



VERMONT STATEWIDE HOUSING CONFERENCE

IMPLEMENTING NEW RESIDENTIAL BUILDING ENERGY STANDARDS

November 15, 2012



Richard Faesy, Energy Futures Group

Presentation Overview

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1. What is EFG?
2. Vermont Energy Codes Chronology
3. Vermont Energy Code Compliance Plan
4. Energy Code Compliance Rates

Energy Futures Group Consulting

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Areas of Expertise

- Policy Development
- Program Design
- Building Codes
- Evaluation
- Cost-Effectiveness

Range of Clients

- Government Agencies
- Advocates
- Regulators
- Utilities

Clients in 15 states/provinces plus regional, national and international organizations.

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Chronology

Vermont Energy Codes Chronology

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- ▣ Residential Building Energy Standards (RBES):
 - ▣ 1997
 - ▣ 2005
 - ▣ 2011
- ▣ Commercial Building Energy Standards (CBES):
 - ▣ 2001
 - ▣ 2005
 - ▣ 2011
- ▣ ARRA in 2009

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Energy Code Compliance Plan

ARRA Assurances

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JAMES H. DOUGLAS
Governor



State of Vermont
OFFICE OF THE GOVERNOR

March 19, 2009

The Honorable Steven Chu
Secretary
U.S. Department of Energy
1000 Independence Avenue, S.W.
Washington, D.C. 20585

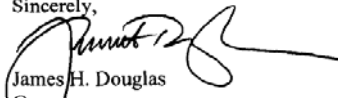
Re: State Energy Program Formula Grants
Governor's Assurance

Dear Secretary Chu:

Pursuant to the guidance provided by the U.S. Department of Energy in its March 12, 2009 Solicitation for State Energy Program Formula Grants under the American Recovery and Reinvestment Act (ARRA) of 2009, I am providing the attached preliminary "Governor's Assurance" as part of the State of Vermont's initial application.

Vermont is committed to robust improvements in energy efficiency and renewable energy, as well as a balanced State energy policy. I want to assure you that, within the limits of my authority, we will move forward in these critical areas.

Sincerely,


James H. Douglas
Governor

ATTACHMENT 3 – GOVERNOR'S ASSURANCE

I, James H. Douglas, Governor of the State of Vermont, do hereby certify that I will comply with Section 410 of Title IV of the American Recovery and Reinvestment Act (ARRA) of 2009 and will "notify the Secretary of Energy in writing that the Governor has obtained necessary assurances" as required by that section. This is to further certify that I have, as a first step towards compliance, requested assurances from the appropriate State regulatory authorities, as follows:

(1) The applicable State regulatory authorities will seek to implement, in appropriate proceedings for each electric and gas utility, under its rate-making authority a general policy that ensures that utility financial incentives are aligned with helping their customers use energy more efficiently and that provide timely cost recovery and a timely earnings opportunity for utilities associated with cost-effective measurable and verifiable efficiency savings, in a way that sustains or enhances utility customers' incentives to use energy more efficiently; and

(2) The State entity with authority to adopt building codes will implement the following:

(A) A residential building energy code (or codes) that meets or exceeds the most recent International Energy Conservation Code, or achieves equivalent or greater energy savings.

(B) A commercial building energy code (or codes) throughout the State that meets or exceeds the ANSI/ASHRAE/IESNA Standard 90.1-2007, or achieves equivalent or greater energy savings.

(C) A plan to achieve 90 percent compliance with the above energy codes within eight years. This plan will include active training and enforcement programs and annual measurement of the rate of compliance.

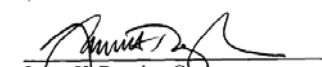
(3) The State will to the extent practicable prioritize the grants toward funding energy efficiency and renewable energy programs, including –

(A) the expansion of existing energy efficiency programs approved by the State or the appropriate regulatory authority, including energy efficiency retrofits of buildings and industrial facilities, that are funded by the State or through rates under the oversight of the applicable regulatory authority, to the extent applicable;

(B) the expansion of existing programs, approved by the State or the appropriate regulatory authority, to support renewable energy projects and deployment activities, including programs operated by entities which have the authority and capability to manage and distribute grants, loans, performance incentives, and other forms of financial assistance; and

(C) cooperation and joint activities between States to advance more efficient and effective use of this funding to support the priorities described in this section.

Dated at Montpelier, Vermont this 20th day of March, 2009.


James H. Douglas, Governor
State of Vermont

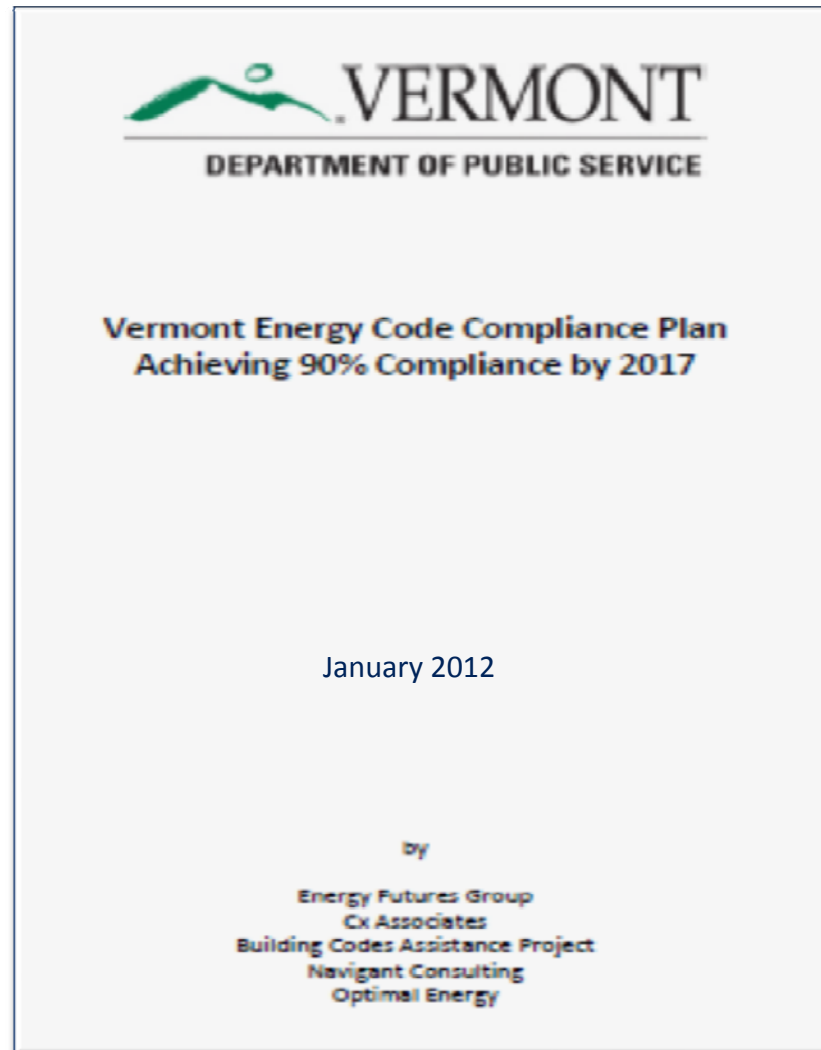
ARRA Assurances - Codes Section

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- (2) The State entity with authority to adopt building codes will implement the following:
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 - (C) A plan to achieve 90 percent compliance with the above energy codes within eight years. This plan will include active training and enforcement programs and annual measurement of the rate of compliance.

Vermont Energy Code Compliance Plan

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Compliance Plan Process

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- Team
 - ▣ EFG, Cx Associates, Building Codes Assistance Project (BCAP), Navigant Consulting, Optimal Energy
- September 2011 – January 2012
- Stakeholder Survey
- Researched other states
- Stakeholder meetings
 - ▣ Montpelier & Rutland
- Final stakeholder meeting (Montpelier)
- Final Plan (<http://publicservice.vermont.gov/energy>)



Pillars to 90% Code Compliance

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- Measurement & Evaluation
- Leadership & Policy
- Outreach & Education
- Resources & Funding



Measurement & Evaluation

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- ❑ Compliance Tracking & Reporting Through the Property Transfer Tax Return System
- ❑ Measuring Progress Towards 90%
- ❑ Compliance Tracking – Commercial
- ❑ Training/Outreach Assessment



RBES & CBES Certificates

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2011 Vermont Residential Building Energy Standards (RBES) Certificate			
This certificate is for projects started on or after October 1, 2011. Before completing this form, refer to the instructions in Section 7.2a of the Residential Energy Code Handbook (3rd edition). For additions, alterations, renovations or repairs, only fill out applicable portions of certificate.			
Property Address (Street, City, ZIP Code)		Act 250 Permit #	<input type="checkbox"/> NA
Electric Utility serving this address	Construction START Date	Construction FINISH Date	
# Units	# Stories	# Conditioned Sq. Ft.	# Bedrooms
Foundation Type: <input type="checkbox"/> Basement <input type="checkbox"/> Slab On Grade <input type="checkbox"/> Crawl Space			
Thermal Envelope			
R-___ Basement / Crawl Space Walls	R-___ Basement Insulation Depth (ft)	U-___ Basement Windows	<input type="checkbox"/> NFRC <input type="checkbox"/> Default
R-___ Unheated Slab	R-___ Floors over Unheated Spaces	R-___ Sloped Ceilings	___ Area (Sq. Ft.)
R-___ Heated Slab	R-___ Above-Grade Walls	R-___ Flat Ceilings	___ Area (Sq. Ft.)
R-___ Perimeter Slab Edge	U-___ Doors <input type="checkbox"/> NFRC <input type="checkbox"/> Default	U-___ Skylights	<input type="checkbox"/> NFRC <input type="checkbox"/> Default
U-___ Windows <input type="checkbox"/> NFRC <input type="checkbox"/> Default	R-___ Attic Access Hatch / Door		
Air Sealing Verified by: <input type="checkbox"/> Testing <input type="checkbox"/> ACH50 <input type="checkbox"/> CFM50 <input type="checkbox"/> Visual Inspection			
Ventilation System <input type="checkbox"/> Exhaust <input type="checkbox"/> Balanced Air Flow: ___ CFM <input type="checkbox"/> Rated <input type="checkbox"/> Measured			
Mechanical System Calculation Method: <input type="checkbox"/> ACCA Manual J 8th Edition <input type="checkbox"/> Other ___			
Primary Heating System Size (Btuh) ___	Primary Central Cooling System Size (Btuh) ___	<input type="checkbox"/> NA	
Calculated Heat Loss (Btuh) ___	Calculated Heat Gain (Btuh) ___	<input type="checkbox"/> Programmable Thermostat	
AFUE or HSPF Efficiency ___	SEER or COP Efficiency ___	<input type="checkbox"/> Heat Pump Supplementary Heat Control	
Ducts <input type="checkbox"/> Ducts located within conditioned space			
R-___ Supply Ducts ___ Location	___ Duct Tightness (CFM @ 25 Pa.)		
R-___ Return Ducts ___ Location	Test Performed at <input type="checkbox"/> Rough-in <input type="checkbox"/> Post-construction		
Combustion Safety <input type="checkbox"/> Spillage testing conducted on combustion equipment not directly-vented			
<input type="checkbox"/> Fireplaces have gasketed doors with compression closure			
<input type="checkbox"/> Exterior air supply requirements met for solid fuel burning appliances and fireplaces			
Other			
<input type="checkbox"/> Mechanical System Piping, R-3	<input type="checkbox"/> Accessible on-off switches for pool heaters		
<input type="checkbox"/> Circulating service hot water piping, R-3	<input type="checkbox"/> Automatic time switches for pool heaters		
<input type="checkbox"/> Automatic or Gravity dampers	<input type="checkbox"/> Pool cover for all heated pools		
<input type="checkbox"/> Automatic controls for snow-melt systems	<input type="checkbox"/> 50% of lamps in permanently installed fixtures are high efficacy		
Compliance Method Used Fast Track <input type="checkbox"/> Package # ___ <input type="checkbox"/> REScheck Software Maximum UA ___ Your UA ___			
<input type="checkbox"/> Home Energy Rating Rating Score ___ Rated by ___			
I certify to ___ (Owner) that the above information is correct and that the premises listed HAVE been constructed in accordance with the Vermont Residential Building Standards (RBES) created under 21 V.S.A. § 266.			
Signature ___		Print Name ___	
Company ___		Phone ___ Date ___	
21 V.S.A. § 266 requires this certificate label to be permanently affixed to the inside electrical service panel or heating or cooling equipment or nearby in a visible location. Copies also must be provided within 30 days following the sale of the property, to 1) the Dept. of Public Service, Planning & Energy Resources Division, 112 State St., Montpelier, VT 05602, and 2) the town clerk of the town where the property is located. NOTE: Noncompliance with RBES may result in action for damages under 21 V.S.A. § 266. This label does not specify all 2011 RBES requirements. QUESTIONS? CALL THE VT DEPT. OF PUBLIC SERVICE: 802-828-2811.			

VT COMMERCIAL BUILDING ENERGY STANDARDS (CBES) CERTIFICATE		
This certificate is for projects whose state or local permit application was submitted on or after January 1, 2007 Before completing this form, refer to the instructions		
Site Address (street, town, ZIP Code)		County
Construction Start Date	Construction Finish Date	Project Description
Building Sq. Ft.	# of Stories Above Grade	Act 250 Permit # <input type="checkbox"/> N/A
The premise listed above has been designed and constructed in substantial compliance with the requirements of the Vermont Commercial Building Energy Standards created under 21 V.S.A. § 268.		
The method used to determine code compliance was: (select one)		
<input type="checkbox"/> The 2005 Vermont Guidelines for Energy Efficient Commercial Construction Prescriptive Measures		
<input type="checkbox"/> COMcheck™ Software Version 3.2.1 or newer or COMcheck-Web™		
<input type="checkbox"/> ASHRAE/IESNA Standard 90.1-2004 Energy Cost Budget Method – Simulation Program		
I certify that the above information is correct and that the premises listed HAVE been DESIGNED in accordance with the Vermont Commercial Building Standards (CBES) created under 21 V.S.A. § 268.		
Signature		Print Name
Company	Phone #	Date
I certify that the above information is correct and that the premises listed HAVE been CONSTRUCTED in accordance with the ordinary standard of care applicable to the participating construction trades, and that the subject commercial building was constructed substantially in accordance with the construction documents including the plans and specifications certified herein, and in accordance to 21 V.S.A. §268		
Signature		Print Name
Company	Phone #	Date
21 V.S.A. §268 requires this certificate label to be permanently affixed to the inside electrical service panel or heating or cooling equipment or nearby in a visible location. In addition an affidavit shall accompany this certificate, certifying that the commercial construction meets the CBES requirements. Copies of the certificate and affidavit shall be provided to the Dept. of Public Service, Energy Efficiency Division, 112 State St., Montpelier, VT 05620-2601 NOTE: Noncompliance with CBES may result in action for damages under 21 V.S.A. §268. This label does not specify all 2005 CBES requirements.		

QUESTIONS? CALL THE VERMONT DEPARTMENT OF PUBLIC SERVICE: 800-642-3281 (in state) OR 802-828-4056 (out of state)

Leadership & Policy - 1

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- Energy Code Compliance Coalition
 - ▣ Coalition Roles
- Compliance Verification
 - ▣ Energy Efficiency Utilities
 - ▣ Act 250
 - ▣ Modify RBES Certificate
 - ▣ Compliance Verification – Commercial
 - ▣ Builders
 - ▣ Lender, Realtor, Attorney & Appraiser Checklists
 - ▣ Third-Party Energy Code Inspectors



Leadership & Policy - 2

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- Enforcement
 - ▣ Towns' Roles
 - ▣ Compliance Payments
 - ▣ Certificate of Occupancy
 - ▣ Spot Inspections
 - ▣ State Agencies & the Commercial Sector
- Additions, Alterations, Renovations or Repairs – Residential



Outreach & Education

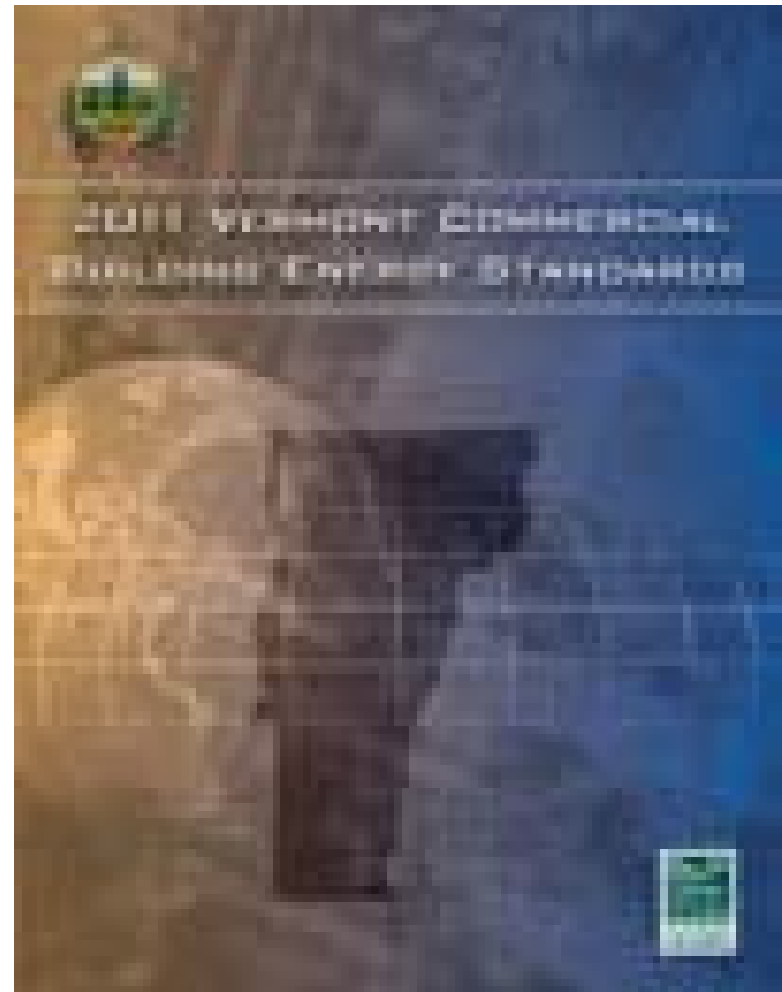
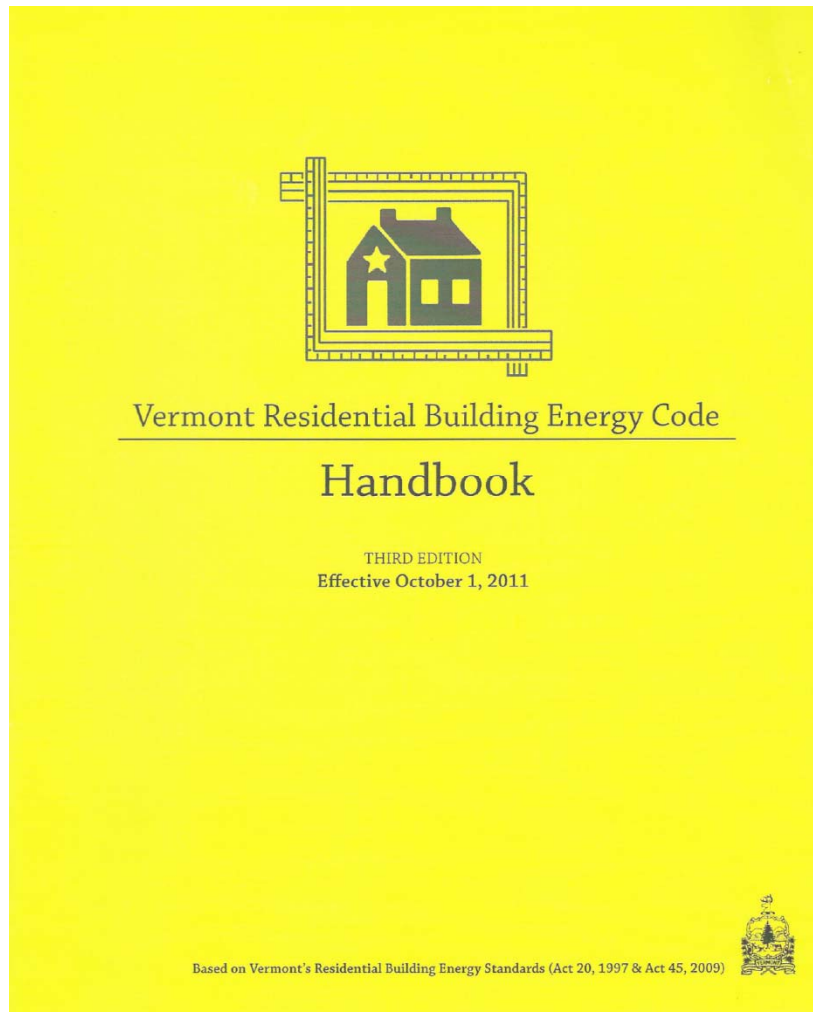
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- Training of Design and Construction Professionals
- Trade Allies
- Towns & Cities
- Utilities
- General Education
 - ▣ Consumers
 - ▣ General Educational Materials
- Energy Code Assistance Center
- Commercial Sector Outreach and Education



RBES & CBES Handbooks

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Resources & Funding

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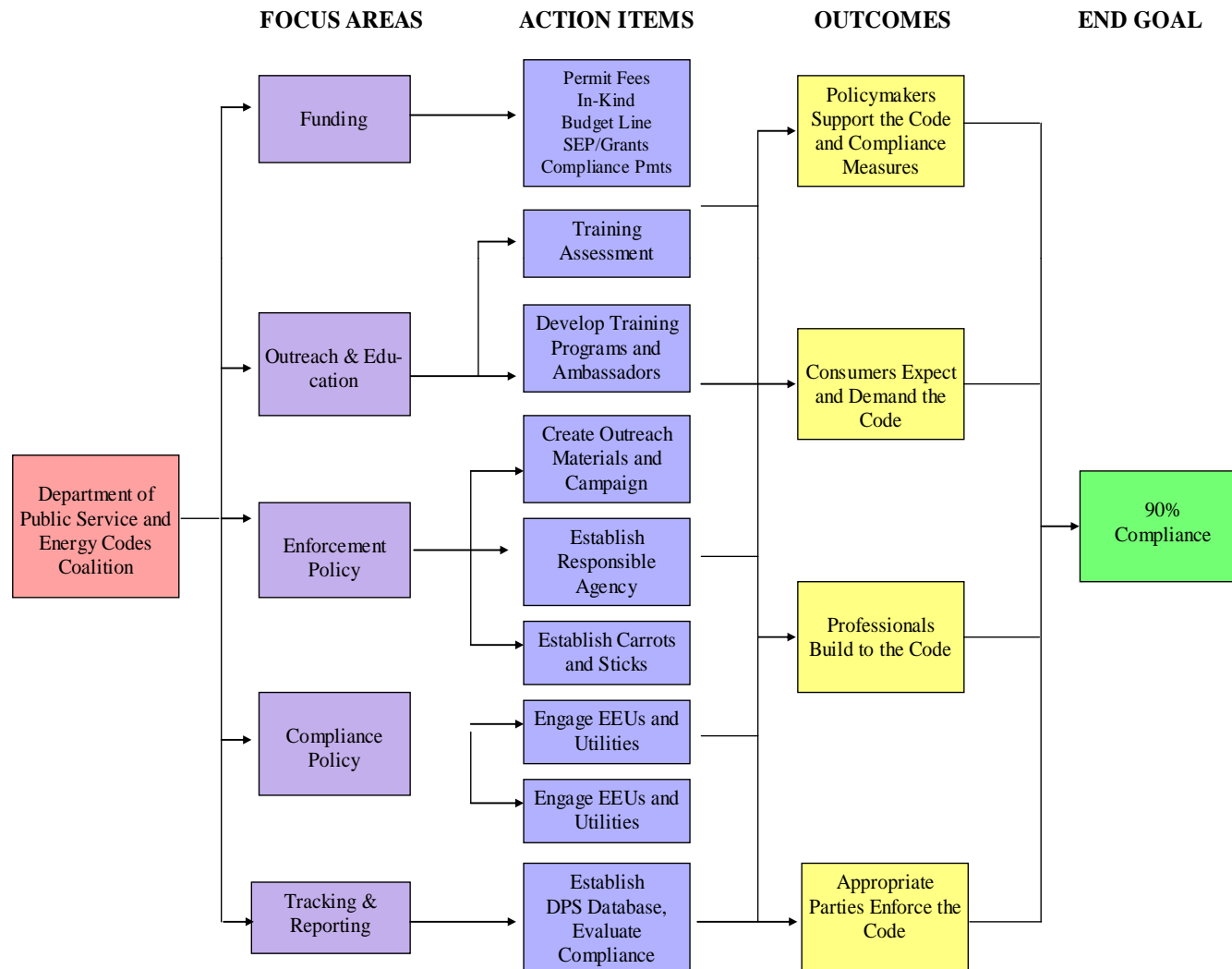
- Energy Code Positions
- Budget & Funding

Table 8. Proposed Vermont Energy Code Compliance Plan Budget 2013 - 2017

	2013	2014	2015	2016	2017	Total
Staff	\$ 300,000	\$ 300,000	\$ 300,000	\$ 300,000	\$ 300,000	\$1,500,000
Training	\$ 50,000	\$ 40,000	\$ 80,000	\$ 50,000	\$ 40,000	\$ 260,000
Energy Code Assistance Center	\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000	\$ 150,000
90% Compliance Assessment	\$ -	\$ 170,000	\$ -	\$ -	\$ 170,000	\$ 340,000
Other Activities	\$ 218,333	\$ 313,333	\$ 153,333	\$ 140,000	\$ 120,000	\$ 945,000
Total	\$ 598,333	\$ 853,333	\$ 563,333	\$ 520,000	\$ 660,000	\$3,195,000

Compliance Flow Chart

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Energy Code Compliance Rates

Energy Code Compliance in VT

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□ Compliance Rates

▣ Residential:

- ▣ 2002: 58% (n=158)

- ▣ 2008: 72% (n=106)

- ▣ 2011: ____% (n=97)

- Current market study: NMR – REScheck – performance based assessment to 2005 RBES

▣ Commercial:

- ▣ Current market study: Navigant – DOE Building Energy Codes Program – to 2005 CBES

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Q&A

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