asbestos professional is an allowable measure under H&S if the heating system is to be replaced. The Energy Auditor must educate the client about asbestos and the dangers of airborne asbestos fibers. In these instances, clients should be instructed not to disturb suspected asbestos-containing material.

State of Connecticut: For state regulations regarding the treatment of asbestos see the Department of Public Health website: www.ct.gov/dph

Funding: WAP funding, including H&S funds, may be used for limited removal or encapsulation of Asbestos.

H&S funds can be used for an appropriately-trained Asbestos Hazard Emergency Response Act (AHERA) asbestos control professional to perform limited encapsulation and/or limited removal only with prior State approval. Testing for asbestos by an AHERA Certified Tester is an allowable WAP expense.

Blower Door Testing Restrictions– If friable asbestos (i.e., material that appears to be asbestos, and crumbles or produces dust when touched) is identified in a home, and would be exposed to the direct flow of air at an opening during blower door testing, the blower door depressurization testing should not be performed, unless that room or space where such materials are present can be isolated from the rest of the building, by closing a door, or other means, the blower door test can be performed but at a reduced pressure of CFM 25 or CFM 30 In addition, if concerns still remain regarding performing the blower door test at reduced pressure, then, a blower door pressurization test may be possible. See the Auditor/Inspector Field Guide

Deferral: In some cases the presence of asbestos may mean the weatherization work is deferred. If the condition of the asbestos is such that it presents a potential health risk to the worker, or if the weatherization work will worsen the situation for the occupants, the work on the dwelling should be deferred.

The occupant and/or owner must be notified of the conditions that are the deferral reason. To properly identify where asbestos should be addressed, the homeowner should be urged to have an inspection performed, and to have the asbestos removed, by a licensed asbestos abatement contractor. This determination should be left to the homeowner and not entered into by the Subgrantee or contractors. However, if a heating system is to be replaced, some limited removal of asbestos pipe insulation allowable, just enough to enable the disconnection of the old boiler from the heating pipe distribution system and to reconnect the new boiler, can be paid under H&S. The air testing required after abatement before re-entry can be made into the space where the abatement took place, cannot be paid using DOE WAP funding.

417.2 Vermiculite

Although not all vermiculite contains asbestos, some vermiculite products that contain asbestos were made until the early 1990s. Vermiculite is a naturally occurring mineral composed of shiny flakes, resembling mica. When heated to a high temperature, flakes of vermiculite expand as much as 8-30 times their original size. The expanded vermiculite is a lightweight, fire-resistant, and odorless material and has been used in numerous products, including insulation for attics and walls. Sizes of vermiculite products range from very fine particles to large (coarse) pieces nearly an inch long.

Action: Weatherization workers are required to take the same precautionary measures as when other suspected materials may contain asbestos is present.

- Do not insulate directly over vermiculite.
- Take necessary precautions when performing a blower door test, such as keeping the area, which contains vermiculite, isolated from the rest of the house, i.e., close the door to that space, run the blower door at CFM25 or CFM30 pressurization.

Subgrantees must advise all personnel conducting blower door testing to exercise extreme caution in determinations regarding whether vermiculite laden areas can be effectively isolated from the blower door test zones prior to testing. In the event that unintended disturbance of any Asbestos like materials (ALM) occurs, the Subgrantee and its contractors are responsible for providing acceptable resolution to the client/homeowner.

Clients should be instructed not to disturb suspected asbestos-containing material as part of the Energy Auditor's client education module about asbestos safety.

Funding: WAP funding, including H&S funds may be used to address encapsulation of Vermiculite by appropriately trained Asbestos control professionals, provided testing performed by AHERA Certified sampling confirms the presence of Asbestos.

Restrictions: Removal of vermiculite is not allowed under the CT-WAP program.

Deferral: None

417.3 Radon and Soil Gases

Radon and other dangerous soil gases enter homes by seeping up through the ground. Radon is an inert gas, which means that it does not react or combine with the elements in the ground. Because of this, radon gas can move up through the soil into the atmosphere, where it is easily diluted. However, when it enters a building constructed on top of this soil, it can build up and become a health concern. Studies have shown a link between breathing high concentrations of radon and incidence of lung cancer. Thus, radon is considered a significant contaminant that affects indoor air quality worldwide. According to the U.S. EPA, radon is the second most frequent cause of lung cancer, after cigarette smoking. For state regulations regarding radon treatment, see the Department of Public Health website www.ct.gov/dph

Action: A moisture/vapor barrier over dirt spaces aids in reducing radon infiltration into a home as well as in reducing moisture evaporation is required to be installed when site conditions permit. Clients should be provided with EPA Consumer's Guide To Radon.

Funding: WAP funding including H&S funding cannot be used to mitigate radon. Auditors may identify the presence of radon via client inquiry or visual identification of abatement measures or mitigation equipment. Auditors must refer to WPN 11-6 and conduct blower door testing only after thorough evaluation of existing conditions and equipment operation. Subgrantees are advised to document all site conditions and file accordingly.

Restrictions: Radon testing may be an allowable activity under the Connecticut Weatherization Assistance Program. WPN 11-6 indicates that Radon testing may be allowed in locations with high radon potential. Current EPA documentation provides a map of Radon Zones in CT in accordance with the Indoor Radon Abatement Act of 1988 (IRAA). The CT map displays 3 color-coded zones of radon potential.

Zone 1(Red) is listed as the highest potential area to encounter residential radon exposure. (Fairfield, New Haven, Middlesex and New London Counties).

Zone 2(Orange) is listed as moderate potential.

Zone 3(Yellow) is listed as low potential.

Based on EPA reporting, Radon testing may be considered in any home weatherized in CT zones 1 and 2. Testing may be performed in Zone 3 homes if the auditor determines that site conditions warrant further examination.

As always document all existing conditions and testing results and provide the client with appropriate education and reference materials.

Do not run a blower door test if radon is identified unless a radon mitigation system is already in place. These gases are driven by air pressure differentials, so work should never be done that create or increases negative pressures in basements and crawlspaces. However, running the blower door to pressurize the unit may be performed.

Deferral: None.

417.4 Formaldehyde and Volatile Organic Compounds

Volatile organic compounds (VOCs) are emitted as gases from certain solids or liquids. VOCs include a variety of chemicals, some of which may have short and long-term adverse health effects. Concentrations of many VOCs are consistently higher indoors (up to ten times higher) than outdoors. VOCs are emitted by a wide array of products. Examples include paints and lacquers, paint strippers, cleaning supplies, pesticides, building materials such as plywood, furnishings, new carpets, and craft materials including glues and adhesives.

The ability of organic chemicals to cause health effects varies. As with other pollutants, the extent and nature of the health effect will depend on many factors including level of exposure and length of time exposed. Eye and respiratory tract irritation, headaches, dizziness, visual disorders, and memory impairment are among the immediate symptoms that some people have experienced soon after exposure to some organics. At present, not much is known about what health effects occur from the levels of organics usually found in homes.

Action: The client should be informed and receive documentation on safety and proper disposal of household pollutants, including household chemicals, paints, and other suspected pollutants.

Funding: H&S funds can be used to remove pollutants if they pose a risk to workers and the cost is not prohibitive. Prior State approval is necessary before removal of VOCs may take place.

Restrictions: If there is evidence of excessive VOC fumes, no air sealing work is to be done.

Deferral: If the removal of such pollutants is cost prohibitive a 60-day deferral may be necessary in order for the owner to abate this condition.

417.5 Dust

Inhaling any kind of dust can be harmful. During weatherization work, especially when blowing insulation, precautions should be taken to minimize exposure to dust. Workers should wear NIOSH N100 rated respirators, and clients should be isolated from work areas. If this is not possible, or the client has a history of respiratory problems, they should be removed from the dwelling until work is complete.

417.6 Unsanitary Conditions

Unsanitary conditions may pose a risk to weatherization workers. Unsanitary conditions include but are not limited to odors, mustiness, raw sewage, and rotting wood.

Deferral: In these cases work ***must*** be deferred until the client can address these hazards. If unsanitary conditions are present, clients should be informed and be provided with information about maintaining a sanitary home.

417.7 Bacteria and Viruses

It is not an allowable H&S expenditure to address harmful bacteria not normally present in a dwelling unit. In all circumstances where harmful bacteria are present, work must be deferred. If harmful bacteria are suspected to be present, clients should be informed and be provided with information about maintaining a sanitary home.

Work may be postponed due to contagious viruses/illnesses.

417.8 Pests

Pests such as cockroaches, mice, rats, mites, and others can be detrimental to the health of the weatherization workers and the client.

Funding: Pest removal is allowed as a H&S cost only where infestation would pose a health hazard to the worker and prevent weatherization. Prior State approval is necessary before funding may be expended to address pest removal.

Deferral: Infestation of pests may be cause for deferral where it cannot be reasonably removed or poses risk for weatherization workers. Clients should be informed of observed condition and associated risks.

417.9 Refrigerant Issues

Refrigerant should be reclaimed per Clean Air Act of 1990, section 608. The EPA requires that removal of refrigerants be conducted by an appropriately licensed party. Subgrantees should remind clients not to disturb refrigerant if it is located in a dwelling unit. A deferral must be issued until the client has had the refrigerant issues addressed. CT WAP dollars cannot be used to address such issues.

418 BUILDING CODE COMPLIANCE ISSUES

All weatherization-related work must comply with applicable State of Connecticut Building, Fire, and all other applicable Codes. Subgrantees are reminded that if a conflict arises between State and local codes, the local code will prevail.

Restrictions: Correction of preexisting code compliance issues is not an allowable cost unless it pertains directly to the weatherization measures to be installed.

Deferral: Condemned properties and properties where severe H&S conditions due to code non-compliance exist must be deferred for up to 60 days until repaired by the owner or another funding source. If issues are not addressed within the 60-day period, the client must be notified in writing that weatherization work will not be performed, the job will be a “walk away’, the client file will be closed, and the client may jeopardize any State assistance for up two years.

419 LEAD SAFE WEATHERIZATION

Lead exposure can lead to poisoning, especially in young children and pregnant women. Household paints used before 1978 are presumed to contain lead. Paint chips or dust from lead-containing paints can be inhaled or ingested, which can lead to lead poisoning. Studies have found quantities of lead dust around windows and doors because of the friction created from constant opening and closing. Once this dust is airborne it can settle anywhere. Crews working within these areas of pre-1978 dwellings must assume that lead paint is present and take precautions to prevent contamination of themselves and clients.

The USDOE Minimum Standards for Lead Safe Weatherization (LSW) that were issued September 22, 2008, must be followed when such conditions are present. These precautions include the following practices:

- Residents, especially young children and pregnant women, are to be kept away from the work area.
- HEPA vacuum or wet-clean the immediate work area, before and after work, to remove potentially dangerous lead paint particles and prevent dust from becoming airborne.

- Household items within the immediate work area will be removed, if possible, or covered with plastic. The floor in this area will also be covered with plastic (6 ml minimum thickness) and secured with masking tape. Photo documentation of containment setup must be kept in file.

- When working on exterior surfaces, cover the ground and all landscaping underneath the vertical surface. The area to be covered should extend out to 5 feet for every 10 feet of wall height. Use 6 ml plastic and secure the plastic to the foundation with duct tape. Photo documentation of containment setup must be kept in file.

- All painted surfaces that are to be disturbed (sanding, drilling, cutting, etc.) must be thoroughly misted first.

- Workers must remove or clean footwear and remove gloves or clean hands before leaving the work area so as not to contaminate other areas. Disposable coveralls and footwear are recommended.

- At the end of each workday all plastic coverings must be rolled or folded inward to trap dust and debris; removed from the job site; and disposed of along with all other construction waste. All debris must be bagged and sealed before removal from the job site.

As a client education service, all weatherization clients living in pre-1978 housing that may contain lead paint will be alerted to the dangers of lead paint as part of the client education process during the energy audit. Prior to any weatherization work being done on pre-1978 housing, owners and occupants will be provided with the EPA Pamphlet "Renovate Right: Important Lead Hazard Information for Families, Child Care Providers and Schools." An adult tenant or homeowner must sign an acknowledgement after receiving this pamphlet. This documentation must be kept in the client file.

All weatherization workers and contractors who might come into contact with or disturb lead-painted surfaces must attend a mandatory day-long Lead-Safe Weatherization Work Practices training. This training is based on the DOE standard curriculum. Certified Firms must perform all renovations. To comply with the rule, all WAP Subgrantees and contractors must be Certified Firms as defined by EPA. Certified Renovators are required to be onboard with all Subgrantee crews, and shall supervise and inspect weatherization work to ensure that procedures pertaining to the weatherization of buildings built prior to 1978 are met. Firms are responsible for ensuring that a Certified Renovator is assigned to each job for the purpose of supervising and inspecting weatherization work. Firms are responsible for ensuring that a dust sampling is also performed on each unit to ensure the work area has been cleaned. Certified renovators must also be trained in Lead Safe Weatherization.

It is a requirement that all contractors who perform measures that fall under EPA purview, including window and door installation, and sidewall insulation, comply with EPA Lead, Renovation, Repair and Painting standards. As a result, contractors and crew who perform this work **must** be EPA Certified Firms and must have sufficient staff that serves as Certified Renovators so as to fully comply with the Rule.

Note: Per WPN 11-6 subgrantees are reminded that testing for lead-containing substances is an allowable cost. All testing and post completion verification results must be documented and placed in the client file.

420 STRUCTURAL ISSUES

The State does not allow for structural repairs that do not directly affect weatherization measures. In some instances, minor structural repairs may be made to accommodate weatherization measures. “Minor repairs” are funded under Incidental Repairs and included in the overall SIR of the package of measures.

420.1 Injury Prevention

It is not an allowable H&S measure to perform measures intended to prevent client injury, such as the installation of stairs or the replacement of handrails in a home. However, if such conditions are observed, the client should be informed of observed hazards and associated risks, and these potential hazards should be documented and placed in the client file.

420.2 Building Structure

Building rehabilitation is beyond WAP’s scope. When homes in poor structural condition are encountered, weatherization services should be delayed until the dwelling can be made safe for crews and occupants. Clients should be referred to the State Department of Housing and Urban Development or other programs for assistance with rehabilitation services. Incidental repairs necessary for the effective performance or preservation of weatherization materials are allowed provided they yield an individual SIR of one (1) or more (see Incidental Repairs, Section 311)

421 ELECTRICAL SAFETY

Issue: A range of electrical issues may arise in the process of weatherizing a house when installing insulation in an attic or in sidewalls where outdated, overloaded or deteriorated electrical circuits may pose a hazard. Typical issues to look out for include:

- Uncapped junction boxes
- Frayed or exposed electrical wiring
- Live knob & tube style wiring
- Overloaded circuits
- Improper use of extension cords
- Recessed can light – always consider to be non-insulation contact canned lights
- Other exposed wiring at lighting fixtures, switches and outlets, fans
- Electrical problems with fans, blowers, thermostats on combustion appliances

The owner of the property must be notified immediately of any observed electrical issue that may pose a danger. A licensed electrician is required for any further electrical inspections or repairs.

Weatherization measures such as insulation must be undertaken in such a way as to avoid any contact with electrical systems. See *Connecticut Weatherization Installers Field Guide (2012) Chapter 1.5.3*

The electrician's report, where required, must document that all circuits have over-current protection, either by circuit breakers or type "S" fuses. A copy of the electrician's report must be kept in the job file. Electrical inspections and minor electrical repairs are allowable H&S measures. Allowable measures can include repairs to prevent circuit overloading, and replacement or elimination of live knob and tube wiring to allow for insulation. If knob & tube wiring is addressed, the client must be provided with information on over-current protection. Anytime electrical issues are addressed, the client should be provided with information (client education) on the dangers of overloading circuits and basic electrical safety.

Funding: H&S funding may be used for the further inspection and repair of electrical hazards if such hazards might be made worse with the installation of weatherization measures, would prevent the effectiveness of the work, or present a danger to weatherization crews. Such costs must be reasonable and are limited by the funds available for each unit.

Restrictions: Only licensed electricians may conduct electrical inspections or make repairs or alterations to the electrical systems.

Deferral: Electrical hazards must be repaired such that weatherization activities can safely be undertaken. Otherwise the unit should be deferred until the issues have been resolved.

Note: Subgrantees are advised to refer to WPN 11-6 for additional information.

422 FIRE HAZARDS

Checking for fire hazards should be ongoing, when the audit is conducted and while weatherization work is underway. Opportunities to remove fire hazards may include removing chemicals that may be stored too close to combustion appliances or moving combustibles that are stored in close proximity to a water heater or other gas, oil, or propane-fired appliances. Combustion appliances and associated venting systems can present potential fire hazards as well. All combustion appliance areas must be checked for:

- Adequate clearance between combustion appliances, flue pipes and any combustible materials
- Fuel/gas leaks
- Frayed electrical wiring
- Overloaded or misused electrical wiring
- Excess creosote and or soot built-up in flues and chimneys connected to primary heating appliances

Action: Education is crucial; clients must be reminded that chemicals, clothing, furniture etc. cannot be stored in close proximity to combustion appliances and flue pipes. Clients with wood stoves must be reminded about the potential danger of excess creosote build-up in flues and chimneys and maintenance including cleaning of flues and chimneys.

Funding: H&S funds may be used to prevent fire hazards including measure such as: cleaning and/or repairing flues and chimneys; and repairing minor fuel and gas leaks as well as leaking fuel oil storage tanks.

423 INDOOR AIR QUALITY/ ASHRAE 62.2 2013

Because weatherization activities, particularly air sealing, affect ventilation rates through the unit, indoor air quality (IAQ) can be worsened by weatherization work. IAQ issues may range from noticeable sources such as discarded VOCs to less detectable dangers such as CO. The decision to adjust the unit's ventilation systems cannot be based solely on visible and obvious issues: it must take into consideration all possible issues. Thus, a WAP ventilation standard has been established.

DOE has adopted for WAP ventilation standards set by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) in its handbook section ANSI/ASHRAE Standard 62.2-2013, *Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings* ("ASHRAE 62.2"). ASHRAE 62.2 applies to single family and multi-family up to three stories above grade, including manufactured or modular units.

See Connecticut Weatherization Program Guidance No.18, *Air Sealing; Connecticut Weatherization Field Guide SWS Aligned Edition* DOE Weatherization Program Notice 11-6, DOE H&S Guidance.

423.1 Ventilation and Air Sealing

Major air sealing should be done and *then* ventilation installed to meet calculated ventilation requirement per the standard. Note: Subgrantees are advised as follows: On the initial site visit, Auditors must conduct indoor air quality analysis consistent with ASHRAE 62.2 2013 standards to develop projected Health and Safety cost estimates to determine feasibility to comply or defer the unit. Based on those findings, Weatherization may proceed and post Weatherization installation analyses, including scientific assessment of ventilation requirements must be conducted.

Also note that CT WAP Technical personnel will closely monitor and adapt to any changes to the standard and training requirements to remain in compliance with USDOE ventilation standards.

If needed the two system requirements of ASHRAE 62.2 2013 standards are:

- Whole-Building Ventilation – installation of a fan, or a combination of fans, which will provide the minimum ventilation needed for proper air flow as calculated by the standards.
- Local Ventilation Exhaust – installation of local, intermittent exhaust fans in each kitchen and bathroom, as specified by the standards, to reduce the possible levels of contaminants and moisture in each of unit.

See *Connecticut Weatherization Field Guide SWS Aligned Edition*

423.2 IAQ Funding

When installed to comply with ASHRAE 62.2 201 standards, the materials, supplies and labor needed for systems - including ducts to the outside - for whole house ventilation, kitchen exhaust and bathroom exhaust installations qualify as H&S measures.

423.3 Blower Door Restrictions

Some Blower Door safety concerns in this process are:

- Do not conduct a depressurization test with a wood stove or fireplace burning. Close flue dampers and cover loose ash in the fireplace.

- Do not conduct a depressurization test when any other combustion appliance is operating. Shut off power or gas before the test is conducted, and make sure appliances are turned back on when testing is completed.

- Do not conduct a blower door test if **friable** asbestos is present in the dwelling unit. It is, however, an allowable H&S expenditure to pay for an AHERA asbestos control professional to encapsulate asbestos if the alternative blower door testing method cannot be performed. Subgrantees must first obtain prior approval from the State before any encapsulation work is to be performed. Once this has occurred, the Subgrantee may perform a blower door test.

424 HEALTH & SAFETY DEFERRAL

The goal of WAP is to weatherize homes and save energy. However, in certain circumstances, H&S hazards, structural problems, or other environmental hazards must be addressed before the weatherization work can be completed. Some of these repairs may be beyond the scope of the program because they are too expensive, or not allowed under DOE WAP funding. In these cases, the Subgrantee should work with the client, and with other funding sources to coordinate the completion of the required repairs.

Ultimately, the decision to defer work is the responsibility of the Subgrantee that must insure the safety of the client, as well as the integrity of the weatherization work being done. In most cases, deferral of weatherization services means that work will be postponed until the problems can be resolved. Subgrantees are expected to assist clients when possible, helping to find alternative sources of funding. Good judgment must always be used in dealing with these difficult situations.

Subgrantees must document all serious H&S problems encountered that will either prevent or delay the delivery of weatherization services on the Notice of Postponement of Services form along with possible solutions. The form must be signed and dated by the client and the Subgrantee's representative. If the client is a renter, a copy must also be sent to the landlord.

The Subgrantee must monitor timelines for client eligibility and completion of work.

- Work MUST be completed within 12 months of the original eligibility determination date of the client

- If all H&S concerns that triggered deferral are addressed within sixty (60) days of receipt, re-verification of eligibility is not required.

- Should remediation take longer than the sixty (60) day grace period, eligibility ***must*** be re-verified in accordance with state and federal policy. If the client is still eligible for the Program, work can begin.

- If the client's circumstances have changed and they are no longer eligible, work ***cannot*** be done on the dwelling unit.

- All weatherization work MUST be completed within 12 months from the original eligibility date of the client

Where conditions cannot be corrected through H&S funds, deferral may include some of the following situations:

1. The client has known health conditions that would be impacted by the installation of insulation or other measures.
2. The building structure or its mechanical systems, including electrical and plumbing, are in such a state of disrepair that failure is imminent and the conditions cannot be resolved cost-effectively.
3. The building has sewage or other sanitary problems that would further endanger the client and weatherization installers if weatherization work were performed.
4. The building has been condemned or electrical, heating, plumbing or other equipment has been "red tagged" by local or state building officials or utilities.
5. Moisture and drainage problems are so severe they cannot be resolved under existing guidelines.
6. Dangerous conditions exist due to; high carbon monoxide levels in combustion appliances, high levels of Formaldehyde, other pollutants or VOCs, and these conditions cannot be resolved under existing guidelines.
7. The extent and condition of lead-based paint in the building would potentially create further H&S problems.
8. The client is uncooperative, abusive or threatening to the Energy Auditor, crew, subcontractors or others who must work in or visit the dwelling.
9. In the judgment of the Energy Auditor, any condition exists which may endanger the health or safety of the work crew or subcontractor (e.g. extremely unsanitary conditions).
10. In the judgment of the Energy Auditor, illegal activities are taking place on the property.
11. Infestation of pests cannot be reasonably removed or creates a H&S concern for weatherization workers.
12. The client exhibits signs of hoarding behavior that prevent the installation of weatherization measures that are necessary to improve the efficiency of the home.

State of Connecticut

Revised 01/2006

HEALTH & SAFETY DISCLAIMER

This is to verify that I have been alerted to the presence of a health & safety concern, specifically _____ in the following area/s of my home or property:____ _____.

I understand that it was determined that work may still be performed in my home despite this potential hazard and that in large enough concentrations, these concerns can be a serious health hazard and that I have been provided with information concerning the dangers of _____ problems in my home or property.

Furthermore, should _____ authorize any weatherization work or repairs to my home or property, I understand that neither they nor their State and Federal funding sources shall be held responsible for any future liability related to the above mentioned condition.

_____

Signature of Client Date

_____

Signature of Landlord Date

_____

Signature of Subgrantee Representative Date

State of Connecticut

Revised 01/2006

MOLD DISCLAIMER

This is to verify that I have been alerted to the presence of a moisture and/or mold problem in the following area/s of my home or property:_____
_____.

I understand that in large enough concentrations, mold can be a serious health hazard and that I have been provided with information concerning the dangers of these mold and moisture problems in my home or property.

Furthermore, should _____ authorize any weatherization work or repairs to my home or property, I understand that neither they nor their State and Federal funding sources shall be held responsible for any future liability related to the above mentioned condition.

_____

Signature of Client Date

_____

Signature of Landlord Date

_____

Signature of Subgrantee Representative Date

State of Connecticut

Revised 01/2006

CONNECTICUT WEATHERIZATION PROGRAM

Notice of Postponement of Services

During an audit by a Connecticut Weatherization Provider, _____

Phone # _____, the following Health and Safety problems were discovered:

_____

_____

_____

Because these problem(s) will prevent us from starting our weatherization work, we have outlined the following required actions. Any help that we can provide will be clearly stated.

_____

_____

_____

The problems listed above do not exclude you from receiving the benefits of the weatherization program. If the above problems can be rectified within sixty (60) days, you will still be eligible for services provided by the Weatherization Program. It will be your responsibility to notify the Provider within the timeframe mentioned above, in writing, that the problem(s) outlined have been eliminated unless the Provider has taken the responsibility for resolving them.

I clearly understand that the condition(s) and problem(s) outlined above prevent my home from being weatherized. I also clearly understand the responsibilities of all parties involved, including my responsibilities and required actions. By signing this document, I understand that I am not giving up my rights to benefits provided by the Weatherization Program, but it is in the best interest of all parties involved that weatherization work shall not take place until the problem(s) are resolved.

Signed: _____Date:_____

Provider's Name:_____Representative:_____ Date: _____

State of Connecticut

Revised 01/2006

CARBON MONOXIDE DISCLAIMER

This is to certify that I have been alerted to the presence of dangerous levels of Carbon Monoxide in my home.

I understand that these odorless gases are coming from _____

_____ and that this appliance should not be operated until it has been inspected and repaired by an authorized service technician.

Furthermore, should _____ authorize any repairs I understand that neither they nor their State and Federal funding sources will be held responsible for any injuries that may occur before these repairs are completed.

I also understand that in some instances, State or Federal Program funds will not be available to pay for complete repairs or replacement; if recommended, I will be responsible for paying the remaining costs.

_____

Signature of Client Date

_____

Subgrantee Representative Date

cc: 1/Housing Code Office

1/Fire Marshal's Office

State of Connecticut

Revised 01/2006

SMOKE/CO DETECTOR DISCLAIMER

This is to certify that I, _____, have had ____

(name of client)

smoke detector(s) and/or _____carbon monoxide detector(s) installed in my

dwelling unit located at _____, by the

_____.

(name of local Subgrantee)

I have also been instructed in its/their use and maintenance. ***The replacement of batteries and maintenance is my sole responsibility, and not the responsibility of the Subgrantee.*** Neither the State nor the Subgrantee listed above, guarantees the performance of the smoke detector(s) and/or carbon monoxide detector. Life expectancies of those detectors vary depending on the manufactures' specifications. Generally, they are 5 years or less.

I understand that the life expectancy of this detector(s) is 5 years or less and that replacement, when necessary is my responsibility.

_____ _____

Signature of Client Date

I certify that I have installed _____ **working smoke detector(s)** in the dwelling unit listed above in the following area(s): _____.

I certify that I have installed _____ working carbon monoxide detector(s) in the dwelling unit listed above in the following area(s):

_____

_____

I have also instructed the client on its (their) proper use/maintenance.

_____ _____

Signature of Installer Date

SECTION 500 TRAINING & TECHNICAL ASSISTANCE

500 INTRODUCTION

The Department of Energy (DOE) allocates Training and Technical Assistance (T&TA) funding to the states. T&TA funds support State program operations such as analysis, measurement and documentation of program performance, skill development, and local monitoring, to improve program effectiveness.

> **Note: all Training related to Work performed and reported as DOE completed CT WAP sites must be in compliance with DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, CT WAP Weatherization Filed Guided SWS Aligned Edition and the current year State Plan/Master File.**
>
> **Note: Quality Control Inspection personnel must complete DOE approved Tier 1 Training and possess knowledge, skills and abilities as listed in the National Renewable Energy Laboratories Job Task Analysis, and become certified by the Building Performance Institute as a Home Energy Professional Quality Control Inspector.**

To ensure the consistent delivery of high-quality weatherization services nationwide the DOE, through a network of Weatherization Professionals, identified and developed a set of core competencies for the various staff positions that implement the Weatherization Program including the types of training required to increase levels of core competencies for these job categories. The goal, to increase the levels of competencies and expertise in the workforce so that every house that is weatherized receives appropriate, properly installed cost-effective measures.

Although many of the core competencies and job classifications identified are universal, not all the core competencies will be appropriate for the job classifications identified in every state. For instance, testing, repairing or replacing heating and cooling systems in Connecticut requires certification or licensing from the State. Therefore, the Auditor or Weatherization Installer may not be able to conduct this work. In Connecticut, work on heating and cooling systems must be subcontracted to a licensed contractor outside the Weatherization Assistance Program (WAP). However, just because a heating, ventilation, and air conditioning (HVAC) contractor is licensed by the state does not mean he possesses the competencies required by the Weatherization Program. Additional training of these contractors may be required, or someone at the local agency must be competent to specify what work the contractor is to do and to verify that the completed work complies with the technical standards of the WAP.

Further information on DOE recommendations for meeting core competencies can be found on the WAP Technical Assistance Center (WAPTAC) website, http://www1.eere.energy.gov/wip/pdfs/wap_tta_plan.pdf.

The DOE also places certain requirements for training and certification including:

- Lead Safe Weatherization (LSW) training for all workers

- At least one onsite worker must be an EPA Certified Renovator
- LSW training for all Certified Renovators
- LSW training for all State Monitors

The State of Connecticut is committed to increase the Connecticut Weatherization network's expertise. Numerous program training opportunities and hands-on workshops have been conducted with the goal to maximize energy savings, minimize production costs, improve quality of work, and foster management expertise. In Connecticut, T&TA funds are primarily used to train state and local Weatherization staff on program operations, management, and technical topics. Staff members receive training at national and regional conferences, regional and state training centers, state and Subgrantee provided workshops, and in the field.

501 TRAINING PLAN

Note: all Subgrantee training related to Work performed and reported as DOE completed CT WAP sites must be in compliance with DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, CT WAP Weatherization Filed Guided SWS Aligned Edition and the current year State Plan/Master File.

The Subgrantee is required to have a qualified weatherization staff fully trained in the performance of their individual functions; including staff employed by the Subgrantee as well as contracted personnel. In the belief that training is the key to a vital program, the Connecticut WAP maintains an aggressive training regimen which places specific training requirements on the Subgrantee and its contractors.

Through monitoring review and assessments with the Subgrantee, the State will coordinate with the local Subgrantees to determine the types of training needed to strengthen weatherization services. Based on the need of the weatherization network, the State will continue to periodically provide training and workshops such as statewide Lead-Safe Training, management training, fiscal training, air sealing, use of two-part foam, pressure diagnostics, proper insulation of attics and walls, and so forth. The State will locate weatherization experts to present on this range of training activities required to foster individual competencies with the various classifications of weatherization services. The curriculum will be presented by training experts in a combination of classroom, hands-on activities, and field training to continuously increase the skill levels of each type of weatherization worker.

The State allocates funding directly to the Subgrantees for local staff, and sometimes contractor personnel, to attend program-related training.

To facilitate contractor training, the Subgrantee is allowed to pay a per-diem, on a case-by-case basis, for contractor personnel to attend training when it is designated as mandatory and has the prior approval of the State.

The Subgrantee must ensure that its weatherization staff and contractors maintain the required level of training and certifications required for conducting the work. CT-WAP requires that the Subgrantee evaluate its weatherization workforce to determine the types of training needed. The Subgrantee's policy should be to encourage its staff, and that of its contractors, to attend training to strengthen worker competencies and skills.

Funding: See the *CT Program Operations and Training Manual*, Section 703.3, Training and Technical Assistance Cost Category, for information regarding T&TA expenditures, including the process for prior approval.

T&TA funds may be used for most any training activity which will clearly improve the quality of the Subgrantee's weatherization work.

Such training would include, but not necessarily be limited to, the following areas, below.

501.1 Program Administration Training

Training is important in all aspects of the weatherization program, including the non-technical and administrative functions. Some examples include training topics such as:

- Program management and weatherization program supervision
- Financial management including budgets, claims, weatherization financial rules
- CT-WAP client services including program application and eligibility policies and procedures
- Client energy education, case work and delivery of weatherization information
- Procedural training for all staff on program forms, including software, used in the effective administration of the program
- Comprehensive program training with the *CT Program Operations and Training Manual* and other policy sources

See *CT Program Operations and Training Manual*, Section 100, ADMINISTRATION; and SECTION 200, CLIENT SERVICES for detailed information, including areas to cover in training.

501.2 Weatherization Services Training

Of course, detailed training related to specific weatherization functions is vital in the effective delivery of services. Such areas of expertise will include training in:

Note: Quality Control Inspection personnel must complete DOE approved Tier 1 Training and possess knowledge, skills and abilities as listed in the National Renewable Energy Laboratories Job Task Analysis, and become certified by the Building Performance Institute as a Home Energy Professional Quality Control Inspector.

- Energy Audit and Final Inspection: techniques, tools, testing used in all of the technical aspects of weatherization; evaluation skills, building science; audit software and forms training.
- Weatherization Installation: tools, techniques, and materials used in various areas of the installation of weatherization measures; carpentry, spray foam techniques, ventilation; plumbing and electrical safety.
- Crew Supervision: technical training on every aspect of weatherization; supervisory skills & human relations; specialized site safety training such as OSHA and LSW; proper use of protective equipment (PPEs) and MSDS.

- Mechanical Systems: tools, techniques, parts and materials used in various areas of the installation of weatherization mechanical measures; worst case draft testing (CAZ), combustion appliances, plumbing and electrical; other specific mechanical work; state certification.
- Mobile Home Training for Auditors, Inspectors and Installers: tools, techniques, and materials used in auditing, inspecting, and installations including special aspects to weatherizing mobile homes.
- Comprehensive training on the *CT Field Guide SWS Aligned Edition:* overall training on protocols and technical information needed for weatherization work.

See *CT Program Operations and Training Manual*, Section 300, WEATHERIZATION SERVICES, for detailed information on weatherization measures, including areas to cover in training.

501.3 Health & Safety Training

Weatherization work must be conducted in such a way as to avoid current and future harm to the client and other residents, as well as the weatherization worker. Health and Safety (H&S) training is vital, including some of the following areas:

- Indoor Air Quality: all training on the recognition and mitigation of IAQ issues, including mold, moisture, volatile compounds, and so forth.
- Combustion Appliance Safety (annual CT training provided)
- OSHA: worker safety training for new Subgrantee staff and contractor staff
- Lead Safety: EPA lead safety regulations and EPA Certified Renovator course; Connecticut regulations (DEEP); DOE Lead Safe Weatherization (LSW) regulations

501.3.1 Lead Safety Training Requirement

Unless there is existing evidence that the home has been certified as being lead-free, or the work is below the lead threshold limits, LSW protocols must be applied to *all* pre-1978 target housing. The EPA LRRP rule requires that such work must be conducted under the supervision of a Certified Renovator. (Note that EPA rules apply to all work, not just weatherization.)

DOE requires all individuals working on pre-1978 housing projects complete the 8-hour LSW course prior to performing work on any pre-1978 sites. A Certified Renovator is required to attend *an additional* EPA Certified Renovator course sponsored by an EPA-approved training center.

If the Certified Renovator has previously attended the 8-hour LSW Course, the renovator *must* attend a 4-hour LRRP Refresher Course. If the Certified Renovator has not attended the 8-hour LSW course, they must attend both an 8-hour LSW course and an 8-hour EPA Certified Renovator course.

See *CT Program Operations and Training Manual*, Section 400, HEALTH & SAFETY, for detailed H&S information, including areas to cover in training.

502 TRAINING RESOURCES

The State will continue to schedule training, bringing trainers to the state if necessary.

502.1 Sample Curricula

The following are examples of curricula recently offered to support Weatherization staff training."

- Weatherization Crew Worker I: This training course is intended for workers new to weatherization, or who wish to improve their technical knowledge of weatherization concepts. The trainings include weatherization theory as well as hands-on activities and skills assessments. The course addresses:
    - LSW 8 Hours
    - Safe Work Practices
    - Air Sealing
    - Duct Sealing
    - Insulation
    - Base-load Measures
    - Diagnostic Testing
- Weatherization Crew Worker II: This is a 32 hour training course intended for incumbent workers who have previously completed the Weatherization Crew Worker Level I course through the CT-WAP program or have at least 1 year experience working in the field. The trainings include weatherization theory as well as hands-on activities measured through skills assessments each day. The course addresses:
    - Safe Work Practices
    - Air Sealing
    - Duct Sealing
    - Insulation
    - Base-load Measures
    - Diagnostic Testing
    -
- BPI Building Analyst Training. This is a 40 hour training course intended for participants who wish to obtain the BPI Building Analyst Professional certification. The course includes weatherization theory as well as hands-on activities using the diagnostic equipment. The course addresses:
    - Energy Efficiency
    - Building Science
    - H&S Issues
    - Weatherization Practices
    - Air-Sealing and Duct Blasting Equipment Overview
    - Moisture Detection and Management
    - Building Envelope and Thermal Envelope

- Air Sealing Basics
- Zonal Pressure Diagnostics
- Insulation

- Envelope Professional Training. This is a 40 hour training course intended for participants who have earned the BPI Building Analyst Professional certification. The course includes Building Envelope theory as well as hands-on activities using the diagnostic equipment. The course addresses:

  - Energy Efficiency
  - Building Science
  - H&S Issues
  - Comfort
  - Durability
  - Weatherization Practices
  - Moisture Detection and Management
  - Building Envelope and Thermal Envelope
  - Air Sealing Basics
  - Zonal Pressure Diagnostics
  - Insulation

503 JOB CLASSIFICATIONS TRAINING

The type of training appropriate to each job classification varies in its scope and complexity. The Energy Auditor/Inspector needs to have a whole house understanding of weatherization while a Weatherization Installer may only require specified knowledge of a specific task. Training for some of the typical weatherization job classifications are detailed below.

503.1 Energy Auditor/Inspector

Note: Quality Control Inspection personnel must complete DOE approved Tier 1 Training and possess knowledge, skills and abilities as listed in the National Renewable Energy Laboratories Job Task Analysis, and become certified by the Building Performance Institute as a Home Energy Professional Quality Control Inspector.

The Energy Auditor and Inspector conduct two of the most important functions in the weatherization process: (1) making the pre-weatherization determination of which measures will cost-effectively conserve energy, and (2) making the post-weatherization determination of the actual success of those measures. The knowledge of the Auditor/Inspector in performing Auditor/Inspector duties is crucial for an effective weatherization program. Virtually all weatherization training is applicable to these positions, but several areas are required.

***BPI Certification*: The Connecticut WAP (CT-WAP) requires that a**ll individual Auditor/ Inspectors employed by the Subgrantee, or its contractor, after September 1, 2011 hold a certification from the Building Performance Institute (BPI), as a Building Analyst. Auditor/ Inspectors used by the program must obtain this certification within six (6) months of hire, and must maintain this certification while employed or subcontracted by CT-WAP or its Subgrantee.

Auditors/Inspectors are also required to successfully complete the following training:

- DOE LSW Training
- ASHRAE 62.2 2013 Training
- Envelope Professional Training

Additionally, the State and/or the Subgrantee may provide training in the different areas relating to the responsibility of the Auditor and Inspector ***particularly, in areas such as pressure diagnostics, air sealing opportunities, mechanical systems, CAZ testing, insulation, client education, LSW, mold, asbestos, and general health & safety requirements,*** and may require mandatory attendance. In these instances, Auditors, and Inspectors must attend training as mandated by the State or the Subgrantee.

Funding Note: Use by the Subgrantee of an Energy Auditor without the proper certification may result in disallowed costs, both for the audit and for subsequent measures based on that audit.

Attendance records for all training must be maintained by the Subgrantee for review by the State during monitoring.

See *CT Program Operations and Training Manual*, Section 302, HOME ENERGY AUDIT, for additional information about the job of the Auditor. Also see Manual Section 314, FINAL INSPECTION, for additional information regarding the Inspector's job.

503.2 Crew Chief/Supervisor

No matter the actual job title all weatherization jobsites must have a Supervisor, Foreman or Crew Chief who is the person directly responsible for the on-site management of the Weatherization Installers and their work. As the person responsible for a range of jobs at the worksite, the Crew Chief must not only have a breadth of technical knowledge but must also have supervisory and human resource skills needed to organize an effective crew. Therefore, it is recommended that supervisory training be made available to Crew Chiefs/Supervisors.

Personnel that supervise workers such as Weatherization Installers must also successfully complete the following training:

- DOE LSW
- ASHRAE 62.2 2013
- OSHSA 30
- EPA Certified Renovator

In instances where lead safe work-practices are called for, a Certified Renovator is required for the job. In many cases the Crew Chief/Supervisor will fill the required role of the Certified Renovator. That role requires specialized EPA authorized training. Crew Chiefs/Supervisors fulfilling the role of the Certified Renovator must successfully pass the specialized EPA Certified Renovator training.

Furthermore, the Crew Chief/Supervisor must be able to manage the crew and the job to ensure that all work is being done safely, in a quality and workmanship-like manner in accordance with the generally accepted standard of care in the industry, using appropriate materials, completed in a timely manner, and that the work completed meets all standards. The individual in this position should possess a working knowledge of building science principles including conducting diagnostic tests, understanding air-flow, combustion appliance safety, and installation techniques as may pertain to the work being done. The State and/or the Subgrantee may provide training in the different areas relating to the responsibility of the Crew Chief/Supervisor and may require mandatory attendance.

Attendance records for all training must be maintained by the Subgrantee for review by the State during monitoring.

503.3 Weatherization Installers

Installers include all workers that install weatherization measures such as air sealing, duct sealing, base-load measures, and insulation. Weatherization Installers are required to successfully complete the following training:

- DOE LSW
- OSHA 10
- Weatherization Crew Worker Level I training
- Weatherization Crew Worker II training

As with other job classifications, additional training should be considered covering other aspects of their individual jobs. Additional training may range from basic weatherization areas such as the use of the blower door and infrared camera, air sealing techniques, insulation techniques, and installation of base-load measures, to the more sophisticated use of pressure diagnostics to locate and prioritize unit leaks. The State and/or the Subgrantee may provide additional training in the different areas relating to the responsibility of the Weatherization Installer and may require mandatory attendance.

Attendance records for all training must be maintained by the Subgrantee for review by the State during monitoring.

See *CT Program Operations and Training Manual*, Section 300, WEATHERIZATION SERVICES, for information regarding the wide range of weatherization measures where Installers need expertise.

503.4 Mechanical Systems Contractor

Connecticut law requires licensure by the State Board of Occupational Licensing in several areas relevant to working on combustion appliances and heating systems. Skilled workers such as

electricians, plumbers, heating professionals, and home improvement contractors must currently hold all required state or local licenses and credentials. Applicable licenses include:

- Heating, Piping and Cooling
- Plumbing
- Electrical work
- Duct work (sheet metal)

See Connecticut state statute: Section 20-332 et. Seq., and Professional Licenses Department of Consumer Protection (4) Occupational Licensing for additional information.

In addition to State licensure, the Subgrantee has responsibility to ensure that technicians doing mechanical systems work also possess the knowledge and competencies required specifically by WAP. This means that contractors must participate in training on weatherization program protocols and that program methods are followed in the installation and repair of mechanical systems.

The State and/or the Subgrantee may provide mandatory training in the different areas relating to the responsibilities of the mechanical systems contractor.

Attendance records for all training must be maintained by the Subgrantee for review by the State during monitoring.

503.5 Program Administration

Training of Weatherization Program Administrators including State staff, Subgrantee program Coordinators/Managers, and fiscal staff is essential to the success of the CT-WAP. To continue to improve the knowledge and skills of Program Administrators, the State provides periodic training on topics relating to areas such as: fiscal management, program management, human resources, program policies and procedures, and other topics.

Additionally, staff may be encouraged to attend various national and regional meetings.

Program administrative training may sometimes be mandated.

503.6 Weatherization Program Coordinator/Manager

The Weatherization Program Coordinator/Manager is responsible for the day-to-day administration of the CT-WAP at the Subgrantee level. The list of Coordinator/Manager needed areas of knowledge includes program administration, policies and procedures, applicable laws, rules and regulations, and technical protocols and methods. They also include the business of weatherization: budgetary and other fiscal requirements; procurement rules; inventory control; human resources and training needs. The Program Coordinator/Manager must be able to manage the weatherization staff, contractors, and manage a small construction/production-focused operation.

Program Coordinators/Managers must attend the following trainings:

- DOE LSW
- ASHRAE 62.2 2013
- OSHA 30

- Envelope Professional Training
- Weatherization Crew Worker Level I
- Weatherization Crew Worker II training

Training designed to improve the management of the program may also be required. Training may include workshops at conference s featuring all aspects of program operations from quality assurance to financial management.

The State encourages Weatherization Coordinators/Managers to attend the various national and regional meetings and to attain BPI certification.

Attendance records for all training must be maintained by the Subgrantee for review by the State during monitoring.

503.7 Weatherization Directors Meeting

The meetings among the Weatherization Directors who manage local programs across Connecticut and the State staff will be held on a regular basis. These meetings are not only a vital forum for the formulation of policy; the interchange of ideas related to weatherization provides effective training among the various state and local program grant partners.

The meetings are also held in partnership with the utility company partners in the program who administer ratepayer-funded programs in coordination with the weatherization grant, including the Home Energy Solutions – Income Eligible (HES-IE) program.

504 TRAINING REPSONSIBILITIES

A meaningful training curriculum works when all of the stakeholders participate fully in both the training, and in suggesting ways in which the curriculum may be designed and improved.

504.1 Subgrantee Responsibilities

The subgrantee is responsible for tracking compliance to training requirements for all individuals at the local level, and for reporting on training participation in the State monitoring process.

Subgrantees should also provide information and suggestions regarding the training curriculum as local needs are identified.

504.1.1 Training Plan and Budget

Prior to the development of the State Plan, the State works with Subgrantees to determine training needs and plan for that Program Year's State sponsored training activities. Subgrantees may submit additional request to the State for training activities not outlined in the State Plan.

Subgrantees may also obtain training for their staff and/or contractors through their T&TA funding. Subgrantee sponsored training requires a training request and State approval.

See the *CT Program Operations and Training Manual*, Section 703.3, Training and Technical Assistance Cost Category, for information regarding T&TA expenditures, including the process for prior approval.

504 .1.2 Training Compliance Monitoring

It is the responsibility of the Subgrantee to maintain records confirming that all certification, licensing, and training are current. Subgrantees must maintain an inventory of all training attended by individuals working on the weatherization program, whether it is with the Subgrantee itself or its contractors. Subgrantees must also track all contractors' licenses for all contractors working in areas that require licensing.

The State will monitor the participation by Subgrantees and Subgrantee contractors to ensure compliance with certification, licensing, and training requirements. Weatherization measures installed by untrained personnel, whether employed by the Subgrantee or by its contractors, may result in questioned and/or disallowed costs for the entirety of weatherization work completed on a unit.

See the *CT Program Operations and Training Manual*, Section 600, MONITORING & QUALITY ASSURANCE.

504.1.3 Retention Agreement

Pursuant to DOE's Weatherization Program Notice 12-1, dated January 31, 2012, T&TA funds may also be used to train contractors at the Subgrantee level participating in the Program. In making the determination to pay for contractors' training, Subgrantees must secure a retention agreement in exchange for the training. The retention agreement should require that contractors will work in the Program for a specific amount of time and must align with the cost of the T&TA provided. Examples of contractor/agency retention agreements can be found at www.waptac.org.

504.2 Contractor Responsibilities

Note: all Subgrantee Contractor training related to Work performed and reported as DOE completed CT WAP sites must be in compliance with DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, CT WAP Weatherization Filed Guided SWS Aligned Edition and the current year State Plan/Master File.

Given the continuous evolution of residential weatherization practices, it is important for all individuals to maintain a strong knowledge of current best practices in the industry. Connecticut's contractors **agree in contractual assurances that their weatherization employees will participate fully in training appropriate to their work, as required by the Subgrantee and the State.**

Contractors are also required to maintain current and proper licenses, and certifications, as required by law for their particular work.

SECTION 600 MONITORING & QUALITY ASSURANCE

600 INTRODUCTION

To ensure that the weatherization services are designed and delivered in accordance with best practices, agency policies, program rules, applicable regulations and laws, the Connecticut Weatherization Assistance Program (CT-WAP) maintains an aggressive program of periodic monitoring and ongoing quality assurance, featuring roles for the State and the Subgrantee throughout the implementation of the weatherization program. The State monitors the local agency's administration implementation of the program in accordance with policies set forth by the State of Connecticut and the U.S. Department of Energy.

The State's monitoring process is designed to produce written reports directed to the Subgrantee which detail all findings, providing recommendations or corrective action. The agency is required to respond to these reports, in writing, detailing the actions that it has taken to correct problems and issues.

The monitoring process has been implemented to increase oversight throughout the program, identify and address problems on a continuous basis and to result in the improvement of weatherization services. The State will also provide technical assistance and training as indicated by the observations and findings of the monitoring.

> **Note: all Subgrantee Monitoring activity related to Work performed and reported as DOE completed CT WAP sites must be in compliance with DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, CT WAP Weatherization Filed Guided SWS Aligned Edition and the current year State Plan/Master File.**

601 STATE MONITORING PROGRAM

The State will evaluate Subgrantee performance in its monitoring program extending over each contract period. Components include:

- Annual Administrative Review (AAR): an onsite review of each agency's overall administration of its weatherization program conducted by State program monitors; individual case reviews; and, site visits.
- Annual Financial Management Review: on-site monitoring of the agency's fiscal operation and utilization of weatherization funds, conducted simultaneously with the AAR by State fiscal staff.
- Compliance Monitoring: reviews conducted by State program and technical staff on a percentage of individual cases; includes both case file reviews and site visits.
- Desk Review: ongoing review by State program staff of production reports, agency claims, and other regular Subgrantee submissions as required.

Additional quality assurance visits by program monitoring and technical staff may be considered when the State identifies a need for additional evaluation, training or technical assistance.

601.1 Monitoring Topics

Since the program monitoring may include any of the topics covered in the *Connecticut Program Operations and Training Manual*, what follows is a chart showing topics that could be reviewed, arranged by Manual section. Discussion of the current monitoring topics follows.

POLICY SECTION/ TOPICS	MONITORING
100 ADMINISTRATION Federal, State and Local Administrative Roles – Planning & Budgeting – Funds Management - Competitive Procurement - Contracting – Request For Weatherization Proposal Process	*Evaluate the Subgrantee's organization and staffing. This should reflect adequate staffing in the areas of agency administration, program supervision, case work service delivery, fiscal management & reporting, quality management, subcontracting, and training. Review areas such as accounting systems; grantee's policies & procedures; funds management, plans & budgets; procurement of equipment, materials, supplies, and contractors; contracts; insurance; and inventory schedules for required information. Examine independent audits.*
200 CLIENT SERVICES Application Process – Eligibility Determination	*Evaluate the Subgrantee in the areas of application processing and eligibility determination; review individual case files.*
300 WEATHERIZATION SERVICES Program Requirements – Energy Audit – Weatherization Services – Waivers - Client Education – Incidental Repairs - Final Inspection	*Evaluate the Subgrantee's delivery of weatherization services. Some of the areas are based on the State's ongoing case reviews process, both with regard to eligibility and technical aspects of the program. Also considered is the State's review of 100% of the BWRs. Review of the audit compared to the work order, measures called for and measures installed, SIR's and costs within limits.*
400 HEALTH & SAFETY Program Requirement – Health & Safety Training – Worker and Client Safety – Client Education – Combustion Appliance Requirements – Expenditure Limits – Incidental Repairs - Waivers	*Evaluate the Subgrantee's assessment of Health & Safety (H&S) issues in units. Based partly on the ongoing case file reviews the State will check on the agency's responses to H&S problems including the deferral of units when needed. Also, check to see that any H&S work paid for by weatherization is definitively related to weatherization as required.*

POLICY SECTION/ TOPICS ***Cont'd***	MONITORING ***Cont'd***

500 TRAINING Training Requirements	*Evaluate the Subgrantee's compliance with State training, licensing, and certification requirements both for direct staff, as well as the compliance of individuals working for the subcontractor(s).*
600 QUALITY ASSURANCE State and Subgrantee Monitoring	*Evaluate the Subgrantee's implementation of previous corrective actions. Evaluate the Subgrantee's process for ensuring that its contractors comply with program requirements.*
700 CLAIMS & REPORTS Cost categories & Limitations – Claims – Leveraging - State, Subgrantee and Contractor Reporting Requirements	*Evaluate the Subgrantee's accounting systems, review expenditures, claims and documentation, compliance with expenditure limits, production results, and overall funds utilization* *Evaluate the Subgrantee's compliance with reporting requirements including accuracy and timeliness of reports. Evaluate the status of the Subgrantee's production rates.*
800 LARGE MULTI UNITS	*This section is left mostly blank to allow for the State to expand as new policies are developed for the weatherization of large multi-family units*
900 APPENDIX Documents and Forms	*Review documents and forms from the Subgrantee to ensure that the current versions are on hand. Ensure that all brochures, manuals, memoranda, technical information is current.*

601.2 Annual Administrative Review (AAR)

The Annual Administrative Review (AAR) is the *major review* conducted by the State during each contract year. The AAR, conducted by the State's program and fiscal monitors, will include a comprehensive program management review of the Subgrantee's overall administration and implementation of the weatherization program. Case file reviews and on-site visits conducted over the year, or as part of the AAR, may be incorporated into the AAR findings.

The primary form used by the State's program monitor is the *SUBGRANTEE MONITORING INSTRUMENT.* The form is designed to obtain a comprehensive picture of the organization and its weatherization implementation, as indicated by the following general areas from the current form:

A. AGENCY PROFILE
B. PROGRAM OPERATING PROCEDURES
C. CLIENT FILES/COMPLIANCE MONITORING
D. TRAINING & TECHNICAL ASSISTANCE
E. INVENTORY CONTROL/VEHICLES/EQUIPMENT

The time required for on-site visits and the AAR will normally be two to four days and will follow a standard four-step process: (1) notification and scheduling, (2) the actual program reviews, including field work (3), the State's report with findings, and (4) the subgrantee's response.

The sources of information for the AAR may include documentation of Subgrantee policies, case file materials, as well as interviews with the day-to-day program manager, upper level Subgrantee management, and the fiscal officer(s).

Subgrantees are expected to make available for review all weatherization files and paperwork as requested - program case files, administrative files and fiscal files. Other required Subgrantee documents that may be requested for the monitor's review, include but not limited to:

- Current Subgrantee agreement with the State
- Current Subgrantee contracts or other documents related to its contractors
- Inventory records for materials and equipment
- Subgrantee policies and procedures (e.g. fiscal, personnel, safety, vehicle maintenance records)
- Procurement policies, procurement records, and public notice records
- Insurance certificates and other evidence of current coverage
- Subgrantee's copy of the currently approved DOE State Plan
- Subgrantee's copy of the current *Connecticut Program Operations and Training Manual*
- Subgrantee's copy of the current *Connecticut Field Guides*
- Other relevant documentation as requested by the program monitor

601.3 Fiscal Management Review

In addition to the program aspects of the AAR, State fiscal staff will conduct a review of the Subgrantee fiscal administration of weatherization funds. While all efforts will be made to conduct the AAR program and fiscal reviews simultaneously, different state staff is used, so the visits may not exactly coincide. Both components will occur later in the contract period.

The Financial Management review will involve all areas of the fiscal management of the weatherization program such as program budgets & expenditures, invoices for weatherization materials, Subgrantee payroll records, Subgrantee purchases, and paid contractor invoices. The fiscal monitor may review the Subgrantee's current fiscal policy manual and track the system for paying and claiming weatherization expenditures.

State staff will track jobs from start to finish ensuring that proper timelines were met in paying contractors. Fiscal staff will also perform a verification of payroll to ensure that all staff was paid appropriate wages, when applicable. Procurement records and procedures will also be checked to ensure that materials are reasonable, spent in the most cost effective manner, and meet program specifications. Inventory controls and records will also be a focus if the financial monitoring.

The primary monitoring tool used by the State, *FISCAL MONITORING,* has the following general divisions:

I. GENERAL FISCAL MANAGEMENT

II. CASH RECEIPTS

III. PROGRAM RECEIPTS FROM THE FEDERAL/STATE GOVERNMENT

IV. PROCUREMENT

V. CASH DISBURSEMENTS

VI. PAYROLL

VII. PROPERTY AND EQUIPMENT

VIII. INVENTORY CONTROL

IX. CONTRACTING

The State also requires the local Subgrantee to submit the results of its annual fiscal audit of weatherization funds to the fiscal monitor.

Funding: The State may disallow and require the return or deduction of any expenditure that is made that does not comply with WAP policies, regulations and laws.

See *CT Program Operations and Training Manual* Section 700, CLAIMS & REPORTS for definitive information regarding allowable program cost categories, expenditure limitations and eligible program activities.

601.4 Case Reviews

At least ten percent (10%) of the individual client files are to be reviewed and at least five percent (5%) on site visits must be conducted for compliance. The units reviewed may include ones that have been completed and submitted for payment, as well as jobs that are still in process. At its discretion, the State may also monitor more than the targeted percentage.

Note: all Subgrantee Case Review related to Work performed and reported as DOE completed CT WAP sites must be in compliance with DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, CT WAP Weatherization Filed Guided SWS Aligned Edition and the current year State Plan/Master File.

The case review is completed using the *MONITORING REPORT FORM* which identifies the monitor, the unit name, unit number and address of the unit. The form also includes the two sections:

- File Review
- Site Visit

601.4.1 File Reviews

Note: all Subgrantee File review related to Work performed and reported as DOE completed CT WAP sites must be in compliance with DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, CT WAP Weatherization Filed Guided SWS Aligned Edition and the current year State Plan/Master File.

The Subgrantee is responsible for maintaining a complete and unique file on each household whose application is moved off the Waiting List for weatherization services. All paperwork relative to the individual unit must be labeled with a unique unit number assigned by the Subgrantee and kept in the file.

Weatherization unit files should include all notifications, referrals, forms, notes, correspondence, and other documentation explaining the eligibility of the unit, the client's eligibility for services, and the weatherization services approved and delivered.

State monitors will review the individual case files for accuracy and completeness. The current file review form lists the following specific items, but any documentation that supports the actions taken in the unit must be available for the program monitor's review.

The *Monitoring Report Form* looks at the following items:

- CEAP-approved application
- BWR for the unit (all versions)
- CEAP award letter
- **QCI compliant** Completion Certificate
- Data Collection Sheet **(NEAT, MHEA)**
- **ASHRAE 62.2.2013 Worksheet**
- Work Orders
- Invoices, Receipts and other Cost documents
- Blower Door Air-Sealing Work Order/Input Sheet
- Smoke & CO Detector forms (if applicable)
- Weatherization Agreement
- Heating System Waiver (if applicable)
- Permit Copies (if applicable)
- Window/Door Waiver (if applicable)
- HES-IE Form (if applicable)
- SHPO approval (if applicable)
- LRRP documents and photographs (if applicable)
- Landlord contribution documentation (if applicable)
- Other appropriate documents

The forms must be used and completed in compliance with weatherization program polices. The monitoring of the items involves a check of unit documents regarding client and unit eligibility, as well as the weatherization services received. The cost of the weatherization will be verified against the measures called for on the BWR and the amounts claimed for the unit.

The State will also review the Subgrantee's adherence to the weatherization program's service priorities in pulling the client from the Waiting List.

Funding: The cost of weatherization for an ineligible unit, including one that has been served out of the program priority order, may be disallowed by the State.

See *Connecticut Program Operations and Training Manual Section* 206, CLIENT FILE MAINTENANCE for a list of typical unit file documents.

601.4.2 Field File Review

Note: all Subgrantee Field File Review related to Work performed and reported as DOE completed CT WAP sites must be in compliance with DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, CT WAP Weatherization Filed Guided SWS Aligned Edition and the current year State Plan/Master File.

Units will be checked to see that weatherization measures have been completed on the unit as they were authorized. The monitor will check each measure: The Data Collection Sheet, BWR forms, work order, inspection reports should all coincide with regard to measures that are installed. To be counted as *completed*, all measures must have passed inspection.

The monitor will review the energy auditor's documents for justification and prioritization of the recommended measures, including recorded test readings and conformance to program cost standards.

The monitor will proceed to look at the Subgrantee's records of the measures actually conducted in the unit. The report from the Final Inspector will be used to assess that all work was completed in a satisfactory manner.

Some of the weatherization documents that will be reviewed and should be in files are:

- Weatherization Agreement Form
- Photos of the front of the house
- A Completed Data Collection Sheet
- Blower Door Airsealing Input Sheet/Work Order
- **ASHRAE 62.2.2013** Worksheet
- The Work Order duly approved by the Subgrantee
- A record of any measures negotiated for the specific unit, including the supplemental quotes from contractors, as required
- Modifications to the Work Order, approved by the Subgrantee

- A completed H&S checklist with documentation
- Smoke and Carbon Monoxide Forms
- A Burner Combustion Efficiency Report if a Clean and Tune is performed
- Signed agreement from client verifying the receipt of required pamphlets such as the information on lead based paint, as required
- Photos of set-up and containment of lead in compliance with EPA guidelines if window doors and/or sidewall insulation is installed in a building built prior to 1978.
- Historic Preservation Determination Letter for units built more than 50 years ago
- Approved waivers for heating systems oil tanks and/or hot water heaters
- Approved waivers for installing new windows and doors
- Photos of windows or doors before and after being replaced
- Contractor's documentation of work conducted and completed; such as ongoing pressure diagnostic test readings, the completed Work Order form
- Contractor invoice(s) for work completed, on the form and with the details required for all material and labor charges
- Installed Building Weatherization Report (BWR)
- The completed **QCI compliant** Final Inspection report including documentation of post weatherization blower door readings
- Completion Certificate signed by the Subgrantee Inspector and the Client
- The technical review of the unit file will be complemented by an on-site visit by the State's technical representatives to the unit to conduct an inspection of the work completed.

Funding: Weatherization expenditures on measures that are not appropriately documented may be disallowed by the State.

See *Connecticut Program Operations and Training Manual Section* 206, CLIENT FILE MAINTENANCE for a list of typical unit file documentation of the weatherization services.

601.4.3 Unit File Review – Denied

The State will monitor a random sample of denied applications in order to determine that applicants were rightfully denied and given the right to appeal.

See *Connecticut Program Operations and Training Manual Section* 206, CLIENT FILE MAINTENANCE for a list of typical case file documents for denials.

601.5 Compliance Monitoring

Compliance monitoring will be conducted over the contract year but prior to the major administrative review. The compliance monitoring concentrates on individual units, reviewing both file content and weatherization services provided. The State's program monitoring and/ or technical staff visit the Subgrantee to assess the ongoing quality of work as the Subgrantee's contract is

actually in process. This allows problems to be caught and corrected to avoid disallowances and provides an opportunity for training to be conducted on those specific issues.

In addition to the review of unit files and paperwork, the State may choose to look at weatherization work in process: audits, installations and final inspections.

A brief monitoring report will be completed at the end of the compliance monitoring visit that addresses areas of concern and recommendations for improvement. Ongoing issues or trends may also be followed up later in the AAR.

601.6 Technical On-Site Review

Note: all Subgrantee Technical On-Site Review related to Work performed and reported as DOE completed CT WAP sites must be in compliance with DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, CT WAP Weatherization Filed Guided SWS Aligned Edition and the current year State Plan/Master File.

In the course of reviewing units, whether in the compliance monitoring or the annual review, the program monitoring staff may conduct more in-depth technical testing, observation and evaluation at the weatherization worksite. These evaluations, when they are a part of any monitoring event must be followed with a report to the Subgrantee. The report made either at the time of the visit or as part of the AAR will contain the results and State recommendations from the visit.

Procedure: The State will coordinate the on-site visits with the Subgrantee and its contractors so that any work interruption is kept to a minimum. The State reserves the right to attend any work-site without notice. Most of the time however, the Subgrantee will be asked to coordinate the on-site reviews according to the needs of the State to observe all, or part of the weatherization work. The local Subgrantee must also make the appropriate weatherization staff available, as well as specialized equipment needed for the technical monitoring. The appointment time and place of arranged monitoring will be verified by the State prior to the visit.

The monitor may also observe an installation in progress, in such areas as blower door guided air sealing, the installation of insulation, work on the combustion appliances, or any other part of the job which is occurring and meaningful to the review. In some instances the monitor may repeat testing that has already been completed. In other instances, the testing may be observed as it is conducted by the Subgrantee's worker or contractor.

Monitors will further investigate the weatherization work by comparing the measures installed against those called for on the work order and, if completed, those paid for on the invoices. Attention will be paid to work quality, checking to see that all weatherization measures have been installed within program workmanship protocols and material standards.

Health and Safety (H&S) concerns observed by the State monitor must be addressed **immediately** with the worksite supervisor and also reported to the Subgrantee's weatherization program management for follow-up.

Client satisfaction is important in weatherization. While onsite, the monitor may interview the client to determine if the client is satisfied with the work. The monitor may inquire as to the professionalism of the auditors, crews, and contractors on the job. Clients may also be questioned to determine the level of educational interaction that they had with the Subgrantee or contractor staff during the weatherization process.

The following chart summarizes areas that may be examined during a technical, on-site review.

Energy Audit	*Observation of an energy audit in process for correct and complete procedures. Review of an audit report for measures called for in a unit and other factors. Specific technical re-testing to verify the audit results for the unit (e.g. pre-weatherization blower door readings, worst case CAZ draft testing).*
Final Inspection	*Inspection of the quality of work and materials for all measures called for and installed in a unit, as reported. Specific technical tests may be performed to verify results on the unit (e.g. post-blower door reading, worst case CAZ draft test, insulation and/or air sealing verification, proper ventilation per ASHRAE 62.2 2013).*
Health Safety	*Inspection of the unit and paperwork to determine if H&S issues were related to & addressed prior to weatherization. Check smoke detectors and CO alarms are properly installed & working. Specific technical tests may be performed to verify H&S results on the unit (e.g. worst case CAZ draft test, combustion appliance testing, inspection for mold & moisture, proper ventilation, electrical safety).*
Air Sealing	*Inspection of quality of measures (e.g. caulking, weatherstripping, incidental repairs). Overall inspection, including zonal testing of usual locations for missed air sealing opportunities. Blower door testing and verification of installer or inspector readings. Verification of optimum air exchange calculations per ASHRAE 62.2 2013. Inspection of windows & doors repair and replacement for quality of installation and checked against the order specs.*
Insulation	*Inspection of attic insulation for proper depth, even application, proper baffling, materials used around chimneys, and hatch door insulation and knob & tube wiring de-energized. Visual inspection of sidewall insulation areas, including use of infrared technology to check for coverage. Visual check of other insulated areas.*

Mechanical	*Inspection of repaired or replaced furnaces, water heaters, oil tanks, knob & tube wiring, and electrical systems. Comparison of appliance specifications with work as ordered. Verification of calculations (e.g. manual J). Follow-up appliance testing, if needed.*
Energy Education	*Observation of efforts to inform and educate clients throughout the course of the weatherization services. Client interview.*

Follow-up: Observations from the State's technical visits will be recorded in the Subgrantee's quality assurance file. Prevalent issues and trends as noted over time will be addressed in the AAR Report. At that time, the State will address technical areas where the Subgrantee or its contractor is out of compliance with prescribed field protocols.

Funding: Expenditures on measures that are not authorized or installed within program protocols shall be disallowed by the State.

Training: State recommendations may include requirements for additional training for crews and/or contractors.

See *CT Program Operations and Training Manual*, Section 300, WEATHERIZATION SERVICES, for comprehensive information regarding measures that may be installed by the program. See also *Manual* Section 400, HEALTH & SAFETY. See also *CT Weatherization Field Guide SWS Aligned Edition* for approved technical protocols.

601.7 Technical Assistance

On-site visits may also be carried out in the context of technical assistance by the State, where the local Subgrantee has requested such assistance, or the State has other reasons for observing the work of a particular Subgrantee or contractor.

Technical assistance visits may not be as formal as monitoring. Test results, observations and recommendations may be discussed with the Subgrantee's weatherization technicians or managers at the job site, or, depending on the significance of the issues, in subsequent meetings with the Subgrantee.

Whether or not such visits result in a written monitoring report, the State must keep records of the technical assistance, as any issues may eventually become part of the AAR.

601.8 Desk Review of Monthly Claims & Reports

The State will conduct desk reviews of Subgrantee claims and reports as they are submitted each month throughout the year. Any discrepancies will be communicated directly to the Subgrantee for resolution. It is expected that such issues may be resolved immediately but no longer than fifteen business days from the notification.

A record of the desk review is kept so that persistent issues may then be addressed again in the AAR. Ongoing State desk checks of Subgrantee submissions will include reviews of the:

- monthly and quarterly production in comparison to State and Subgrantee production goals,

- monthly expenditure reports against Subgrantee budgets and line item limitations,
- all Building Weatherization Reports (BWR) submitted for claims and reporting purposes,
- annual independent audit of weatherization funds for each local Subgrantee,
- all closeouts, final claims, and advance repayment balances, and
- other reports, as required.

The State reviews **100%** of the BWRs submitted for the units claimed for the month. The BWRs must balance against the monthly statistical reports which are submitted for the month and grant to date. Each measure reported for the unit must meet the individual Savings to Investment Ratio (SIR) test or the overall SIR as appropriate, unless the measure is addressed under Health and Safety or General Heat Waste. Approved waivers obtained on the unit must be on file, as applicable. The staff will also compare the invoiced charges against the program maximum prices or other amounts negotiated by the Subgrantee for the specific job. Through the review of the BWRs the State will also maintain a close check on the repayment of any outstanding advance and will monitor closeouts and final claims.

Fiscal and monitoring staff will also review incoming monthly and quarterly Subgrantee reports to see that the Subgrantee is on target to meet goals for production and funds utilization; the Subgrantee has committed to a projected number of units based on the allocation of weatherization funds. The State will review reports to see that the Subgrantee remains on track to use its funds and reach the target number of units.

Any shortfalls projected in production and expenditure rates will be addressed with the Subgrantee on an ongoing basis and as part of the AAR. Significantly low production will require corrective action on the part of the Subgrantee, which will be closely monitored by the State. Persistent problems in meeting production goals may affect the Subgrantee's continued contractual arrangement with the State.

Unresolved issues and trends found during the desk reviews will be maintained in the program file and will also be addressed in the AAR monitoring visit and in that monitoring report along with recommendations or requirements for a corrective action plan to address the issues.

Funding: The State will disallow and require the return or deduction of any expenditure that does not comply with weatherization program policies, regulations, and laws.

See *CT Program Operations and Training Manual* Section 700, CLAIMS & REPORTS, for definitive information regarding allowable program cost categories, expenditure limitations and eligible program activities.

602 MONITORING REPORT & RESPONSE

All monitoring reviews will result in the issuance of a written report from the State to the Subgrantee. The time frame for such reports and required responses will vary according to circumstances. Desk reviews of the Subgrantee's monthly reports and claims may only require communication with the Subgrantee if there are discrepancies or questioned costs. Comprehensive monitoring of individual units during the year will be more extensive and will include a more time consuming action and response, such as a Subgrantee re-work and additional inspection. The major monitoring report

resulting from the AAR may involve more organizational or procedural issues that require prolonged changes and an in-depth response.

Monitoring results will be used by State administrators to identify ways that the weatherization plan can be improved each year.

Similarly, monitoring results will be shared with weatherization training entities to ensure that training can be scheduled to address concerns that have been identified during the monitoring.

The State's report to the local Subgrantee will usually start with a verbal communication of the results. This may vary, from an initial call to the weatherization manager about a specific issue, to a formal exit interview following the AAR.

602.1 Exit Interview (AAR)

A formal exit interview will be conducted on the final day of the Annual Administrative Review (AAR). The interview will be conducted between the State monitoring staff and Subgrantee's weatherization program manager. Additional personnel as designated by each Subgrantee may also participate.

Ideally, the Subgrantee's executive staff and a fiscal representative will be present for pertinent parts of the AAR exit interview. During the meeting, the State will briefly go over the preliminary findings, discussing proposed recommendations and requirements. This will give the Subgrantee a head start on the issues. Particular emphasis will be placed on any corrective actions that must be attended to promptly in order to prevent compounding significant errors in program implementation.

All findings and recommendations, even if they seem to be resolved in the exit interview, will still appear in the State's written report and must be responded to by the Subgrantee. The written documents are the official record of the monitoring process and results.

602.2 Annual Administrative Review (AAR) Report

The State's AAR monitoring will result in the issuance of the AAR Report to the Subgrantee within thirty (30) calendar days of the exit interview date. This annual monitoring report will be based on success, best practices, issues, problems or tendencies from the following sources.

- annual administrative review
- unit reviews (file and field)
- technical visit reports
- desk reviews
- review of Subgrantee production reports
- review of Subgrantee claims and expenditure reports
- outstanding issues from previous monitoring
- findings and requirements from Department of Energy (DOE) & other federal agencies

- other reports or documents with issues noted by the State.

The AAR monitoring report, addressed to the Executive Director of the Subgrantee, will include the State's recommendations and requirements for the Subgrantee and its contractors. The structure of the written report will provide a clear, specific and concise list of areas for the Subgrantee to address. All of the areas reviewed will be listed with a statement of any issue, followed by the State's recommendations or requirements. If best practices and/or no issues were found in an area reviewed, that will also be stated. Matters referring to a specific case or unit will be identified by a unit number.

The monitor will address each of the area of the review and state one of three determinations:

BEST PRACTICES/SUCCESS	***ISSUE*:** During a monitoring visit, a "Best Practice" is identified in an area which addresses a matter of compliance which is worthy of applying with other Subgrantees is considered a Success.
	***RESPONSE*:** The Subgrantee may be asked to write-up the process in more detail or prepare a short training document to present to other Subgrantees or to be presented by Department staff.

RECOMMENDATION	***ISSUE:*** *An issue was identified in this area which is not a matter of regulatory compliance but is based on the State or monitor's knowledge of sound program practices. Includes suggestions for program procedures; protocols in the weatherization work; or other recommendations by the State for the improvement of the local program.*
	RESPONSE: *Subgrantee action on State recommendations is optional but a response to the item is required.*
CORRECTIVE ACTION	***ISSUE:*** *A problem was identified which is a matter of compliance with the legal, regulatory or contractual obligations of the subgrantee. A problem was identified which is a matter of unacceptable weatherization workmanship. Here, the report must cite a specific source for the requirement by number and title; which may include the subgrantee's contract, the approved DOE State Plan, federal or state laws, regulations, program technical protocols, program policies and procedures (manual citation).*
	REPSONSE: *Subgrantee must respond with corrective action. The response must be detailed and a time frame for compliance is required. Subsequent monitoring will ensure the requirement has been implemented.*

602.3 Subgrantee Response (AAR Report)

The Subgrantee must provide the written response to the AAR Report. A specific response by the Subgrantee is required for every recommendation or requirement listed in the State's report. In many instances, corrective action may be taken immediately, or may have already been taken following the exit interview. The response must still explain all actions taken by the Subgrantee, even though already completed.

Procedure: The Subgrantee response to the AAR is due within thirty (30) calendar days of the date of receipt of the report. The written response must re-state the issue and the recommendation/ requirement only to the extent that the matters can be identified from the original report. A hard copy of the report must be submitted to the State.

In some instances, the Subgrantee may request and extension to respond to the AAR. Such action does not mitigate the timeframe for the response, instead the response should detail the specific steps to be implemented and provide time frames for the ultimate amelioration of each issue. Where longer terms are required, particularly with solutions that are going to take more than forty-five days, it is up to the Subgrantee to periodically report progress on the issue to the State program monitor.

The State will follow up on any overdue monitoring report responses with a reminder letter to the Subgrantee's Executive Director, with a copy to the weatherization manager. If the response is still not received within an additional ten (10) business days from the date of the letter, further action will ensue; including additional correspondence, delay of payments and, in some situations, suspension or termination of the Subgrantee's weatherization contract with the State.

The Subgrantee is encouraged to have procedures in place for the review of all AAR documents by its governing board of directors.

Communication with the State regarding monitoring issues is important as outstanding issues will have a negative affect when the AAR is used to determine any future contracting arrangements with the Subgrantee.

Department monitors will also follow up on outstanding issues in subsequent monitoring.

603 SUBGRANTEE MONITORING

Note: all Subgrantee Monitoring related to Work performed and reported as DOE completed CT WAP sites must be in compliance with DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, CT WAP Weatherization Filed Guided SWS Aligned Edition and the current year State Plan/Master File.

The Subgrantee is responsible for the performance of its own staff as well as that of its contractors in the implementation of weatherization services. There are numerous Subgrantee responsibilities (detailed in this manual) which will require the Subgrantee to set up a review program of its own to monitor ongoing performance and compliance by the Subgrantee and its contractors. Some key areas which must be addressed include the following:

- The Subgrantee must implement a process of careful review of all contractor invoices and back-up documentation, including a comparison of (1) the measures ordered on the Work Order, (2.) the measures paid by invoice and (3.) the measures passed in the Final Inspection.
- The Subgrantee must have ongoing quality management procedures in which a significant percentage of unit files are reviewed by a weatherization manager for completeness and accuracy. All work orders must be approved by a supervisor prior to issuance.
- The Subgrantee must have ongoing quality management procedures in which the quality of its weatherization work is monitored. This monitoring should be conducted by a weatherization technical expert who routinely visits the worksites and observes the installation work, along with paperwork, to ensure the job is being done right. Contractors should be issued written reports requiring corrective action on significant issues with their work or workplace, as well as recognized for work that meets or exceeds quality standards.
- The Subgrantee must maintain and monitor a log of all of the training of its contractors, as well as its own staff. Training must be tracked for each individual employed by the contractor and Subgrantee. The Subgrantee must compare the individual training record with the types of training required by the weatherization program according to job function. Contractors should be issued written reports on the requirements for training. The Subgrantee is also responsible to see that required certifications and/or state licenses are current for persons working at weatherization sites.
- The Subgrantee must put in place any other procedures that are necessary to monitor the compliance by the Subgrantee's own staff and that of its contractors to its contract agreement with the Subgrantee as well as all the policies contained herein.

SECTION 700 CLAIMS & REPORTS

700 INTRODUCTION

The Connecticut WAP has developed an integrated process for reporting and claiming that ensures that the Subgrantee production results are meeting program goals, through allowable expenditures in correct cost categories and for approved weatherization measures.

Through the Subgrantee submission and the State review of the *Monthly Weatherization Status Report* against the supporting *Building Weatherization Report (BWR)* on each unit reported, the process ensures that the assignment of claimed costs are made to the correct and allowable categories.

The cost of an individual weatherized unit may not be split between budgets. Claimed amounts will be assigned by the Subgrantee to the appropriate line item in the budget, according to the rules set forth in this section.

Weatherization program funds may only be expended for approved activities to accomplish the purposes of the program and are to be charged according to cost categories defined in this section.

Funds available to the Subgrantee are limited to the total contract amount. The Subgrantee is solely responsible for any expenditure in excess of an approved budget category or the total value of the contract.

> **Note: all Claims and Reports for Work performed and reported as DOE completed CT WAP sites must be in compliance with DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, CT WAP Weatherization Filed Guided SWS Aligned Edition and the current year State Plan/Master File.**

701 OVERALL COST LIMITATIONS

The expenditures for WAP are subject to the limits of the overall allocation of funds to the Subgrantee, as well as capped dollar amounts or comparative percentages for each cost category and line item as defined by the WAP policies. The Subgrantee is responsible for tracking program expenditures to stay within all set limits and terms.

Overall Budget: The Subgrantee may not exceed its total allocation of funds for the period of the contract. Any expenditure exceeding the allocation becomes the responsibility of the Subgrantee and may not, under any circumstances, be paid out of DOE grant funds.

Average Cost Per Unit: The expenditure WAP funds for labor, weatherization materials, and other program support costs is limited to the set average cost per unit. The average is updated annually by the State and reviewed by the DOE. The Subgrantee may not claim any expenditure which exceeds the allowable average cost per unit over the contract period.

Renewable Energy Average Costs Per Unit: The expenditure of WAP funds for program support costs for a Renewable Energy system is limited to an average cost per unit. The Renewable Energy average is updated annually by the DOE and communicated to the Subgrantee by the State. The Subgrantee may

not claim any expenditure for Renewable Energy measures which exceeds the allowable average cost per unit over the contract period. The State does not have a separate average limit nor is currently addressing Renewable Energy measures.

Materials Cost Limit on Program Support: For every $1.00 spent on materials, the Subgrantee may expend a maximum of $2.50 for all other Program Support costs, including labor. The limit applies on a cumulative basis over the contract period.

The Department will track the cumulative expenditures for materials by the Subgrantee on a monthly basis. Any claimed expenditure for the non-materials, program support costs that exceeds the allowed amount will be reduced on the monthly claim payment. At any point that the cumulative cost returns to the allowed amounts, the program support reimbursements will be restored by the State.

Minimum Materials Expenditure: As per CT WAP there is an expenditure minimum of $50 in materials per unit.

Maximum Per Unit Expenditure: The maximum average per cost per unit is $7105 for total expenditures for materials *and* labor. In certain instances the total cost of a unit may exceed $7105 the maximum average per unit expenditure. In such instances, the maximum allowable is $10,000 however the subgrantee is responsible for ensuring that the $7105 average cost per unit is maintained.

Limitations on individual line items and measures are discussed below.

702 WEATHERIZATION SERVICES COSTS

The entire cost of weatherizing a unit may be claimed as expenditures under the DOE WAP grant. Allowable weatherization costs for materials and labor include the energy audit, the installation of measures and the final inspection.

To meet the requirement for reimbursement measures must be installed in compliance with the WAP policies and technical protocols.

> **Note: all installed measures and Work performed and reported as DOE completed CT WAP sites must be in compliance with DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, CT WAP Weatherization Filed Guided SWS Aligned Edition and the current year State Plan/Master File.**

All energy conservation measures are required to achieve an individual Savings to Investment Ratio (SIR) of one (1), or better. The overall package of measures must also meet the SIR threshold. Measures must be installed according to the authorized Work Order and by qualified personnel. Certain replacement measures require prior approval from the Department. Health & Safety (H&S) measures may only be installed according to the policy definition of such measures and within dollar limits. Incidental Repairs may only be installed according to policy and within dollar limits.

Failure to comply with any of these requirements will result in questioned or disallowed costs when claimed, or in program monitoring and financial auditing procedures.

Materials: Materials are charged according to actual cost to the Subgrantee, within certain limitations, explained below. Material costs must be reasonable and meet the material standards of the program.

Material costs charged by Contractors must be documented and may not exceed contractual limits, including price lists agreed upon with the Subgrantee.

Labor: A Subgrantee employee's time may be charged entirely to the grant except for any time spent on any other program or non-weatherization program function, which must be allocated. The contracted installer expenditures are paid and charged to program support as invoiced. Contractors must also allocate time based on actual time on the specific job.

The following information explains details for categorizing expenditures for the various weatherization measures.

For additional information on measures, see *CT Program Operations and Training Manual* Section 300 Weatherization Measures, and Section 400, Health & Safety.

702.1 Energy Audit Costs

The Subgrantee may claim the total cost of an Energy Auditor. Such costs will include salary, fringe and other costs attributable to the position.

Cost Category: Program Support (Labor and other support costs).

However an Auditor who spends time with other programs or on non-audit functions must have the costs allocated, and charged to weatherization according to the actual time spent on the Energy Audit functions.

CT WAP Approved Contractor Energy Auditor costs may be paid as a flat fee or based on actual time, depending on the terms of the contract.

702.2 Air Sealing Costs

Expenditures for labor and material in application of air sealing measures are allowable costs, within limitations. Typical materials include caulk, foam and weatherstrip. Typical labor includes personnel time to locate major leakage using the Blower Door or other equipment, as well as the time to seal areas of infiltration.

Cost Category: Material and Program Support (Labor and other support costs), within limitations.

Limitations: The Connecticut WAP reimburses Blower Door guided air sealing at the rate of $105 per-hour. Of the total hourly rate, $30 is to be allocated to materials and $75 is to be allocated to the program support cost of the job, out of which the contractor labor will be paid. These amounts will be computed using the air sealing activity information entered into *the NEAT, MHEA software..*

Subgrantees are allowed to bill up to five (5) hours of air sealing per unit, provided SIR is achieved for all related costs The following materials are routinely included in the hourly rate:

- Urethane foam
- Interior caulking
- Miscellaneous materials for covering large holes such as sheetrock, plywood, flashing, insulation board, cardboard, nails, screws and other hardware.

Whenever justified, additional hours of air sealing may be charged with the *prior approval* of the Subgrantee program monitor. The monitor's approval may be obtained by phone by the Subgrantee and must be notated in the case file and on the air sealing paperwork.

Health & Safety: Ventilation may be required by the tightening of the unit through air sealing. Material and labor for ventilation installed according to ASHRAE 62.2.2013 standards is to be paid under the H&S cost category.

Incidental Repairs: Air sealing work, particularly with regard to windows and doors are likely to require Incidental Repairs which should be paid from that cost category.

702.2.1 Windows and Doors Costs

Expenditures for labor and material in sealing or repairing doors and windows to reduce air infiltration are allowable costs.

Cost category: Materials and Program Support (Labor and other support costs).

Typical materials include caulk, thresholds, sash kits, window components, door components, locksets, latches, and glass. Typical labor includes personnel time to locate window and door leakage using the Blower Door or other equipment, as well as the time to install new components, and seal areas of infiltration around windows and doors.

In the limited circumstances in which windows and doors may be replaced, materials and labor would include the entire cost of the replacement, including the new door or window. The replacement of doors or windows requires an individual SIR of one (1) or better.

702.3 Insulation Costs

Expenditures for labor and material in the installation of insulation are allowable costs. Typical materials include various types of insulation: cellulose, fiberglass, foam board, foam spray. Labor includes installer time to properly apply the insulation measures.

Cost Category: Materials and Program Support (Labor and other support costs).

Any Subgrantee insulation costs that are reimbursed, such as the payment received from some utility companies for a percentage of the insulation costs, must be deducted from the amount claimed by the Subgrantee for the job.

Health & Safety: Insulation of cold water pipes in areas in jeopardy of freezing may be charged to the H&S line item.

702.4 Heating Appliance Costs

Expenditures for labor and material used in the repair, retrofit or installation of heating appliances and connected systems are allowable costs. When these activities are conducted as energy efficiency measures they are allowable. In some instances, heating system costs may qualify under the H&S category.

Typical materials include replacement parts, sealants, filters, vents, pipes, and in some instances replacement of entire appliances and systems, or oil tanks. Labor includes cleaning, tuning and further testing, as well as installation labor.

Cost Category: Materials (parts) and Program Support (Labor and other support costs) ormeasures may be charged to H&S, as justified.

Health & Safety: Under certain circumstances, heating appliance measures are conducted for reasons of H&S of the unit's occupants. Such measures must first be screened to see if they qualify as cost-effective energy efficiency measures with a SIR of 1.0, or better. If not, they must be charged to the H&S category, provided they qualify otherwise. (If such measures do not qualify either way, they may not be installed.)

In Connecticut, repairs to the heating appliance, including the standard Clean, Tune and Test procedure, along with emergency repairs, are charged to the H&S cost category. Such costs must fall within the definition and dollar limits in that category.

One-time Heating System Charge: In addition to the reimbursement to the Subgrantee for Contractor labor and materials costs, the Department allows the local agency to claim a one-time $200 flat payment for its costs when replacing heating systems. This payment applies no matter which cost category is used. A specific line item for this purpose is under the Program Support category.

Prior approval: Expenditures for the replacement of heating appliances require prior approval by the Department. Expenditures may not be claimed if the waiver process has not been completed.

702.5 Central Air Conditioning Systems

The CT WAP program does not allow the expenditure of WAP funds to address any issues with central or window type air conditioning systems. However, if a central air conditioning system's "A" coil shares the supply plenum or supply ductwork with a heating system then the cleaning of the "A" coil of a working central A/C system and repair to the condensate pan/drain is an allowable cost.

702.6 Humidification Systems

The CT WAP program does not allow the expenditure of WAP funds to address any issues with central humidification systems that share the supply plenum or supply ductwork with a heating system. In addition, NO humidification system is allowed to be installed into the supply plenum or supply ductwork of a replacement heating system paid for with WAP funds.

702.7 Domestic Water Heaters (DWH) Costs

Expenditures for labor and material used in the repair, retrofit or installation of domestic water heating appliances and connected systems are allowable costs. These activities are allowable as energy efficiency measures. In some instances water heater costs may qualify in the H&S category.

Typical materials include replacement parts, sealants, filters, flues, hoods, diverters, thermocouples, burners, pipes, insulation and, in some instances, replacement of appliances and systems. Labor includes cleaning, tuning and further testing, as well as labor to install parts.

Cost Category: Materials and Program Support (Labor and other support costs). Or, measures may be charged as H&S, as justified.

Health & Safety: Under certain circumstances, water heating appliance measures are conducted for reasons of H&S of the unit's occupants. Such measures must first be screened to see if they qualify as cost-effective energy efficiency measures with a SIR of 1.0, or better. If not, they must be charged to the H&S category.

Prior approval: Expenditures for the replacement of a domestic water heater require prior approval by the Department. Expenditures may not be claimed if this process has not been completed.

702.8 General Heat Waste (GHW) Costs

The Department allows for up to $100 in materials to install DOE pre-approved GHW measures for Subgrantees working in municipalities where such measures are not covered by public utility programs. DOE pre-approved GHW measures vary from those GWH measures allowed by the utility programs.

Those DOE-approved, presumptively cost effective materials include:

- Water heater wrap (i.e., insulating blanket);
- Water heater pipe insulation (on first six feet of hot water pipe exiting water heater);
- Faucet aerators;
- Low-flow showerheads;
- Limited weather-stripping and caulking to increase comfort (does not include regular air sealing work on Audit);
- Furnace or air conditioner filters.

Cost Category: Materials and Program Support (Labor and other support costs).

702.9 Health & Safety Costs

Weatherization program funds may be used for the separate cost of certain H&S activities that meet the defined criteria related to the weatherization work and are within the dollar limits defined in the State's approved H&S plan. Expenditures for these ancillary activities that are required to ensure that weatherization measures do not cause or exacerbate H&S problems for workers and/or occupants are allowable costs only to the extent they are reasonable and specified as allowable in the CT WAP policies.

Cost Category: Health & Safety. Activities assigned to the H&S costs are not subject to the SIR analysis.

Allowable Costs: See Section 400 Health & Safety for allowable activities and costs under the CT WAP..

702.10 Incidental Repair Costs

Weatherization funds may be used for the cost of certain Incidental Repairs when such repairs are reasonable and necessary to ensure the sustainability and effectiveness of weatherization measures.

Incidental repair costs can be treated in two ways, by being considered a component of the energy conservation measure and incorporated into the SIR of the associated measure, or incorporated into the SIR for the overall package of measures.

Incidental repairs can only be considered if the overall package maintains an SIR of 1.0, or greater, *and* the repairs do not prevent the installation of any weatherization measure that would have otherwise been installed.

Cost Category: Material and Program Support (Labor and other program support costs). The Incidental Repair is included in the average cost per unit calculation.

Allowable Costs: Subgrantees must refer to the State of Connecticut's H&S Plan which specifies IR activities and costs that are allowed under the CT-WAP.

Incidental Repair (IR) Limit: Connecticut WAP allows the Subgrantee to include incidental repairs as part of the over-all SIR calculation or be added with the individual measure; therefore as long as the cost of the IR screens 1 or more, either way the IR is allowable.

As a reminder Incidental Repairs are intended to be ancillary and reasonable. WAP is not a rehabilitation or general repairs program and does not allow roof replacement, major structure repairs, or other non-energy related repairs.

703 COST CATEGORIES

DOE regulation at 10 CFR 440.18 establishes specific cost categories for all WAP expenditures, including: administration, training and technical assistance, program operations (material, labor and other program support), H&S, vehicles and equipment, liability and pollution occurrence insurance, and financial audit.

The expenditures under various cost categories are strictly monitored by the Department during the processing of claims, in program fiscal monitoring and in fiscal audits. Costs that do not conform to program policies and definitions may be rejected, questioned or disallowed. Costs that are beyond established expenditure limits may be denied or disallowed. Disallowed costs become the responsibility of the Subgrantee and may not, under any circumstances, be paid from weatherization funds.

Throughout the contract period, the Subgrantee shall report monthly on the expenditures for the current month and for the grant-to-date, against the total grant budget. The information is reported on the spreadsheet *Analysis of Expenditures against Approved Budget Items*. Funds may only be expended for those cost categories defined in the approved Connecticut State Plan and detailed in this *CT Program Operations and Training Manual*.

The manual sections below and line items are:

Sec No./	Sub Category Line items

Category Line Items	
703.1 MATERIALS	Contractor Materials Installed in Completed Units Agency Materials Installed in Completed Units Materials for DOE Heating Systems
703.2 PROGRAM SUPPORT	Storage Contractor Installed Measures - Labor Contractor-Other (attach itemized sheet) Maintenance, Repair, Operation of Tools, Equipment & Vehicles Insurance for Tools, Equipment and Vehicles Purchase of Non-Expendable Tools, Equipment and Vehicles Purchase of Expendable Tools and Equipment Annual Lease of Tools and Equipment Salaries - Crew Salaries - Supervisory Salaries - Program Staff Fringe Benefits Transportation Program: Other (attach itemized sheet) Purchase/Lease of Vehicle(s) Labor for DOE Heating Systems $200 Reimbursement per Heating System Minus Landlord Contribution
703.3 TRAINING & TECHNICAL ASSISTANCE	(Attach itemized form)
703.4 LIABILITY INSURANCE	Actual Direct Cost
703.5 POLLUTION INSURANCE	Actual Direct Cost
703.6 FINANCIAL AUDIT	Actual Direct Cost

703.7 HEALTH & SAFETY	Attached summary report
703.7 ADMINISTRATION	Salaries Fringe Benefits Travel Other (Attach itemized sheet)

Connecticut cost categories mirror the federal regulation except that Program Operations is further defined and tracked separately as Materials and Program Support (including labor).

DOE defines Program Operations costs to typically include materials, program support less labor, and labor.

703.1 Materials Costs

Note: all Materials costs related to Work performed and reported as DOE completed CT WAP sites must be in compliance with DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, CT WAP Weatherization Filed Guided SWS Aligned Edition and the current year State Plan/Master File.

The Subgrantee may expend funds for the program operations cost of all necessary materials and parts used by Subgrantee staff, crews, and Contractors in the weatherization of a unit. Funds must be expended within the definitions and dollar limits established by the WAP policies.

The MATERIALS costs are reported (and claimed) on the monthly expenditure analysis report, A*nalysis of Expenditures against Approved Budget Items.* Reported items include:

- Contractor Materials Installed in Completed Units
- Agency Materials Installed in Completed Units
- Materials for DOE Heating Systems

Materials must be reasonable and materials must be comparable to similar market products. They must be purchased in conformance to CT WAP procurement policies.

Materials costs charged to the grant are limited to the net, documented expenditure by the Subgrantee or the Subgrantee's Contractor. The actual cost must be discounted by any rebates or other reimbursement of the cost of the material or part.

To be charged to the grant, materials and parts must be properly installed to manufacturer's specifications and meet WAP standards. Parts and materials must be covered by standard warrantees, which are to be passed along to the owner of the unit.

703.1.1 Actual Costs Units Completed, Units in Progress

For each monthly report packet, the Subgrantee is required to report materials costs for each of the units *completed* and *in process*.

The number of completed units reported should equal the total number reported for the current month.

Units are considered to be in process if an Energy Audit has been completed and Work Order(s) have been assigned but the work is not completed, **including passing the Final QCI Inspection.**

Units are listed for the month, identified by Site ID.

703.2 Program Support Costs

Subgrantee expenditures for the cost of program support are allowable.

The PROGRAM SUPPORT costs are reported (and claimed) on the monthly expenditure analysis report, A*nalysis of Expenditures against Approved Budget Items.* Items include:

- Storage
- Contractor Installed Measures - Labor
- Contractor-Other (itemized)
- Maintenance, Repair, Operation of Tools, Equipment & Vehicles
- Insurance for Tools, Equipment and Vehicles
- Purchase of Non-Expendable Tools, Equipment and Vehicles
- Purchase of Expendable Tools and Equipment
- Annual Lease of Tools and Equipment
- Salaries - Crew
- Salaries - Supervisory
- Salaries - Program Staff
- Fringe Benefits
- Transportation
- Program: Other (itemized)
- Purchase/Lease of Vehicle(s)
- Labor for DOE Heating Systems
- $200 Reimbursement per Heating System
- *Minus* Landlord Contribution

703.2.1 Subgrantee Staff

As part of Program Support, the Subgrantee may expend funds for the cost of all personnel and labor assigned to the weatherization program operation.

Cost Category: Program Support

- Salaries – Crew/ Salaries – Supervisory
- Salaries - Program Staff
- Fringe Benefits

Where employees work on multiple activities, their costs are to be allocated based on a consistently reasonable method and adequate documentation of their activities across programs.

When Subgrantee staff is in training the cost for time spent may be charged to Program Support *or* to Training and Technical Assistance (T&TA) at the Subgrantee's discretion, and in consultation with the State.

The Subgrantee's expenditures including salaries payroll taxes, group health insurance, and other employee benefits that may include but are not limited to pensions for those employees receiving salaries are allowable expenses paid to:

- Supervisory Staff – including Weatherization Program Coordinators, Program Directors, Program Supervisors, and on-site supervisors.
- Program Support Staff – including staff providing direct support to the Weatherization Program, such as intake, data entry, clerical support, and other services directly associated with the program.
- Auditors &**QCI** Final Inspectors – including agency staff performing initial Audits and Final Inspections of dwellings receiving Weatherization services.
- Crews - including employees and staff installing energy savings measures and H&S Measures for eligible dwellings.
- Air Sealing Personnel Limitations – Up to $75 per hour for air sealing for up to three (3) hours of air sealing per dwelling as determined by the Auditor may be claimed. Additional hours require approval.
- Heating Systems Fee – Up to $200 in program support may be claimed for heating system replacements. Actual Material and Labor costs are charged to the appropriate cost categories.

703.2.2 Subcontracted Labor

The total cost of the labor for work completed by a Contractor of the Subgrantee is an allowable expenditure for the weatherization program support. This includes Contractor labor for installing authorized weatherization measures, H&S activities and incidental repairs.

Cost Category: Program Support

- Contractor Installed Measures – Labor
- Contractor-Other (itemized)

The spreadsheet report *DOE Contractor -Other Itemized* must be submitted as a part of the monthly reporting packet detailing Contractor expenditures, as follows:

- Name of Company
- Employee Name(s)
- List Work Performed
- Audit/Inspection Done By
- Site ID#
- Current Month Amount Paid
- Current Month Grant To Date
- Prior Month

This includes all Contractor costs for staff and labor; including Contractor management staff, supervisory staff and laborers, as well as Contractor overhead including material handling.

Contractor must invoice for one unit at a time, detailing all charges for Materials and Labor separately. Contractor may submit request for partial or in progress payments, but must clearly delineate the address of the unit, what this partial or in progress payment covers, i.e. number of labor hours at specified labor rate, with dates, or list of itemized and quantified materials with install or delivery dates, all substantiated by signed delivery slips, or payroll paid time slips as acknowledged by the agency. An interim inspection of the installed measure is required prior to payment.

703.2.3 Rent, Utilities & Other Direct Costs

Subgrantee expenditures are allowable for the direct costs to the program for rent and utilities, program advertising, supplies consumed by the program, as well as office equipment, furnishings, and computer equipment used in the program. Program support charges must be made using the actual cost to the program.

Cost Category: Program Support.

703.2.4 Equipment, Supplies & Tools

Subgrantee expenditures are allowable for the direct costs to the program for equipment, supplies and tools.

Cost Category: Program Support.

Equipment: Equipment is defined by federal regulation as an item of non-expendable, tangible personal property, having a useful life of more than one year and an acquisition cost which equals or exceeds a unit cost of $5,000.

Equipment may be bought outright and charged to the grant in the contract period in which it was purchased. Alternately, the purchase may be amortized over its expected useful life and charged over that period. Finally, equipment may be leased and charged according to the periodic lease payments. In any instance, the cost of the equipment would be prorated to each completed unit to compute the average cost per unit.

Supplies: Supplies, including tools are defined as items valued at less than $5,000 per unit.

Other acceptable, related expenditures for equipment and tools used in the WAP include:

- The costs for maintenance and repair of tools and equipment
- Maintenance agreements, insurance premiums for tools and equipment
- Rental fees for tools and equipment, including the lease cost(s).

703.2.5 Vehicle Purchase and Operation Costs

The cost of a vehicle for the sole use by the Subgrantee in the weatherization program is an allowable expense.

Cost Category: Program Support.

A vehicle may be bought outright and charged to the grant in the contract period in which it was purchased. Alternately, the purchase may be amortized over its expected life and charged over that period. Finally, equipment may be leased and charged according to the periodic lease payments. In any instance, the cost of the equipment would be prorated to each completed unit to compute the average cost per unit.

Prior Approval: Note that any purchase or lease of a vehicle requires *prior approval* by both the State WAP and the DOE. The Subgrantee must follow the proper competitive procurement method to obtain a vehicle. The State must be listed as first lean holder.

Other acceptable, related expenditures for vehicles used in the WAP include:

- Maintenance or repair of vehicles
- Cost of gas, oil or other fluids
- Storage or garage rental fees
- Insurance premium payments

703.2.6 Storage & Handling

The expenditure by the Subgrantee for warehousing and handling materials is an allowable cost. These include agency staff time and transportation associated with materials handling.

Cost Category: Program Support.

703.2.7 Transportation

Subgrantee reimbursement of weatherization program related travel costs incurred by an employee using the employee's own vehicle is allowable, in the form of mileage reimbursement.

Costs must be paid in conformance to approved Subgrantee travel policies, but only up to the maximum rates allowed by the State of Connecticut.

Cost Category: Program Support.

703.3 Training and Technical Assistance Cost Category

Note: all Training and Technical Assistance costs related to Work performed and reported as DOE completed CT WAP sites must be in compliance with DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, CT WAP Weatherization Filed Guided SWS Aligned Edition and the current year State Plan/Master File.

Training and Technical Assistance (T&TA) activities are allowable Subgrantee expenditures. A separate award is made to each Subgrantee with weatherization funds specifically allocated for training and technical assistance activities. T&TA expenditures require the prior approval of the State, as explained below.

Cost Category: Training and Technical Assistance (separate grant allocation).

The T&TA costs are reported (and claimed) on the monthly expenditure analysis, *Analysis of Expenditures against Approved Budget Items.*

T&TA funds are budgeted separately for activities to be used according to current program training priorities, for Subgrantee to continue to improve the knowledge and skills of their employees and Contractors.

T&TA funds may be used for a variety of training topics, including policy, administration, support functions, technical knowledge and so forth. Training and technical assistance activities must be demonstrably relevant to the weatherization program to be allowed for payment from T&TA funds.

See *CT Program Operations and Training Manual*, Section 500, TRAINING for training requirements.

703.3.1 Prior Approval

A Subgrantee's expenditure for T&TA requires the *prior approval* by the State. A request must be submitted to the agency's assigned program monitor at least ten (10) business days prior to the training date.

The request should include:

- Training sponsor, title, location, dates
- Training brochure, agenda or other explanation of the content
- Agency attendee(s) name and position

- Costs and details for training registration or fees, travel, lodging, per diem, other
- Training Presentation costs, as applicable, including facility, materials, trainers, equipment rental, and other costs
- Proposed cost category (T&TA or Program Support: Labor)
- Brief justification in terms of each attendee's weatherization role; including a justification for more than one attendee from the agency.

State T&TA approval may be requested by the Subgrantee in several ways. A local training plan may be submitted at the start of a contract year. T&TA plans thus submitted will require further approval only if there is a significant change, resulting in increased projected costs to the grant. The Subgrantee may also submit specific T&TA requests anytime over the course of the contract period.

Training that is paid for and/or required by the State as part of its overall training plan shall be considered by the Subgrantee as already *approved*.

Individual training requests and approval may be handled between the Subgrantee staff and the state program monitor and program manager by email.

703.3.2 Staff Costs at Training

The Subgrantee cost for time spent in training by Subgrantee personnel, in consultation with the state staff, may be charged to the T&TA category. Alternately staff time in training may be charged to Program Support: Labor.

703.3.3 Contractor's Training Costs

Note: all Subgrantee Contractor training related to Work performed and reported as DOE completed CT WAP sites must be in compliance with DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, CT WAP Weatherization Filed Guided SWS Aligned Edition and the current year State Plan/Master File.

Properly trained and qualified Contractor staff is a requirement of the contract with any individual or company. Therefore, the State or Subgrantee may use T&TA funds to provide training and include Contractor participation at no additional cost to the Contractor. A flat $100 *per diem* per person is allowable for Contractors attending training to offset cost associated with travel. **Prior State approval must be obtained first.**

However, those costs associated for Contractor staff time to attend training should be included in the Contractor's price determination and are not an allowable expense under T&TA.

Under certain circumstances where Contractor staff must meet licensing or other certification requirements such as lead safe training, it is generally the Contractor's responsibility to pay for further training of its employees. Still, the Department will consider the approval of training requests for a Contractor, on a case by case basis.

703.3.4 Training Presentation Cost

Subgrantee presentation costs are allowable under the T&TA grant in the amount of the actual expenditures for the training.

Specific expenditures under this line item may include: presenter fees (including presenter travel costs), training materials, facility rental, presentation supplies, equipment rental and other directly related costs.

Training may be directly conducted by the Subgrantee or contracted with a qualified individual trainer or training organization.

Training presentations may be directed to the Subgrantee staff or to the agency's weatherization Contractor staff.

703.3.5 Training Travel Cost

Travel cost for approved training is an allowable expenditure under the T&TA grant.

Travel costs must be charged according to the Subgrantee's travel policies but only up to the maximum rates allowed by the State of Connecticut and subject to prior approval by the State.

Specific expenditures may include: mileage, car rental, airfare, lodging and *per diem* (federal rate used). To qualify for reimbursement for lodging or *per diem* expenses, the traveler must be in travel status according Connecticut state travel policy. Travel status is indicated by the fact that the person is spending the night more than fifty miles from his/her station.

A flat $100 *per diem* is allowable for Contractors attending training to offset cost associated with travel to attend State or Subgrantee sponsored training.

703.3.6 Training Registration Cost

Conference, workshop or similar fees required for attendance at an *approved* weatherization training event may be expended under the T&TA cost category.

703.3.7 T&TA Documentation

The Subgrantee has responsibility to fully document T&TA expenditures. Documentation will include travel vouchers, invoices, programs, brochures agenda and so forth.

The Subgrantee should request clarification from the Department on the appropriateness of any questionable training expenditure.

703.4 Liability Insurance Cost Category

The premium payment for acquiring Liability insurance is an allowable Subgrantee expenditure under the weatherization grant.

Cost Category: Liability Insurance.

The LIABILITY INSURANCE costs reported (and claimed) on the monthly expenditure analysis, *Analysis of Expenditures against Approved Budget Items.*

The actual direct cost of Subgrantee for liability insurance is allowed as a separate line item. It is not counted as an administrative cost and so is not a part of the limit on that cost category. Neither is it counted as a program operations cost nor considered in any related limitations on those costs.

Subgrantees must carry liability insurance and must require the same of their weatherization Contractors. The following requirements must be met:

- The Subgrantee agrees to provide comprehensive general liability insurance coverage in the minimum amount of one million dollars for bodily injury and property damage. Such liability insurance shall cover 'personal injury' and/or 'property damage' related to the provision of on-site Program services. Such coverage must be at least 500,000.00 for personal injury and $500,000.00 for property damage.

703.5 Pollution Occurrence Insurance Cost Category

The premium payment for acquiring Pollution Occurrence (PO) Insurance is an allowable expense.

Cost Category: PO Insurance.

The POLLUTION OCCURRRENCE costs reported (and claimed) on the monthly expenditure analysis, *Analysis of Expenditures against Approved Budget Items.*

The actual direct cost of Subgrantee for pollution occurrence insurance is allowed as a separate line item. It is not counted as an administrative cost and is not a part of the limit on that cost category. Neither is it counted as a program operations cost nor considered in any related limitations on those costs.

Pollution Occurrence Insurance shall include the cost of pollution insurance premiums maintained by the Subgrantee for the Program. Such pollution occurrence insurance shall cover 'personal injury' and/or 'property damage' related to the provision of onsite Program services. Such coverage must be at least $500,000.00 per occurrence.

703.6 Financial Audit Cost Category

The cost of the Financial Audit is an allowable Subgrantee expenditure under the weatherization grant.

Cost Category: Financial Audit.

The FINANCIAL AUDIT costs reported (and claimed) on the monthly expenditure analysis, *Analysis of Expenditures against Approved Budget Items.*

The actual direct cost of Subgrantee for the Fiscal Audit is allowed as a separate line item. It is not counted as an administrative cost and is not a part of the limit on that cost category. Neither is it counted as a program operations cost nor considered in any related limitations on those costs.

Subgrantees shall conduct a financial audit of its weatherization program in accordance with 10 CFR Part 600, as amended.

In the event that more than one program is being audited, the cost to the weatherization program is to be allocated on a reasonable basis.

703.7 Health & Safety

See Section 400 Health & Saftety for allowable Health & Safety Costs under the CT WAP.

703.8 Administration Cost Category

The Subgrantee costs for the administration of the WAP is an allowable expense. The Subgrantee must expend and administer funds in accordance with the policies and regulations as defined by DOE in 10 CFR Part 600, as amended.

Cost Category: Administration.

The ADMINISTRATIVE costs reported (and claimed) on the monthly expenditure analysis report, A*nalysis of Expenditures against Approved Budget Items.*

Connecticut provides to Subgrantee funds to cover the cost of administering the program in an amount based on a formula that includes a base allocation and other factors. This amount is determined yearly by the State and is provided to the Subgrantee through their contractual agreement. The actual amount *claimed* by the Subgrantee for administration costs over the period of the contract cannot exceed this limit. Any expenditure exceeding this limit is the responsibility of the Subgrantee and cannot be reimbursed from program funds.

Administration costs are costs associated with those functions of a general nature not clearly specific to one program but applied to a range of the Subgrantee's programs: salary and fringe costs for individuals such as directors, fiscal staff, and legal staff.

Personnel functions such as agency planning, budgeting, accounting, and activities that establish and direct the Subgrantee's policies, goals, and objectives overall, are usually considered administrative costs.

Salaries shall include the salaries of administrative staff including fiscal personnel and the cost of supervisory personnel indirectly providing Program services. Allowable costs include:

- Fringe Benefits such as, group health insurance, workman's compensation, and other employee benefits that may include but are not limited to pensions for those employees receiving salaries.
- Travel including the cost of mileage reimbursement for those employees identified above for the use of their personal vehicles in the provision of Program services.
- Other costs include but not limited to the cost of postage, copying fees, office space, machinery rentals and purchases in the provision of WAP services.

Administration Budget Examples

Some specific examples of costs that, so far as they are not directly chargeable to program operations, may be considered as administrative include:

- Executive functions
- Office management functions
- Accounting, auditing, and budgeting
- Corporate legal services

- Personnel management
- Purchasing and distribution of supplies
- Insurance and bonding
- Receptionist, mail distribution, filing, and other central clerical services
- Data processing and computer services
- Computer equipment used for administrative functions
- General record keeping
- Office space/facilities lease or rental
- Utilities in the office space/facilities
- Postage
- Duplicating/copying.
- Telephone equipment and services
- Administrative staff training
- Applicable state and local taxes

703.8.1 Cost Allocations

Overall agency costs that cover a range of programs must be assigned using a reasonable and consistent formula to figure how much to charge each program. Most agencies split overall agency administrative costs among programs based on a cost allocation plan, using time studies of the employees involved.

Specific costs may be allocated to the weatherization program if they are treated consistently with other costs incurred for the same purpose in like circumstances and if they:

- are incurred specifically for the purposes and benefit of the sub-grant;
- can be distributed in reasonable proportion to the benefits received by the program; and,
- are necessary to the overall operation of the organization, although a direct relationship to any particular cost objective cannot be shown.

More rarely, an agency applies an indirect cost rate that has been approved by the agency's cognizant, federal funding source. To use this method, the approved indirect cost rate must be properly documented by the Subgrantee.

The Subgrantee must be able to demonstrate a valid basis for administrative charges to the weatherization programs, both for fiscal monitoring by the Department and in an agency-wide audit (e.g. A-133).

704 LEVERAGED FUNDS

The State of Connecticut has AN important resource in the several leveraged funds used for various purposes and coordinated at the local level with WAP services.

704.1 Utility Programs

Funding for weatherization comes from the State's five largest electric and natural gas utility companies. Energy Audits and some heat waste measures are partly covered byEversource Energy, , United Illuminating, Yankee Gas Services, Southern Connecticut Gas and Connecticut Natural Gas.

704.2 Leveraged and DOE Funds

Leveraged funds are used directly by Subgrantee, at the local level. The Subgrantee must account separately for the leveraged funds. Both federal & non-federal, leveraged funds may be used on the same unit, but in no instance may DOE funds be comingled in the same account with leveraged funds. DOE funds may not be used to cover expenditures for which leveraged funds are used, or to be used.

Leveraged funds are not considered program income.

705 SUBGRANTEE CLAIMS

The Subgrantee must claim for all allowable costs associated with the weatherization program from the Department on a monthly basis. Claim is made by submitting a packet of reports, the *DOE Monthly Weatherization Status Report* detailing the Subgrantee statistics, production and expenditures for the month.

The forms, which are submitted on template spreadsheets provided by the State, include:

1. Individual Assisted, Completed Units Statistics
2. Actual Costs Units Completed, Units in Progress
3. Analysis of Expenditures Against Approved Budget Items
    a. DOE Contractor – Other Itemized (as applicable)
    b. DOE Program – Other Itemized (as applicable)

In addition to the *Monthly Weatherization Status Report,* a *Building Weatherization Report (BWR) (Installed version)* is to be submitted for <u>each</u> unit being reported and claimed.

Also, the *Health & Safety Measures* report form is to be submitted listing materials used on such activities for the month.

It is the responsibility of the Subgrantee to understand which expenditures are allowable in each weatherization cost category, including the dollar limits on expenditures. Expenditures that are inappropriately claimed, that cannot be legitimately assigned to a weatherization cost category, or that cause the agency to exceed caps within a limited category, will be disallowed by State.

Note: all Work performed and reported as DOE completed CT WAP sites must be in compliance with DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, CT WAP Weatherization Filed Guided SWS Aligned Edition and the current year State Plan/Master File.

The Subgrantee may not report a unit as completed until the unit has passed the Final QCI Inspection. (Except, see Progress Inspection stipulations below.) No claim may be submitted for weatherization work until such time as Subgrantee has performed the Final QCI Inspection and has issued a written determination that the work has been performed in a satisfactory manner.

No claim may be submitted for weatherization work which is outside of the measures set forth by the Subgrantee Work Order, without a prior, written modification of that order.

No claim may be submitted for weatherization work performed by personnel who have not fulfilled the weatherization training and certification required for such work.

No claim may be submitted for additional weatherization work conducted on a unit after the unit has been reported as completed.

Following the execution of the Subgrantee's contract, an advance payment up to 25% of the Subgrantee's contract is sent to the Subgrantee. Additional payments are made to the Subgrantee based on submittal and review of monthly weatherization reports. Toward the end of the contract, the advance is drawn against reports submitted. The State processes payments to the Subgrantees using a Purchase Order (P.O.) process.

Certification: The monthly report must include the Subgrantee certification form attesting to the accuracy of the claim. The form is signed and dated by the agency's weatherization coordinator, executive director and finance director.

705.1 Subgrantee Claim/ Report

The report is to be submitted by the Subgrantee to the State program monitor assigned to the agency. The monthly report is to be received at the State by the tenth (10th) of each following month.

As a minimum, the Subgrantee staff will check to see that the correct *BWR* form is ready for submittal for each unit to be reported on the *Monthly Weatherization Status Report* forms. The *Status Report* and each correct *BWR* will be reviewed for accuracy and completeness.

The reviewer will check to ensure that the measures and costs reported on the BWR are those called for on the Work Order(s), the Energy Audit and any modifications made to the work. Each installed measure will be verified to have met the requirement for a SIR of 1.0, or better. Likewise, the overall SIR compliance will be checked on the package of measures.

The reviewer will also match the information on the BWR with information on any waiver approvals on the unit.

The review of a Subgrantee monthly report will include a review of:

- The *Status Report* and each *BWR* for accuracy and completeness

- The measures installed compared to the measures in the Audit and on the Work Order(s)
- The charges for air sealing within dollar limits
- The balance achieved to the calculated MVG based on final Blower Door readings
- The insulation materials expenditure against quantity of insulation installed
- Agency and Contractor materials expenditures against program limits
- Contractor labor expenditures against program limits
- The limits between the cumulative materials cost credits and the other program support costs
- H&S materials expenditures against program limits
- Individual and package SIR ratios
- ASHRAE 62.2.2013 Compliance
- The required demographics for program management and DOE reporting, including the:
  - number and types of dwellings
  - numbers and types of people assisted

When applicable the Subgrantee reviewer will adjust for any changes such as landlord contributions and disallowances. Then, claimed amounts will be assigned by the reviewer to the appropriate cost category according to the rules set forth in this section.

Disallowance: If discrepancies are found, the agency must make the necessary corrections prior to submitting their claim to the State.

The preparer and the reviewer will sign the submittal indicating their "Due Diligence" in performing this review.

Unless requested by the State, source documents, including Contractor invoices are not to be submitted by the Subgrantee. Such documentation must, of course, be available for review and audit.

705.1.1 Administrative, Insurance, Audit & T&TA Claims

A claim for ongoing expenditures in other cost categories is submitted with the monthly report. Claims in these categories, explained above, include the following line items:

- Administration
- Liability Insurance
- Fiscal Audit

- T&TA

Ongoing claims will be paid by the State. It is the responsibility of the Subgrantee to track its claims to ensure that the allocated amount of funds in each of these cost categories are not exceeded by the cumulative claimed costs. Funds paid to a Subgrantee in excess of its allowable expenditures will be required to be re-paid to the State.

705.2 State Approval Process

The State fiscal staff will check to see that the correct *BWR* form has been submitted for each unit reported on the *Monthly Weatherization Status Report* forms. The *Status Report* and each correct *BWR* will be reviewed for accuracy and completeness.

The reviewer will check to ensure that the measures and costs reported on the BWR are those called for on the Work Order(s), the Energy Audit and any modifications made to the work. Each installed measure will be verified to have met the requirement for a SIR of 1.0, or better. Likewise, the overall SIR compliance will be checked on the package of measures.

The reviewer will also match the information on the BWR with information on any waiver approvals on the unit.

The fiscal review of a Subgrantee monthly report will include a review of:

- The *Status Report* and each *BWR* for accuracy and completeness
- The measures installed compared to the measures in the Audit and on the Work Order(s)
- The charges for air sealing within dollar limits
- The balance achieved to the calculated MVG based on final Blower Door readings
- The insulation materials expenditure against quantity of insulation installed
- Agency and Contractor materials expenditures against program limits
- Contractor labor expenditures against program limits
- The limits between the cumulative materials cost credits and the other program support costs
- H&S materials expenditures against program limits
- Individual and package SIR ratios
- ASHRAE 62.2.2013 Compliance
- The required demographics for program management and DOE reporting, including the:
    - number and types of dwellings
    - numbers and types of people assisted

When applicable the State reviewer will adjust for any changes such as landlord contributions and disallowances. Then, claimed amounts will be assigned by the reviewer to the appropriate cost category according to the rules set forth in this section.

Disallowance: If discrepancies are found, the agency will be notified in writing that a unit claimed is being *temporarily disallowed*. At this point the unit will not be counted as a completion on any reports for the period. The *BWR* for the disallowed unit will be removed, the amount claimed deducted and the status reports adjusted.

Subgrantees must respond to all disallowed expenditures taking corrective actions to the satisfaction of State within forty-five (45) days of receipt of the notice. This allows for the Subgrantee to return to the dwelling and address measures if required, and to resubmit the completion to the State for reimbursement. Subgrantees are required to request extensions in writing, if they cannot meet the forty-five (45) day time limit.

Approval: Once the information on the *Monthly Weatherization Status Report* is reconciled with the approved batch of BWRs, the claim will be processed for payment by the State. The data will also be reported to DOE, as required, in the Performance and Accountability for Grants in Energy (***PAGE***) reporting ***system.***

705.2.1 Claim Payment Time Frame

Accurate and complete claims received by the due date will be paid to the Subgrantee within thirty days (30) of receipt.

Subgrantee claims are made on a reimbursement basis, except that an advance payment may be made to the Subgrantee by the State at the beginning of the contract period for expenditures.

705.3 Contractor Invoices

Note: all Invoices for Work performed and reported as DOE completed CT WAP sites must be in compliance with DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, CT WAP Weatherization Filed Guided SWS Aligned Edition and the current year State Plan/Master File.

Subgrantee Contractors are required to maintain strict accountability for the costs invoiced to the program. All claimed costs must be linked directly to weatherization activities performed on a specific job and identifiable by the Work Order Number, case name, and address. All labor and materials must be clearly identifiable with each unit weatherized, on each invoice. The Work Order Number is assigned by the Subgrantee and must appear on all documents related to the unit.

Contractor books, records, documents and other evidence must be set up in a way that follows generally accepted accounting principles, using procedures and practices which sufficiently and properly reflect all costs attributed to each service provided.

The Contractor is required to retain records for no less than three (3) years after the close of the contract period with the Subgrantee. Records must be made available, upon request, to the Subgrantee, State, DOE or to any other duly authorized state or federal entity, for the purpose of a fiscal review or an audit, as required.

705.3.1 Contractor Invoice Information

In order to substantiate the Subgrantee's claim each Contractor invoice must include:

- CONTRACTOR name, address, phone and contact information
- Work Order Number assigned to the unit by the Subgrantee
- Physical address of the unit
- All dates that the company worked on the unit
- A copy of the original approved Work Order and any Work Order modification approved by the Subgrantee.
- Breakdown by weatherization measure of costs for *labor* on the unit
- Breakdown by weatherization measure of costs for *materials, parts or other costs* on the unit
- Invoice total
- Original receipts for all materials purchased and being billed by the company, as required by the Subgrantee
- Other information or documentation required by the Subgrantee or State
- Signature of authorized company employee

Contractors shall submit invoices within five (5) days of the completion of their work.

The Subgrantee will make payment within thirty (30) days upon the Contractor's submission of an acceptable invoice and other required documents; but, only after the completed unit has passed the Final Inspection, or an approved Progress Inspection.

705.3.2 Interim Contractor Claims

In some instances, payments to certain Contractors completing their share of the work on a unit may be excessively delayed because other weatherization work is not done. For example, an insulation Contractor may be finished, but the Final Inspection is held up because of a delay in installing the heating system. The insulation installer may have submitted an invoice and the Subgrantee is under obligation by DOE to pay it within thirty (30) days.

In this situation, rather than delaying payment beyond the thirty-day limit on invoice payments, the Subgrantee may choose to conduct a "Progress Inspection" of the Contractor's individual work. If the work can be passed in itself, the Contractor's invoice may then be submitted to the State by the Subgrantee for payment. However, NO payments may be issued before the work passes the Progress Inspection conducted by the Subgrantee's QCI Inspector and State Level QCI Inspector and a signed copy of the Progress QCI Inspection Report by the agency is submitted with the claim for payment to the State.

A Subgrantee electing to use a Progress QCI Inspection is required to have a system that ensures that, in the end, all measures are QCI inspected and there is no duplication of invoice payments to its Contractors.

Measures which are inspected on a Progress QCI Inspection must be inspected again as a part of the unit's overall Final QCI Inspection. A Final QCI completion certificate may *only* be signed after the completion of the entire job and passing Final QCI Inspection. Units may not be reported by the Subgrantee as completed on the *Monthly Weatherization Status Reports* until it has entirely passed the Final QCI Inspection,

705.4 Withholding of Funds

The State may withhold full or partial payment of claims under several circumstances. The Subgrantee will be notified prior to funds being withheld and given an opportunity to ameliorate the underlying issue, during which time the payment will be held.

705.4.1 Errors

The State may withhold payment to a Subgrantee if a report submitted by the Subgrantee is inaccurate, incomplete or unsubstantiated; or if the Subgrantee has not otherwise complied with the instructions issued by the State.

705.4.2 Fiscal Monitoring and Audit Issues

The State may withhold payment to a Subgrantee in instances of incorrect, inappropriate or unsubstantiated costs that have been discovered through fiscal monitoring. Payment may be withheld for expenditures that have been disallowed in an audit of Subgrantee weatherization funds.

705.4.3 Line Item Over-expenditure

In the event that the State has advanced funds or overpaid the Subgrantee, the funds may be recovered through a reduction in monthly or final claims payments to the Subgrantee. This would include, but is not limited to the following situations where the Subgrantee exceeds the limits on:

- Administration expenditures
- H&S expenditures
- Maximum or minimum expenditure per unit
- Average Cost per Unit limit
- Renewable Energy Average Costs Per Unit
- Materials Cost Limit on Program Support

706 SUBGRANTEE REPORT REQUIREMENTS

The State, the Subgrantee and the WAP Installation Contractors each have the responsibility for certain levels of reporting for WAP activities. Reports at every level must be based on information which accurately reflects their performance in the weatherization program.

Much of the required data come from the elements which are submitted by the State to the DOE.

Subgrantees and their Contractors are prohibited from using client records for any purpose other than that directly related to eligibility, services and reporting for the Weatherization Assistance Program. Subgrantees must guard against unnecessarily revealing information about individual weatherization clients. Most reports are set up to obtain aggregate, numerical data for which specific, individual information is not needed.

706.1 Monthly Reports

The Subgrantee is required to submit periodic reports detailing the agency's implementation of the Weatherization program. Most reports are submitted to the State updating the local agency's progress in weatherizing units, assisting clients and expending program funds.

Reporting requirements are met and the Subgrantee's claim is made by submitting a monthly packet of reports, the *DOE Monthly Weatherization Status Report* which includes several pages detailing the Subgrantee statistics, production and expenditures for the month.

The pages, which are submitted on template spreadsheets provided by the State, include:

- Individual Assisted, Completed Units Statistics
- Actual Costs Units Completed, Units in Progress
- Analysis of Expenditures against Approved Budget Items; and, as applicable
  - DOE Contractor – Other Itemized
  - DOE Program – Other Itemized

In addition to the *Status Report,* a complete *Building Weatherization Report (BWR)* must be submitted in the *installed* version, for *each* unit being reported as complete.

The financial status reports are covered in the cost category sections above. The unit/individual reports are covered in this section.

706.2 Unit Completion Definition

Note: all units reported as DOE completed CT WAP sites must be in compliance with DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, CT WAP Weatherization Filed Guided SWS Aligned Edition and the current year State Plan/Master File.

A unit may be reported as "complete", only in the period in which it is certified as passing the Final QCI Inspection.

A completed unit may only be reported under one funding source. Where DOE funds are used along with other funds (e.g. utility funds), the unit is to be reported as a DOE completion.

<u>DOE Definition</u>: A DOE weatherized unit is a dwelling on which a DOE-approved energy audit or priority list has been applied and weatherization work has been completed. DOE funds used on this unit may include, but are not limited to auditing, testing, measure installation, inspection, or use of DOE equipment and/or vehicles, or if DOE provides the training and/or administrative funds.

Therefore, a dwelling unit that meets the definition of a DOE weatherized unit and has DOE funds used directly on it must be counted as a DOE completed unit.

Units must be counted and claimed in the contract period in which they are *completed*.

706.3 Building Weatherization Report (BWR)

The *Building Weatherization Report (BWR)* is the primary document detailing the work that was ordered, installed and finalized on each unit. The monthly packet of reports must include the correct BWR for *each* completed unit claimed in the report month. The BWR is to be submitted in the final, *installed* version to properly support the reported and claimed units.

The BWR is a control document that is produced from the *Weatherization Assistant 8.9 (NEAT, MHEA)* software at any point during the weatherization process. The measures included on the BWR will only be those that are allowable under Connecticut WAP and that meet the SIR requirement, as applicable. (H&S activities will also be on the BWR.)

The initial input by the Energy Auditor produces a draft BWR that may be used to propose measures to be ordered. Proposed measures may need further review by the Subgrantee supervision and/or prior approval by the State before they are actually assigned.

The *contracted* BWR indicates the measures that are authorized to be assigned to one or more Work Orders and distributed to agency crews or contracted installers as appropriate. At any time that the work is changed during the installation, a *modified* BWR must be produced that reflects the approved changes in the work.

The *installed* BWR must reflect all of the work actually completed, inspected and passed in the unit. This version of the BWR is submitted as the backup to each unit reported in the monthly packet of reports.

The BWR includes information as entered in the *NEAT, MHEA* program, including, but not limited to:

- Unit identification
- Building unit types and details
- Client identification
- Family demographics
- Audit summary, auditor, job #, dates, other
- Heating system type
- Blower Door pre- and post-weatherization readings
- Minimum Ventilation Guideline calculation
- Weatherization measures by funding, type, agency, and installer

- Costs broken out by materials and labor
- Other comments and information, as required

See *CT Program Operations and Training Manual* Section 300, for additional information *for resetting pricing in CSG and allowable corrections to the BWR* and the Weatherization Assistant 8.9 procedural manual for additional procedures

706.4 Individual Assisted, Completed Units Statistics

The Subgrantee is required to report monthly totals on the characteristics of the completed units and the individuals occupying them. These details are reported only for units that have been *completed*. Statistics are reported on both a Monthly and Grant to Date (GTD) basis.

The unit and fuel type categories will total the same as the total number of units completed. The occupant category will total the number of *individuals* served in the *completed* units.

Unit Categories	Definition
Homeowners	Owner-occupied, single-family, site-built units
Renters - Single Family	Rented, single-family, site-built (include each unit weatherized in small multi-family up to 4 units.)
Renters - Multi Family	Rented, multi-family (each unit weatherized in 5+ units.)
Mobile Homes- Owner	Owner-occupied mobile home
Mobile Homes- Renter	Renter-occupied mobile home
Re-weatherized Units	Qualified (pre-10/01/1994), re-weatherized units

Occupant Categories	Definition
Sixty Year Old & Older	Identified as elderly (60+) on eligibility form
Handicapped/Disabled	Identified as disabled on eligibility form
Native American	Identified as Native American on eligibility form
Children - 5 and under	Identified as having young children (5 and under) on eligibility form

Fuel Type Categories	Definition
Gas	Primary heating source only
Oil	
Electric	
Propane	
Kerosene	
Wood Other (coal)	

Other Categories	Definition
Cost shared(Leveraged) units	Partially paid from other funds
High energy users	As identified on eligibility form
Heating Replacement	Pre-approved heating system replacement
COMPLETED Units By Service Area	Number completed by designated area

706.5 Subgrantee Training Report

The Subgrantee is responsible for tracking the certification and training of all personnel used in the weatherization program. This information includes both required and optional training. Training of the Subgrantee's own employees as well as those of its Contractors must be tracked on an individual basis and made available to State program monitors upon request.

The utilization of appropriately trained employees is a requirement for payment for work under the program. The inability to document the training of individuals used in weatherization may result in a disallowed or questioned cost for weatherization work conducted by those individuals.

706.6 Subgrantee CCR Federal Report

As what is termed a "first-tier" recipient of federal funds, the Subgrantee must also register and report directly on its activities at the federal website at the Central Contractor Registration (http://www.ccr.gov). A Dun and Bradstreet Data Universal Numbering System (DUNS) Number (http://www.dnb.com) is required for registration.

707 CONTRACTOR REPORTING

The Subgrantee must put in place procedures and forms that ensure that their Contractors provide statistical and financial information regarding the weatherization work performed. Such overall reporting includes but is not necessarily limited to documentation of the weatherization work performed, material costs, overhead costs, employee time records, and employee pay records.

707.1 Contractor Production

The Subgrantee must also require the Contractor to report data needed to complete the unit production information detailed in Section 706, above.

Contractor must keep detailed records of the measures that have been performed on each unit. All work records must be identified by the Work Order Number assigned by the Subgrantee. All labor and materials must be clearly delineated for each unit weatherized.

The Contractor is required to retain production records for no less than three (3) years after the close of its contract period. Records must be made available, upon request, to the Subgrantee, the State, DOE or to any other duly authorized state or federal entity, for the purpose of a fiscal review or an audit, as required.

Invoice, claim and other financial information on the work performed must also be cross referenced to the individual unit by Work Order Number.

707.2 Contractor Training Reporting

In order to report properly, the Subgrantee must require that its Contractors document employee participation in certain training programs. The training must be reported for each individual who works on weatherization under the Subgrantee's contracts.

708 STATE REPORTS

The federal Department of Energy continues to emphasize that state Grantee performance will be closely monitored through the Quarterly Performance Report, the Quarterly Federal Financial Report, and the Annual Training and Technical Assistance, Monitoring and Leveraging Report. Accurate and complete State reports largely depend on the quality of information aggregated from the Subgrantee and its Contractors.

708.1 State DOE Reports

Most of the information collected from each Subgrantee is aggregated in reports completed by the State and reported to DOE.

708.1.1 Grantee Quarterly Performance Report

The State submits a quarterly report to DOE that lists the statewide totals for all metrics reported by the Subgrantees on units and individuals, as detailed in Section 702, Subgrantee Reports, above.

708.1.2 Training, Technical Assistance, Monitoring, and Leveraging

This report is made annually to DOE as a part of the State's Weatherization Program State Plan. It describes the state's progress in the following three areas.

- Training and Technical Assistance Activities: lists and describes the training and technical assistance activities attended and conducted during the previous program year.
- Monitoring Activities: lists the Subgrantees which were monitored during the year. Describes significant findings and corrective actions.
- Leveraging Activities: lists and describes the projects executed and the amount and source of funding successfully leveraged during the report year.

708.1.3 Quarterly Financial Status Report

As with all federal grants, Department reports quarterly weatherization budget expenditures on Standard Form 269A, Financial Status Report, as prescribed by OMB Circulars A-102 and A-110.

708.1.4 State CCR Report

As a recipient of federal funds the State must register and report directly on its activities at the federal website, the Central Contractor Registration (http://www.ccr.gov). A Dun and Bradstreet Data Universal Numbering System (DUNS) Number (http://www.dnb.com) is required for registration.

SECTION 800 LARGE MULTI-FAMILY UNITS

800 INTRODUCTION

While the weatherization of multi-family unit properties has always been a part of the program, the infusion of ARRA funds renewed the DOE emphasis on this housing stock and increased the volume of large multi-family unit buildings, including government subsidized apartments, and shelters that were served as part of the Connecticut ARRA program.

Apartment buildings are differentiated by the number of eligible households required for the entire building to be eligible. Buildings ranging from a duplex to four units, with a total of up to 10,000 square feet, require that 50% of the units be occupied by eligible households. Although the approach to weatherizing a building with up to four units may be different than with single unit dwellings, they are audited and recorded using the Weatherization Assistant 8.9 (NEAT) software which is approved for such audits by DOE.

Large multi-family unit buildings are defined as having five (5) or more units. These buildings usually require 66% or more of the occupant households to be eligible for weatherization. Weatherization projects involving multi-family units require a separate process because they are likely to require different approaches with the energy audit and with the recommended weatherization measures. The NEAT software does not accommodate large multi-family greater than 10,000 square feet or individually heated projects greater than 25 units, so in those circumstances different audit procedures are separately approved by DOE.

There are certain large multi-family buildings that are eligible under DOE rules when only 50% of the units qualify, if it can be shown that "an investment of DOE funds would result in a significant energy-efficiency improvement because of the upgrades to equipment, energy systems, common space, or the building shell."

All of the units in the building are served and reported as individual, completed units to DOE.

Note: The Subgrantee must contact the State before embarking on any plan to conduct weatherization services with large multi-family unit buildings or shelters.

> **Note: all Multi-familyWork performed and reported as DOE completed CT WAP sites must be in compliance with DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, CT WAP Weatherization Filed Guided SWS Aligned Edition and the current year State Plan/Master File.**

801 PRE-QUALIFIED MULTI-FAMILY

To assist Connecticut and other states in identifying assisted eligible multi-family units, DOE entered into a memorandum of understanding with HUD to identify federally subsidized housing projects that meet the eligibility requirement for weatherization services. A subsequent concerted effort has been made by the Connecticut program to weatherize properties based on these lists which identify eligible housing from three sources, including properties that are subsidized by the:

- U.S. Housing and Urban Development (HUD)

- U.S. Department of Agriculture
- Low Income Housing Tax Credit Program (LIHTC) (Connecticut Housing Finance Authority)

801.1 Unit Eligibility

To be eligible for weatherization the buildings must meet *all* of the program's property eligibility criteria. Inclusion on one of the lists only relieves the program of the need to re-do already verified eligibility factors. Those factors vary by list. The inclusion of a subsidized multi-family unit building or complex of buildings on one of the three lists below does ***not*** mean that it is in any way categorically eligible to receive weatherization services or that it should be given special priority for services.

The following lists have been developed by DOE.

List #1: Properties identified on this list have been pre-determined to comply with the following program requirements:

- A minimum of 66% of the dwelling units in the building are occupied by a family unit that meets the income requirement
- For a reasonable period of time after weatherization work has been completed, the eligible dwelling unit will not be subject to rent increases as a result of the weatherization, and
- No undue or excessive enhancement has occurred to the value of the dwelling unit.

List #2: Properties identified on this list have been pre-determined to comply with the following program requirements:

- A minimum of 66% of the dwelling units in the building are occupied by a family unit that meets the income requirement
- No undue or excessive enhancement has occurred to the value of the dwelling unit.

List #3: Properties identified on this list are USDA Rural Housing Service's Multifamily Housing Properties in which;

- 100% of residents meet income eligibility requirements for the program.

See the DOE regulations at 10 CFR 440.22(b), Eligible Dwelling Units, for additional federal information regarding multi-unit weatherization.

See DOE *Weatherization Program Notice* documents No. 10-15 and No. 11-9, describing where lists of eligible properties are available.

802 MULTI-UNIT STIPULATIONS

To qualify for weatherization the applicable percentage of occupants (66% or 50%) must be income eligible, rent cannot be increased for a reasonable time, and the financial benefit of the work must primarily accrue to the tenant.

See *CT Weatherization Program Operations and Training Manual*, Section 203, Property Eligibility, for all factors which apply to unit eligibility, including multi-units.

802.1 Accrual of Benefits to Low-Income Tenants

The benefits of weatherization assistance in connection with rental units, including units where the tenants pay for their energy through their rent, must accrue primarily to the low-income tenants residing in such units.

In instances in which tenants of multi-family building pay their energy bills directly, the accrual of benefits requirement may be met by demonstrating a reduction in the tenant's energy bills.

However, the process is more difficult when the tenant does not pay for energy bills directly, and DOE suggests that a combination of several categories of benefits could be used to demonstrate that the weatherization work primarily benefits the tenant.

This list includes, but is not limited to, the following:

- Longer term preservation of the property as affordable housing;
- Continuation of protection against rent increased beyond that required under the WAP regulations;
- Investments of the energy savings in facilities or services that offer measurable direct benefits to tenants;
- Investment of the energy savings from the weatherization work in specific health and safety improvements with measurable benefits to tenants;
- Improvements to heat and hot water distribution, and ventilation, to improve the comfort of residents; and
- Establishment of a shared savings program.

See DOE Weatherization Program Notice No. 10-15 A, *Guidance Regarding Accrual of Benefits to Low-Income Tenants in Multi-Family Buildings under the Weatherization Assistance Program*.

See *CT Weatherization Program Operations and Training Manual*, Section 203, Property Eligibility, for all factors which apply to unit eligibility.

802.2 Rent Increases

For a reasonable period of time after weatherization work has been completed on a dwelling containing a unit occupied by an eligible household, the tenants in that unit (including households paying for their energy through their rent) will not be subjected to rent increases.

See *CT Weatherization Program Operations and Training Manual*, Section 203, Property Eligibility, for all factors which apply to unit eligibility.

802.3 Undue Enhancement

No undue or excessive enhancement shall occur to the value of the dwelling units.

See *CT Weatherization Program Operations and Training Manual*, Section 203, Property Eligibility, for all factors which apply to unit eligibility.

803 COSTS

Measures conducted in multi-family buildings may not be easily attributable to a particular unit. Since the direct cost of an individual unit may not be readily calculated, a formula is used to determine how much may be spent overall.

When addressing multi-family buildings with DOE funds, multiply the total number of income-eligible units in the multi-family building by the current allowable per dwelling unit average cost to determine the amount of DOE funding available for weatherizing the building. (The total number of eligible units will be either the 66% or 50% figure.)

While the amount of funding available for weatherizing a building is limited by the number of eligible units, the weatherization work can result in improvements to all units in the building, including ineligible units.

Reporting: All of the units in the building are served and reported as individual, completed units to DOE.

Funding: Owner participation is also required with multi-family unit properties. As with other properties these leveraged funds may also be used to "buy down" certain measures in order to pass the SIR calculation.

804 MULTI-UNIT ENERGY AUDIT

Some of the standard energy audits are not approved or applicable to large multi-family buildings where weatherization measures may not be unit specific, instead the benefit will be across all units. For example, insulation may be installed over an entire attic area which has the effect of energy conservation for all of the units under the common roof.

DOE will review the plans for multi-unit audits. Where multi-family dwelling units represent more than 20% of a Grantee's building type, DOE requires the Grantee (the State) to submit the multi-family energy audit procedures for review.

For Grantees that fall below the 20% threshold and do not have a DOE-approved audit and procedures for multi-family buildings, a Grantee must take two actions:

1. Describe in its Grantee Plan the approach that will be taken to ensure that the eligible occupants of multi-family dwellings receive appropriate, cost-effective weatherization services.

2. Submit to the DOE Project Officer the necessary material to approve the multi-family project prior to commencing weatherizing the building (e.g. engineering assessment, audit input/output). The Project Officer will review and approve the project(s) on a case-by-case basis in the absence of a multi-family energy audit.

805 SHELTERS

DOE regulations have, in the past allowed for the weatherization of shelters where the principal purpose is to house on a temporary basis, individuals who may or not be related to each other. A grantee may count each 800 square feet of the shelter as a dwelling unit or it may count each floor of the shelter as a dwelling unit.

The State(CT WAP) will review case by case to determine if emergency shelters for the homeless will receive weatherization services, pending the availability of funds.