VERMONT

DEPARTMENT OF PUBLIC SERVICE

# Vermont Energy Code Compliance Plan
# Achieving 90% Compliance by 2017

by

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## Table of Contents

**1. Executive Summary ... 3**

**2. Project Overview ... 12**

2.1. Project Goal ... 12

2.2. Team ... 12

2.3. Approach ... 12

2.4. Timeline ... 13

**3. History of Energy Codes in Vermont ... 14**

3.1. Gap Analysis ... 14

3.2. History ... 14

3.2.1. Residential Building Energy Standards (RBES) ... 14

3.2.2. Commercial Building Energy Standards (CBES) ... 15

3.2.3. Compliance Rates ... 15

**4. Project Process ... 17**

4.1. Survey ... 17

4.2. Research Other States ... 19

4.3. Stakeholder Working Groups ... 20

4.3.1. Montpelier ... 20

4.3.2. Rutland ... 21

4.4. Final Stakeholder Meeting ... 22

4.5. Findings ... 23

**5. Cross-Cutting Compliance Issues ... 24**

5.1. Residential and Commercial Commonalities ... 24

5.2. Scope: New Construction & Renovations ... 24

5.3. Multiple Paths to Compliance ... 25

**6. Measurement & Evaluation ... 26**

6.1. Compliance Tracking & Reporting Through the Property Transfer Tax Return System ... 26

6.2. Measuring Progress Towards 90% ... 27

6.3. Compliance Tracking - Commercial ... 27

6.4. Training/Outreach Assessment ... 28

**7. Leadership & Policy ... 29**

7.1. Energy Code Compliance Coalition ... 29

7.1.1. Coalition Roles ... 29

7.2. Compliance Verification ..... 30
7.2.1. Energy Efficiency Utilities ..... 30
7.2.2. Act 250 ..... 31
7.2.3. Modify RBES Certificate ..... 31
7.2.4. Compliance Verification – Commercial ..... 32
7.2.5. Builders ..... 33
7.2.6. Lender, Realtor, Attorney & Appraiser Checklists ..... 34
7.2.7. Third-Party Energy Code Inspectors ..... 34
7.3. Enforcement ..... 35
7.3.1. Towns' Roles ..... 35
7.3.2. Compliance Payments ..... 36
7.3.3. Certificate of Occupancy ..... 36
7.3.4. Spot Inspections ..... 38
7.3.5. State Agencies & the Commercial Sector ..... 38
7.4. Additions, Alterations, Renovations or Repairs – Residential ..... 39
**8. Outreach & Education ..... 41**
8.1. Training of Design and Construction Professionals ..... 42
8.2. Trade Allies ..... 42
8.3. Towns & Cities ..... 44
8.4. Utilities ..... 45
8.5. General Education ..... 46
8.5.1. Consumers ..... 46
8.5.2. General Educational Materials ..... 46
8.6. Energy Code Assistance Center ..... 47
8.7. Commercial Sector Outreach and Education ..... 47
**9. Resources & Funding ..... 50**
9.1. Energy Code Positions ..... 50
9.2. Budget & Funding ..... 50
**10. Appendix ..... 52**
10.1. Energy Code Compliance Plan Timeline ..... 52
10.2. Matrix of Recommendations and Market Actors ..... 52
10.3. Other States Research Report ..... 52
10.4. Survey Results ..... 52

# Vermont Energy Code Compliance Plan

## 1. Executive Summary

As part of the requirements for receiving American Recovery and Reinvestment Act of 2009 (ARRA) funds, the State of Vermont provided assurance that the state would develop and implement a plan to achieve 90 percent compliance with energy codes by 2017. The plan was also required to include a discussion of training and enforcement programs and annual measurement of the rate of compliance. Vermont also provided assurances that the state would adopt a residential building energy code that meets or exceeds the International Energy Conservation Code (IECC 2009) and a commercial building energy code that meets or exceeds the ANSI/ASHRAE/IESNA Standard 90.1–2007, or achieves equivalent or greater energy savings. [1] Vermont adopted the 2011 Vermont Residential and Commercial Building Energy Standards (RBES and CBES), effective October 1, 2011 and January 3, 2012, respectively, both of which meet or exceed the federal targets. Additionally, through state legislation, the Vermont Department of Public Service ("DPService") was required to establish active training and enforcement programs and establish a system for annual measurement of the rate of compliance by means of administrative rules no later than June 30, 2012. This plan discusses many training and enforcement options; however most will require additional funding to implement. The DPService is therefore considering how to best address the training, enforcement, and annual measurement needs going forward and has requested a one-year extension for the development of the administrative rules.

Beyond its federal obligations, the state also has a strong interest in ensuring that its residents' buildings comply with the state energy codes. A building that complies with the applicable energy code from the outset may represent significant energy savings over its life above a comparable building that is noncompliant. The DPService has assembled this Plan to demonstrate how the state can realize the 90% compliance rate goal.

Achieving 90% energy code compliance in Vermont will require leadership, commitment, engagement and resources on multiple levels. A residential market assessment completed in 2009 found that 72% of newly-constructed buildings in Vermont met the technical requirements of the energy code.[2] While updated commercial and residential building assessments are currently in process, it is clear that there are significant barriers to achieving 90% compliance with the more stringent recently-adopted 2011 Vermont RBES and CBES. This plan identifies the barriers and outlines strategies in four key areas in order to address them. These four areas are the pillars that support a robust platform for achieving energy code compliance:

- Measurement and evaluation
- Leadership and policy

[1] For ARRA requirements
[2] For 2009 report

- Outreach and education
- Resources and funding

The Vermont Energy Code Compliance Plan is organized around these key areas.

### *Measurement and Evaluation*

Regular assessments of progress towards the 90% compliance goal will be necessary to ensure that Vermont is on track. Measuring and tracking compliance along the way, in addition to evaluating trainings, materials and the different approaches will provide a feedback mechanism to support continuous improvement and foster goal achievement.

### *Leadership and Policy*

Meeting the 90% compliance goal will require policy modifications and leadership to carry out the needed changes. Although there is existing legislation that requires updates of the Residential Building Energy Standards (RBES) and Commercial Building Energy Standards (CBES) (collectively, the "energy codes") this does not ensure that a building will meet the minimum energy code requirements. Making energy code compliance a priority is the best and most effective way to move the building and construction community towards 90% compliance. The Vermont Legislature and state agencies with responsibility for energy codes (DPService and Department of Public Safety, or "DPSafety") will need to take leadership roles, allocate the appropriate resources and prioritize energy code compliance. While the DPService is the entity responsible for energy codes in Vermont, moving this Plan forward will take leadership to raise awareness, instil the importance of the task and bring everyone else along.

### *Outreach and Education*

Multiple Vermont actors will need to be engaged in education, outreach, compliance, support and enforcement to achieve the 90% compliance goal. One key approach would be to establish a standing Energy Codes Coalition that could provide on-going code compliance input, review and guidance to state agencies, the Legislature, towns, stakeholders and others. Such a body would be utilized as a go-to organization for energy code issues. Made up of advocates, experts and supporters for energy code issues, the Energy Codes Coalition would ensure that energy codes receive the attention required for Vermont to achieve its objectives.

### *Resources and Funding*

Adequate personnel and code support materials are essential to meeting the 90% compliance goal. These resources include the additional personnel necessary to train, provide technical assistance, follow up with projects that don't report or are out of compliance, develop code mentors, address code questions, and generally serve as a presence in the marketplace to show that someone is overseeing the energy code. In 2012, it is recommended that funding be identified to support up to three positions to provide energy code support and enforcement services (these positions may be housed outside of state government). In addition, information and training materials, updated forms and certificates, a tracking database, and an updated informational website also need to be developed and supported. When the building and construction community regularly encounters code personnel who are continuously engaged in energy code compliance efforts by providing useful information and enforcing the codes, compliance rates will increase.

With minimal funding in the past, Vermont has been able to make some gains in its energy code compliance rates[3]. However, with the new, more stringent 2011 Vermont energy codes and the 90% compliance bar, there is far less chance of meeting this goal without adequate funding to support the necessary resources. Funding could come from a number of places, including federal and state general allocations, grants, fees and, as a last resort, compliance payments or penalties. These funds could be used to support staff, trainings, materials, tracking tools, reporting and technical assistance, all of which are necessary to move Vermont towards 90% compliance.

The budget estimates in this plan are derived from the cost estimates projected in each of the recommendations below, which include one-time costs as well as annual expenses. The estimated cost of implementing the recommendations in this plan in 2013 would be about $600,000, but state budget pressures make it unlikely that this money will be available. Over the course of 2013-2017, the code compliance budget to achieve and verify the goal as outlined herein would be expected to total around $3.2 million.

### *Immediate Priorities*

Building on the work that has gone into engaging stakeholders and developing this energy code compliance plan, implementation of near-term priorities will continue momentum toward the 90% code compliance goal. Certain key steps may be possible to take on at a minimal cost in the immediate future that would move the process forward while additional funding is being identified for future activities. Some of those steps could include the following:

- Determine staff resources and devote some staff time to continuing efforts around energy code compliance.
- Build momentum on the stakeholder outreach that has taken place thus far and begin to explore the formation of an Energy Code Compliance Coalition.
- For commercial construction, build on the collaborative efforts that have come out of this process to establish a joint process between DPService and DPSafety for verifying energy code compliance.
- Bring key recommendations from this plan to stakeholders to discuss and explore paths towards implementation. As the Energy Code Compliance Coalition begins to coalesce, recommendations can be brought more formally to this group.

Aside from some minimum level of staffing resources, none of these "next steps" would involve significant costs, but would be important activities that could help to advance the state's energy code compliance efforts in the near term.

[3] Vermont has supported an on-going series of energy code trainings, user-friendly handbooks, collaboration with building suppliers to support educational activities, the Energy Code Assistance Center, and code compliance support as part of the ENERGY STAR Homes service for participants and periodic market assessments. Vermont went from receiving a “D” grade (on an A-F scale) for energy code compliance (see 1995 Alliance to Save Energy State Energy Code Report card at: http://oikos.com/esb/42/codesurvey.html) to a residential new construction compliance rate of approximately 72%, according to Vermont’s last residential market assessment survey.

### *Recommendations by Priority*

Throughout the Plan, four levels of priority are tied to recommendations (critical, high, medium and low). Whereas the "critical priority" activities would start immediately and would be on-going , "high priority" activities are anticipated to take place by 2014, "medium priority" activities are anticipated to be implemented over years 2013-2015, and "low priority" activities are expected to be implemented in 2014 and occur through 2017.

All of the recommendations presented in this Plan are summarized in the tables below. Additional background and detail on each recommendation are included in later in this Plan. While developing new staff position functions to carry out these activities is called out as a critical priority, many of the recommended activities could and should still move forward before significant additional funds are identified, provided current staff resources (between state agency and Energy Efficiency Utility personnel) could be made available. The extent to which these can be carried out depends upon the availability of existing staff to take them on. Eventually, additional funding would need to be identified for positions specifically devoted to implementing energy code compliance activities.

The Plan recommendations and budgeted costs and priorities are listed in the following tables, sorted by critical, high, medium and low priority recommendations. Some of these costs are annual and others are periodic. See Funding Section 9.2 for budget discussion.

### *Table 1. Critical Priorities and Budget (On-Going Annually)*

| # | Recommendation | Plan Section | Pillar | Cost | Frequency |
|---|---|---|---|---|---|
| 1 | Focus primarily on commercial and residential new construction initially, followed by renovations and remodelling in subsequent years. | 5.2 | Cross-Cutting | $ - | |
| 2 | Require that COMcheck (software) documentation be included on the construction plans as part of the commercial building permit documentation. | 7.2.4 | Leadership & Policy | Position Function | |
| 3 | Continue coordination efforts between the DPService and the DPSafety. | 7.3.3 | Leadership & Policy | Position Function | |
| 4 | Work with the DPSafety to regularly provide the DPService with a list of the current permit applications under review along with the buildings database for review | 7.3.5 | Leadership & Policy | Position Function | |
| 5 | Work with the DPSafety to include verification of filed energy code compliance documents as part of its permit review process. | 7.3.5 | Leadership & Policy | Position Function | |

| # | Recommendation | Plan Section | Pillar | Cost | Frequency |
|---|---|---|---|---|---|
| 6 | Work with the DPSafety to verify the posting of the required energy code compliance documents in projects receiving their occupancy inspection. | 7.3.5 | Leadership & Policy | Position Function | |
| 7 | Coordination and support of cities and towns code compliance activities. | 8.3 | Outreach & Education | Position Function | |
| 8 | Secure funding for up to three full time positions to support outreach, compliance and enforcement activities. | 9.1 | Resources & Funding | $300,000 | per year |
| 9 | Design and establish a funding plan. | 9.2 | Resources & Funding | Position Function | |

### *Table 2. High Priorities and Budget (Years 1 and 2)*

| # | Recommendation | Plan Section | Pillar | Cost | Frequency |
|---|---|---|---|---|---|
| 1 | Investigate whether additions, alterations, renovations & repairs to existing Commercial Bldgs. are complying with the energy code and develop a plan to increase compliance if needed. | 5.2 | Cross-Cutting | $ - | |
| 2 | Work with the Vermont Department of Taxes to add a new "Energy Performance" section to their Property Transfer Tax Return (PTTR) website. | 6.1 | Measurement & Evaluation | $10,000 | year 1 |
| 3 | Establish a system for regularly monitoring the PTTR for documentation of compliance with RBES and CBES and enforce the energy code | 6.1 | Measurement & Evaluation | Position Function | |
| 4 | Monitor the PTTR system and work to enhance its use and accuracy as an indicator of energy code compliance. | 6.2 | Measurement & Evaluation | $10,000 | per year |
| 5 | Assess the current energy code training activities and develop a training plan. | 6.4 | Measurement & Evaluation | $20,000 | year 1 |
| 6 | Create, support and engage regularly with an Energy Code Compliance Coalition | 7.1.1 | Leadership & Policy | $10,000 | per year |

| # | Recommendation | Plan Section | Pillar | Cost | Frequency |
|---|---|---|---|---|---|
| 7 | Require energy code documentation in order to receive incentives through energy efficiency programs at the Energy Efficiency Utilities (EVT, VGS and BED). | 7.2.1 | Leadership & Policy | Position Function | |
| 8 | Consider conducting inspections of Act 250 projects. | 7.2.2 | Leadership & Policy | $50,000 | per year |
| 9 | Modify the current RBES language to allow for a qualified person to sign the RBES certificate while limiting their liability. | 7.2.3 | Leadership & Policy | Position Function | |
| 10 | DPService provide periodic review of plans, specifications, construction and compliance documentation to verify compliance | 7.2.5 | Leadership & Policy | Position Function | |
| 11 | Conduct spot inspections of 5% of newly permitted DPSafety or Act 250 projects each year. | 7.3.4 | Leadership & Policy | Position Function | |
| 12 | The DPService should follow up on selected projects with deficient code documentation by contacting the building owner regarding deficiencies. | 7.3.5 | Leadership & Policy | Position Function | |
| 13 | Conduct at least four residential and four commercial trainings annually. | 8.1 | Outreach & Education | $80,000 | year 1, then declining |
| 14 | Assist municipalities with establishing and enforcing energy codes in their jurisdictions. | 8.3 | Outreach & Education | Position Function | |
| 15 | Continue to support the Energy Code Assistance Center. | 8.6 | Outreach & Education | $30,000 | per year |
| 16 | Ensure Permit Specialists at the Environmental Assistance Offices and the Department of Environmental Conservation educate applicants about requirements for Energy Code compliance. | 8.7 | Outreach & Education | Position Function | |
| 17 | Update all Vermont department code information documentation and websites to include the CBES as a required code. | 8.7 | Outreach & Education | Position Function | |

*Table 3. Medium Priorities and Budget (Years 2 – 4)*

| # | Recommendation | Plan Section | Pillar | Cost | Frequency |
|---|---|---|---|---|---|
| 1 | Investigate whether additions, alterations, renovations & repairs to existing Residential Bldgs. are complying with the energy code and develop a plan to increase compliance if needed. | 5.2 | Cross-Cutting | $ - | |
| 2 | Consider applying the DOE's Building Energy Code Compliance protocols to the current market assessment study results to determine Vermont compliance rates. | 6.2 | Measurement & Evaluation | $20,000 | in years 3 and 6 |
| 3 | Circuit rider performs field verification and the associated documentation to assess compliance on an ongoing basis. | 6.2 | Measurement & Evaluation | Position Function | |
| 4 | Establish commercial compliance tracking database. | 6.3 | Measurement & Evaluation | $15,000 | year 2 |
| 5 | Assess the current Energy Code Handbook and other code support materials to determine effectiveness, update if needed. | 6.4 | Measurement & Evaluation | $20,000 | year 2 |
| 6 | Support a Registered/Certified Builder Program in Vermont. | 7.2.5 | Leadership & Policy | Position Function | |
| 7 | Work with lenders, Realtors, attorneys and appraisers to add a check box to closing checklists that records whether an energy code certificate has been provided. | 7.2.6 | Leadership & Policy | Position Function | |
| 8 | Develop a third-party energy code inspection program. | 7.2.7 | Leadership & Policy | $100,000 | Years 2, 3, 4 |
| 9 | Develop a pool of certified third party compliance professionals to verify and document code compliance. | 7.2.7 | Leadership & Policy | $75,000 | year 3 |
| 10 | Towns: Provide support to Towns and Cities that desire a role in energy code enforcement. | 7.3.1 | Leadership & Policy | Position Function | |
| 11 | Explore the development of a Compliance Payment schedule (with reasonable grace periods) for non-compliance. | 7.3.2 & 7.3.5 | Leadership & Policy | Position Function | |
| 12 | Work through VLCT and VECAN to determine their potential interest in a local (town) Certificate of Occupancy provision. | 7.3.3 | Leadership & Policy | Position Function | |
| 13 | Develop support materials for local town adoption and developing support materials for the towns to use for a local Certificate of Occupancy provision. | 7.3.3 | Leadership & Policy | $10,000 | year 2 |
| 14 | Periodically perform code compliance review inspections for projects with completed energy code documentation. | 7.3.5 | Leadership & Policy | Position Function | |
| 15 | The DPService and DPSafety should work with towns and cities with plan review and code inspection capabilities to ensure that energy code compliance mechanisms are in place state wide. | 7.3.5 | Leadership & Policy | Position Function | |

| # | Recommendation | Plan Section | Pillar | Cost | Frequency |
|---|---|---|---|---|---|
| 16 | Engage with partners such as Industry Groups, Realtors and Appraisers, and building suppliers to provide outreach on the energy codes to encourage them to educate their members about the Vermont energy codes. | 8.2 | Outreach & Education | Position Function | |
| 17 | Provide energy code books to all town offices and encourage towns with web sites to post energy code information publicly. | 8.3 | Outreach & Education | $5,000 | per year |
| 18 | Develop a brochure for all potential and new utility customers. | 8.4 | Outreach & Education | $5,000 | per year |
| 19 | Explore ways to provide outreach to the general public to increase consumer demand for energy code compliance. | 8.5.1 | Outreach & Education | $20,000 | per year |
| 20 | Assess and develop education & outreach materials as necessary. | 8.5.2 | Outreach & Education | $15,000 | per year |
| 21 | Utility programs provide energy code documents to firms engaged in high profile, green projects. | 8.7 | Outreach & Education | $5,000 | year 3 |
| 22 | Update the Vermont DPService "Building Energy Codes Program" webpage. | 8.7 | Outreach & Education | Position Function | |

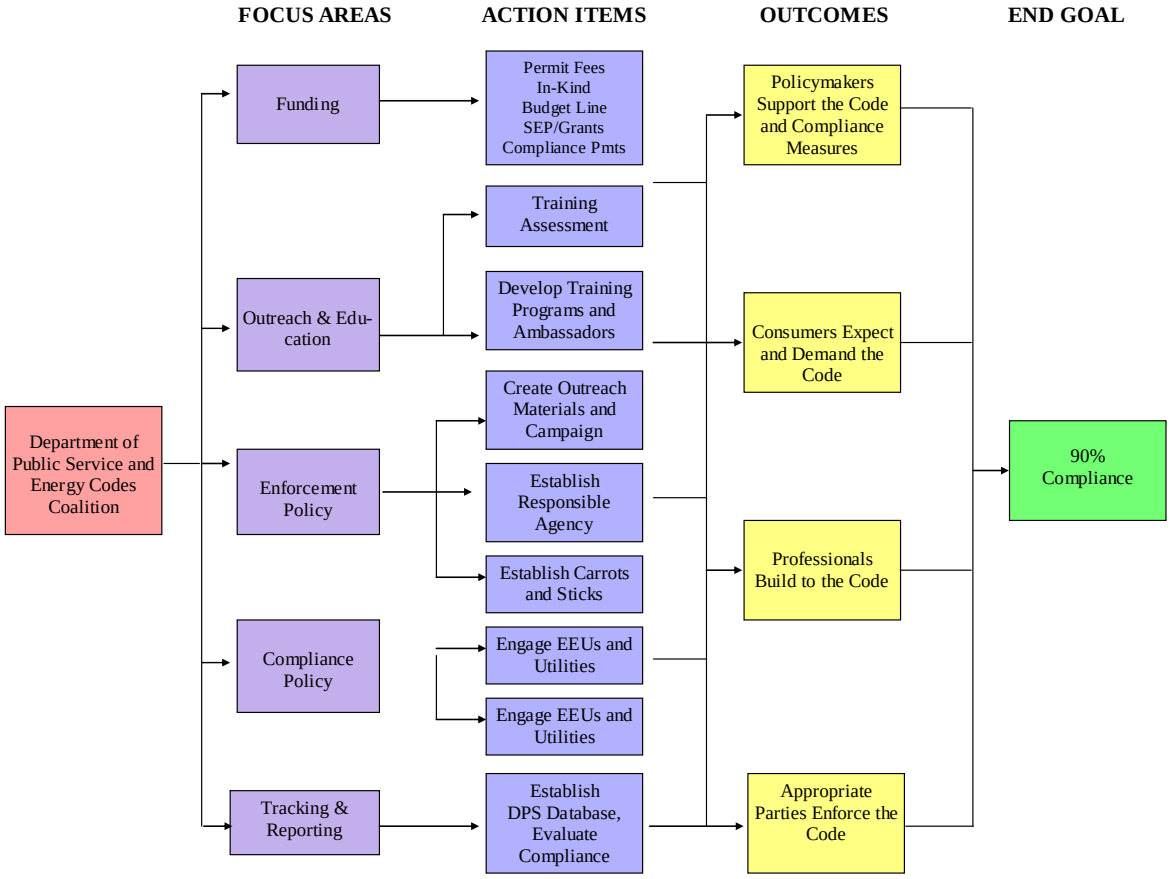
*Table 4. Low Priorities and Budget (Years 3 - 6)*

| # | Recommendation | Plan Section | Pillar | Cost | Frequency |
|---|---|---|---|---|---|
| 1 | Conduct a future market assessment study of new residential and commercial buildings in order to validate compliance in 2017 as required by ARRA. | 6.2 | Measurement & Evaluation | $150,000 | high priority in years 3 and 6 |
| 2 | Periodic surveys as discussed in the "BECP Manual" to provide additional information on progress towards compliance. | 6.2 | Measurement & Evaluation | $20,000 | in years 2 and 5 |
| 3 | Require documentation of RBES and CBES compliance as a condition of every Act 250 project. | 7.2.2 | Leadership & Policy | Position Function | |
| 4 | Coordinate energy code outreach and education and compliance efforts with HP and WAP contractors. | 7.4 | Leadership & Policy | Position Function | |
| 5 | Develop a plan to address the renovation market energy code compliance. | 7.4 | Leadership & Policy | $80,000 | |
| 6 | Energy Code Mentors: Identify and train key people at building supply outlets as mentors and work with NEEP to develop a mentor initiative for regional commercial suppliers.. | 8.2 | Outreach & Education | Position Function | |

| # | Recommendation | Plan Section | Pillar | Cost | Frequency |
|---|---|---|---|---|---|
| 7 | Engage utilities in outreach regarding code compliance for residential remodel through bill inserts or other means. | 8.4 | Outreach & Education | Position Function | |
| 8 | Identify opportunities to educate building owners about the benefits of using design firms who are familiar with the VT energy code. | 8.7 | Outreach & Education | Position Function | |

The following flow chart shows the focus areas, action items and outcomes in moving towards 90% compliance.

*Figure 1. Compliance Flow Chart*




Leadership, strong policies, stakeholder engagement, adequate resources, and funding represent the key ingredients to achieving 90% energy code compliance in Vermont. The details behind these efforts follow.

# 2. Project Overview

## 2.1. Project Goal

The goal of this Vermont Energy Code Compliance Plan is to provide a roadmap to achieve 90% compliance with Vermont's then current commercial and residential building energy codes by February 1, 2017. The Plan is based upon the input of a wide range of stakeholder groups from across the state, as well as research and expertise from a team of experienced firms that are all deeply familiar with Vermont's and national building energy codes. In addition to laying out a path toward increased energy code compliance, the Plan also addresses how best to implement ongoing training related to updates of the Residential Building Energy Standards (RBES) and the Commercial Building Energy Standards (CBES). Further, the Plan includes suggestions for unified energy code enforcement measures, as well as a process to evaluate and report annual rates of energy code compliance.

## 2.2. Team

Energy Futures Group (EFG) led the Energy Code Compliance Plan team ("EFG Team"), which included several additional energy efficiency and code experts, all with a sound understanding of Vermont's building sectors. Additional members of the team included Cx Associates, the Building Codes Assistance Project (BCAP), Navigant Consulting and Optimal Energy. Each of these firms individually has extensive experience working in energy efficiency generally, as well as on energy codes specifically. Collectively, the EFG Team incorporated broad-based expertise on both residential and commercial codes and buildings to ensure a coordinated approach to Vermont's new Energy Code Compliance Plan.

EFG served as the overall project manager, overseeing all aspects of this project and serving as the liaison with DPService, as well as coordinating the residential aspects of the project. Cx Associates led the commercial elements of this project, including coordination of the commercial stakeholders, stakeholder surveys development, co-facilitation of stakeholder group meetings and development of commercial elements of the Plan. BCAP, Navigant and Optimal Energy comprised the EFG Team's advisory committee. BCAP lent its extensive national experience to the EFG Team in guiding research into other states' compliance programs, as well as providing strategic direction and advice on stakeholder outreach and plan development. Navigant provided insights and stakeholder lists from its recent experience having led 2011 Vermont RBES and CBES updates. Optimal Energy lent its regional and national experience working on energy code and efficiency programs to enhance strategic thinking around the code compliance Plan.

## 2.3. Approach

The EFG Team's approach to developing an Energy Code Compliance Plan was as follows:

- Researching Existing Models and Summarizing Findings: The EFG Team identified various, unique and likely-applicable-to-Vermont energy code compliance programs that exist in the U.S., summarizing those models and their key elements in a memo to DPService and stakeholders.

- Early Stakeholder Engagement: The EFG Team conducted an online survey and two stakeholder meetings (one in Montpelier and one in Rutland) to gather input and feedback on the development of the Energy Code Compliance Plan. The online survey was sent to Efficiency Vermont's Better Buildings by Design Conference mailing list of more than 2,800 stakeholders from a wide range of professions, including builders, contractors, designers, architects, state and local officials, lenders, Realtors, utility representatives, environmental organizations and energy efficiency experts. Responses were received from nearly 400 individuals across all of these groups.

  Respondents had the opportunity to express interest in attending the in-person stakeholder meetings. At each of these meetings, the EFG Team presented the results of the research on other states' code compliance mechanisms, reported back on the survey responses, and reviewed various options for the implementation of an Energy Code Compliance Plan. Approximately 40 stakeholders attended the Montpelier meeting and approximately 20 attended the Rutland meeting. Stakeholders at each meeting were provided approximately 90 minutes to discuss and give input on the various options.

- Plan Development: Based on stakeholder input from the survey and in-person meetings, as well as the research on other states' energy code compliance mechanisms, the EFG Team developed this Energy Code Compliance Plan to provide a roadmap for implementation. The Plan addresses roles and responsibilities, timelines, and budgetary considerations.

- Final Stakeholder Engagement: A final stakeholder meeting was held in Montpelier to distribute this Plan to attendees and solicit reactions. The goal of the meeting was to review the key recommendations to get stakeholder feedback and stimulate discussion for DPService to consider in the final revision of the Plan.

- Compliance Plan Finalized: Following the final stakeholder meeting, the ERG Team conferred with the DPService and then incorporated the recommendations and modifications into a final Energy Code Compliance Plan.

## 2.4. Timeline

The primary tasks involved in developing this plan were completed according to the following timeline:

*Table 6. Project Timeline*

| Date | Task |
|---|---|
| 9/1/2011 | Project commenced |
| 10/3/2011 | Survey sent to stakeholders |
| 10/18/2011 | Background research presented to DPService |
| 10/20/2011 | First stakeholder meeting (Montpelier) |
| 10/28/2011 | Second stakeholder meeting (Rutland) |
| 11/18/2011 | Draft plan presented to DPService |
| 12/14/2011 | Final stakeholder meeting (Montpelier) |
| 1/16/2012 | Code compliance plan finalized |

# 3. History of Energy Codes in Vermont

## 3.1. Gap Analysis

Vermont initiated an energy code "Gap Analysis" as part of its participation in BCAP's Compliance Planning Assistance Project, identifying existing gaps and recommendations for addressing energy code compliance and related issues.[4] The analysis documents and analyzes the strengths and weaknesses of the state's existing energy code adoption and implementation infrastructure and policies and recommends potential actions state agencies, local jurisdictions, and other stakeholders can take to increase compliance with the model energy codes.

The Gap Analysis emphasizes that while energy code adoption is the necessary first step in the energy code process, it does not guarantee compliance. To achieve the desired energy and financial savings available through energy codes, the Gap Analysis affirms that Vermont must carry out energy code implementation, a term used to describe all of the activities needed to prepare state and local officials, the building industry, and other stakeholders for compliance with Vermont's energy codes. Implementation includes outreach to stakeholder groups; on-site, classroom, and web-based training; establishing and utilizing enforcement infrastructure, tools, and systems; and other educational and organizational efforts. Many of these recommendations have been rolled into this Energy Code Compliance Plan.

## 3.2. History

### 3.2.1. Residential Building Energy Standards (RBES)

Vermont's first residential energy code, the Residential Building Energy Standards (RBES), was adopted in 1997 and made mandatory statewide. It is a minimum standard of energy efficiency that has applied to virtually all new residential construction in Vermont since July 1, 1998. This residential code was based on the 1995 Council of American Building Officials Model Energy Code (MEC). It was subsequently updated in 2005, based on the 2000 International Energy Conservation Code (IECC) and most recently updated in 2011, based on Vermont amendments to the 2009 IECC. The most recent version went into effect as of October 1, 2011. In addition to new construction, the 2011 RBES applies to additions, alterations, renovations, and repairs of existing homes.

In order to comply with the Residential Energy Code, a home, as built, must meet all of the Basic Requirements and the Performance Requirements for one of the compliance methods outlined in the standards, which are discussed in the RBES Handbook.[5] The three permitted compliance methods are: 1) the prescriptive measure "fast track" method, 2) the RES*check* software method, and 3) the Home Energy Rating method. Regardless of the compliance method chosen, an RBES Certificate must be completed, posted and filed for all homes that fall under the standards, unless the home qualifies for the Owner/Builder Special Provision (or is specifically exempt under RBES.) A

[4] Unpublished. Draft obtained from the Vermont Department of Public Service.
[5] Additional information regarding RBES, including a link to the 2011 RBES Handbook, is available at: http://publicservice.vermont.gov/energy/ee_resbuildingstandards.html

Vermont Owner/Builder Disclosure Statement must be completed for qualified owner/builder homes.[6] RBES exemptions are discussed further in the RBES Handbook.

Vermont currently has one of the few energy codes in the country that relies upon self-certification to demonstrate compliance with the law. Meeting RBES requirements essentially depends on self-certification by the builder, builder/owner, or other qualified professional under state statute.

### 3.2.2. Commercial Building Energy Standards (CBES)

The Commercial Building Energy Standards (CBES) were enacted into law in 2006 and is the energy code for all commercial buildings, as well as residential buildings four stories or greater above grade in Vermont, and took effect January 1, 2007. The 2011 CBES update, which applies to all new commercial building construction, additions, alterations, renovations, and repairs became effective on January 3, 2012. The CBES also allows an alternative compliance path of ASHRAE 90.1-2010, with some Vermont-specific requirements outlined in the energy code.

CBES requires certification that both the design and the construction of a commercial building are in compliance. The design must be certified by the primary designer; if a licensed professional engineer or a licensed architect is not involved in designing the project, certification must be issued by the builder. The construction of a commercial building must be certified as compliant with CBES by the party having primary responsibility for coordinating the construction of the building, such as a general contractor or construction manager. In the absence of such a party, the owner must certify compliance. The certifying person may reasonably rely on one or more supporting affidavits received from subcontractors or others engaged in the construction or design of the commercial building affirming that the portions of the building constructed by them were properly certifiable.

To meet certification requirements, a CBES Certificate and a CBES Affidavit must be completed and sent to the DPService. Further, certification must be permanently affixed to the outside of the heating or cooling equipment, to the electrical service panel located inside the building, or in a visible location in the vicinity of one of these three areas.

### 3.2.3. Compliance Rates

#### *Residential*

The 2009 report "Residential Building Energy Standards Compliance Analysis," produced by Nexus Market Research (NMR) for the Vermont DPService, found that out of an inspected sample of 106 newly-constructed homes, 76 passed RBES via either a home performance rating or REScheck software, yielding a compliance rate of 72%.[7] These results were an improvement over a 2002 new construction Market Assessment Study, in which 58% of the 158 homes inspected met the RBES requirements.[8] However, the 2009 report noted that achieving full compliance under the current

[6] The RBES Certificate and the Owner/Builder disclosure form are each included in the RBES handbook. A separate link to a downloadable/printable version of the RBES certificate can be found on the DPService page cited above.

[7] The report is available on the website of the U.S. Department of Energy's Building Energy Codes Program: http://www.energycodes.gov/publications/research/documents/codes/vt_rbes_analysis_061009.pdf

[8] Vermont Residential New Construction 2002: Baseline Construction Practices, Code Compliance, and Energy Efficiency, p. 1-3. Prepared by Westhill Energy and Computing for the Vermont Department of Public Service. January 3, 2003. Available on the website of the Consortium for Energy Efficiency, http://www.cee1.org/eval/db_pdf/368.pdf

standards would be difficult "because compliance is not enforced and there is no penalty for non-compliance in Vermont."[9] Further, while the rate of compliance with technical requirements was at 72%[10], auditors found an RBES certificate during on-site inspection in only 12 of the 106 homes, an 11% compliance rate for the certificate posting requirement. This Energy Code Compliance Plan attempts to lay out a plan for compliance and enforcement of the residential energy code that will bring the State closer to full compliance with both technical building standards and documentation requirements.

The DPService has commissioned a new Residential Market Assessment Study, which includes residential code compliance, due to be completed in the beginning of 2012, also led by NMR. This evaluation will examine compliance with the 2006 Vermont energy code.

### *Commercial*

The DPService has commissioned a Market Assessment Study that is currently ongoing, led by Navigant Consulting, to conduct a survey and on-site assessment of existing business facilities in Vermont and a business new construction baseline study.[11] This Market Assessment Study will yield the first statewide evaluation results of CBES energy code compliance. In addition, the Study will document the existing saturation and efficiency levels of features such as equipment, lighting, HVAC, natural gas heat, hot water and process systems, and building shell characteristics. The Market Assessment Study is due to be completed by the spring of 2012.

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[9] *"Residential Building Energy Standards Compliance Analysis," Nexus Market Research (NMR),* 2009*,* p. 1.

[10] Since basements were backfilled, there were some assumptions made about exterior basement insulation in some homes that may have affected this value.

[11] More information about this study is available in the Department of Public Service Request for Proposals for this project, which can be accessed on the Department's website: http://publicservice.vermont.gov/energy/ee_files/DPService%20Response%20to%20Market%20Assessment%20RFP%20Questions%201_19_11.pdf

# 4. Project Process

## 4.1. Survey

The EFG Team sent an online survey to a group of approximately 2,800 stakeholders on October 3, 2011 to explore their opinions and needs regarding building energy codes and request their feedback on various options for increasing energy code compliance rates in Vermont. The survey was not statistically representative, but was considered one more tool to gather opinions. The brief survey comprised a set of 12 questions designed to take approximately 10 minutes, with a rating scale that allowed stakeholders to rank options for compliance and enforcement. The survey also included opportunities for respondents to provide narrative input on ways to achieve energy code compliance. Survey links were distributed to stakeholders via email. Approximately 400 responses were received from a wide range of professions. Initial results were compiled and analyzed to be presented at in-person stakeholder group meetings in Montpelier and Rutland. The survey was kept open after these meetings, and the EFG Team made further efforts to solicit participation from additional stakeholder groups, including members of the Vermont League of Cities and Towns (VLCT) and the Vermont Energy & Climate Action Network (VECAN), which is the primary liaison to the Vermont Town Energy Committees. Survey results were finalized in conjunction with the drafting of the Energy Code Compliance Plan.

For the purposes of this survey, energy code compliance was distinguished from energy code enforcement, with the distinction being that compliance referred to the way in which the builder or other party demonstrated that the energy code had been followed, while enforcement described the mechanism that the responsible agency could use to ensure the code was followed. For example, a builder self-certifying that a project complied with the applicable energy code would be an example of compliance, while an agency requiring the filing of such self-certification prior to issuing a building permit or Certificate of Occupancy is an example of enforcement.

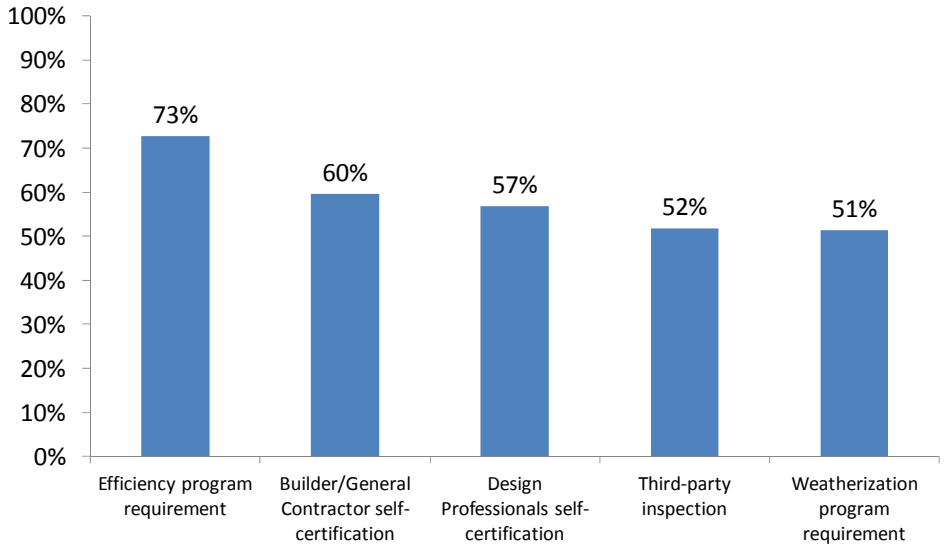
In addition to the two graphs on energy code compliance and enforcement sentiments shown in this section, full survey results are presented graphically in the Appendix to this Plan. The set of survey respondents represented a wide range of building and energy efficiency related professions, with the highest levels of participation from those identifying as general contractors and architects, followed by energy efficiency consultants and subcontractors. A number of state and town employees, building suppliers, inspectors, and other building professionals also participated.

The survey asked participants to rank their reactions to various methods of energy code compliance, including designer or builder self-certification, certification by a certified third-party inspector, and certification by various agencies (e.g., utilities offering efficiency programs; weatherization agencies) as a prerequisite to participation in their programs. Figure 2 shows the results. Overall, every option presented received above 50% support,[12] suggesting there is support for continuing to promote compliance with the state energy codes. In general, there was more support for the current-self-certification system than for independent third-party inspections, but only by a relatively small

[12] Support was defined as the percentage of respondents who indicated that they would be somewhat or very satisfied with a given option.

margin. This suggests that a prudent path to pursuing increased compliance could be to explore first whether compliance rates can be raised within the current system and then considering developing additional support for third-party inspections if such a system is deemed necessary to achieve compliance goals.

*Figure 2. Survey Results: Favorability of Compliance*

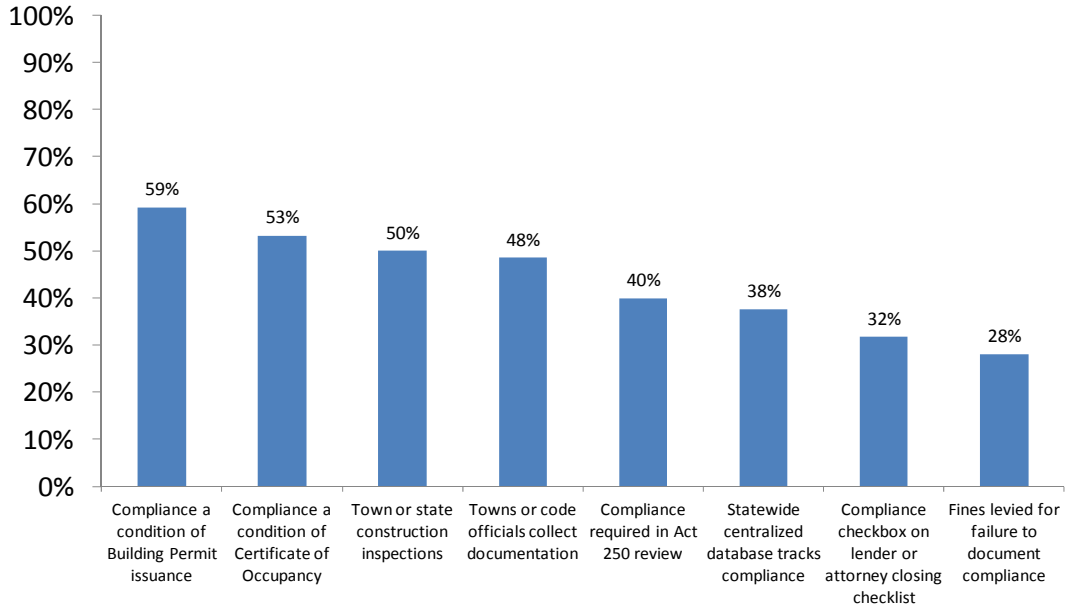



## *Options*[13]

Respondents were also asked about their opinions on various options for energy code enforcement mechanisms, as shown in Figure 3. Overall, respondents were most in favor of making energy code compliance a condition for the issuance of a building permit, followed by compliance as a condition for the issuance of a Certificate of Occupancy. The favorability of these options persisted among key stakeholders who identified as being part of the design and construction industry (and thus would be responsible for actual code compliance in most cases.)

[13] Percent of respondents overall who would be somewhat or very satisfied with this option.

*Figure 3. Survey Results: Favorability of Enforcement Options*[14]




Finally, respondents were asked to rank their support for various options to fund energy code implementation. Respondents indicated that they were most in favor of design and construction fees or permit fees to fund these activities. Utility bill charges and taxes were the least popular options. The market-based mechanism of builders and owners directly hiring a third-party inspector to verify code compliance fell in the middle and was most likely linked to respondents' opinions about the desirability of creating a third-party mechanism.

## 4.2. Research Other States

The EFG Team prepared a memo for DPService and stakeholders exploring code compliance mechanisms in other states, with special attention paid to third-party inspection systems. Given Vermont's lack of a code compliance infrastructure, use of a private independent third-party inspection system was considered one promising option among several, but also one that would involve its own unique set of considerations that would be worth exploring in more detail. The memo examined the experiences of three states and one county that had used such a system: Washington State, New York State, Maine, and Fairfax County, Virginia. The analysis compared each of these jurisdictions across several major dimensions, drawing upon conversations with individuals knowledgeable about these programs in each geographic area, as well as direct research into the programs' regulations and guidelines. Examining the models in each of these locations shed light on the considerations that Vermont would need to take into account in exploring the option of implementing a third-party inspection mechanism for energy code compliance.

Of the locations examined, only Washington State had conducted a quantitative evaluation of the impact of implementing a third-party inspection system. In that state, local jurisdictions were given discretion to use third-party "special inspectors" to verify compliance with only the non-residential energy code. The evaluation found a highly significant impact from implementation of the third-party system: the compliance rate among those buildings examined by an independent third-party

[14] Percent of respondents overall who would be somewhat or very satisfied with this option.

inspector was 83%, compared to a 5 % percent compliance rate among those buildings that were not. The overall compliance rate in a similar previous study conducted before the independent inspector pilot program was launched was 51%, suggesting there was little improvement in the later study among those buildings that were not reviewed by independent third-party inspectors, but significant improvement among those that were. It should be noted, however, that this subset was relatively small, consisting of only 12 buildings. Further investigation would be useful to affirm the potential impact of implementing a third-party inspection system.

Aside from quantitative impact evaluation, research on the various locations revealed a number of noteworthy aspects of program design, both in terms of commonalities and certain features that were unique. An example of a common element across all programs was the inclusion of a provision making code compliance a condition for the issuance of a Certificate of Occupancy or its equivalent. A notable unique feature, by contrast, was New York's "opt-out" system of third-party oversight, which vested local jurisdictions with oversight authority over third-party inspectors, but also granted them to opportunity to opt out of that responsibility, allowing the county or state to step in. Such a system could presumably reduce the burden on local authorities that might otherwise find it difficult to add oversight of third-party inspectors to their list of administrative tasks.

Additional conclusions from this research can be found in the memo prepared for the DPService, which is attached in the Appendix to this Plan.

## 4.3. Stakeholder Working Groups

Two stakeholder meetings were held in Montpelier and Rutland to present the results of the research described above, report back on survey responses, and review and discuss compliance plan alternatives. The agenda for each meeting was the same[15], and the majority of each meeting was devoted to stakeholder discussion of the energy code compliance alternatives. All survey respondents who expressed interest in attending an in-person meeting received an email invitation, and the invitation was forwarded to several additional stakeholder groups. In addition, to ensure the broadest coverage possible, the entire list of 2,800 stakeholders who received the original survey was sent the invitation to the Rutland meeting. Members of the EFG Team and DPService representatives attended both meetings to solicit input in the selection of a workable plan. Meeting minutes were summarized and provided to the DPService for review prior to distribution to stakeholders and are included in the Appendix to this Plan.

### 4.3.1. Montpelier

Among the approximately 40 attendees at the Montpelier stakeholder group, a wide range of professions was represented. Professionals from all of the following categories were in attendance:

- Architects
- Builders/General Contractors
- Subcontractors (HVAC, mechanical systems, etc.)
- Energy Efficiency Consultants
- Building Inspectors
- Local Government Officials

[15] The agenda is included in the Appendix to this Plan.

- State Agencies
- Professional Engineers
- Realtors
- Utilities

In addition, certain attendees represented larger professional industry organizations that could communicate key points back to their membership. The meeting included members of the following organizations:

- American Institute of Architects
- Home Builders and Remodelers Association
- International Code Council Building Safety Association of Vermont
- Northeast Energy Efficiency Partnerships
- Vermont Board of Professional Engineers
- Vermont Green Building Network
- Vermont Green Home Alliance

Additionally, certain agencies and organizations were represented that have a particularly broad reach among relevant stakeholder groups in Vermont, such as the Vermont Housing Finance Agency and Efficiency Vermont.

One of the key themes to emerge from the stakeholder meeting was a healthy discussion of the value of the present self-certification system, as compared to a system involving independent inspections by government employees or private entities. On the one hand, several stakeholders in attendance expressed support for an independent inspection system for two key related reasons: 1) it would help "level the playing field" between builders who follow the energy codes and those who may currently offer lower bids that would not follow code provisions, and 2) it would help designers resist pressure from clients who might ask them to skirt around the code to reduce costs or for other reasons. On the other hand, some stakeholders noted that the self-certification system keeps costs lower and commented that independent inspectors may adhere to certain standardized interpretations of the energy code that do not account for customized designs, creating an administrative hassle.

Despite these differing views, most stakeholders agreed that additional outreach and education around the energy codes could help increase compliance rates and felt that whoever was responsible for code compliance verification should receive specific training on the energy codes. Stakeholders also agreed that compliance and enforcement mechanisms should take place early enough in the process to ensure that problems could be fixed before the costs became too high.

### 4.3.2. Rutland

The Rutland meeting, with about 20 attendees represented a very rich cross-section of stakeholders from a range of relevant professions, including:

- Architects
- Builders/General Contractors
- Remodelers
- Vendors/Building Suppliers

- Subcontractors (windows, insulation, etc.)
- Fuel Dealers
- Energy Auditors
- Weatherization Agencies
- Nonprofit Housing and Community Development Agencies
- Town Energy Committees
- Regional Planning Commissions
- State Agencies

A key theme to emerge from this meeting was the need to engage in additional outreach and education around the energy codes. Stakeholders identified a number of complementary pathways to providing this education, including providing training and handouts to building suppliers, education and outreach through town officials and energy committees, inclusion of energy code information as an attachment to official mailings, and access to online trainings.

Stakeholders also suggested working within existing systems to increase code compliance rates, and adding additional compliance mechanisms incrementally if necessary. For example, several stakeholders proposed tying energy codes to existing zoning regulations that have been adopted in many Vermont cities and towns. It was also suggested that independent code inspections could be layered on as a first step through random selection, rather than requiring independent inspections of every project going forward. Stakeholders also expressed support for broadening the focus of energy code compliance activities to existing home remodeling, in addition to new construction.

Additional themes from both stakeholder meetings can be found in the meeting minutes attached in the Appendix to this Plan.

## 4.4. Final Stakeholder Meeting

A final stakeholder meeting was held in Montpelier on December 14 to review a draft of the Vermont Energy Code Compliance Plan. Invitations were sent to the entire list of 2800 stakeholders who had received the original stakeholder survey, plus certain additional key groups such as the Vermont League of Cities and Towns (VLCT) and the Vermont Energy Climate Action Network (VECAN). Approximately 50 stakeholders attended the meeting. Attendees once again represented a broad cross-section of the building industry, including:

- Architects
- Engineers
- General Contractors
- Subcontractors
- Building Inspectors
- Utilities (including Efficiency Vermont)
- Weatherization Assistance Programs
- Town officials
- State agency officials (including DPService, DPSafety, VHFA)
- Regional efficiency organizations

The meeting consisted of presenting and explaining each recommendation in the plan and discussion and feedback from the stakeholders. Key themes that emerged from the stakeholder discussion included the need to reach out to key industry groups going forward, such as Associated General Contractors of Vermont (AGC), the Vermont Chapter of the American Institute of Architects (AIA), ASHRAE and the Vermont Chapter of the International Code Council (ICC). Stakeholders also noted that where possible, efforts should be made to educate the broader public about the energy codes so they would not be misled about RBES or CBES requirements. Stakeholders were also informally polled by a show of hands to gauge their interest in participating in an Energy Code Compliance Coalition, and a large number showed positive interest. Finally, several stakeholders expressed their support for strong energy code enforcement mechanisms and it was suggested that these issues be discussed once an Energy Code Compliance Coalition had formed.

## 4.5. Findings

Taken as a whole, findings from the preliminary research and outreach prior to the development of the Energy Code Compliance Plan suggest that there is support among key stakeholders for pursuing increased energy code compliance rates. From the non-scientific survey that was conducted, more than half of the stakeholders expressed support for all compliance options presented, including self-certification. Feedback from both the stakeholder survey and in-person stakeholder meetings suggested greatest support for working within the existing system to increase compliance rates and exploring additional elements on a step-by-step basis if necessary. At the same time, stakeholders did express support for certain additions, such as requiring energy code compliance as a condition of issuing building permits or certificates of occupancy, as is the case currently for commercial projects in Vermont and which is the mechanism used in all locations outside Vermont that were examined.

Regarding the question of whether to require independent inspections, a number of stakeholders expressed a slight preference for working within the current system, noting the cost advantage and the low administrative burden. However, the independent inspection option still received a favorable rating overall, and several stakeholders noting it could “level the playing field” by ensuring all designers and builders would follow code and preventing undercutting, while also removing them from the awkward role of having to enforce the code with their own clients. As an intermediate position between self-certification and requiring independent inspection of all buildings, it was suggested that projects could be randomly selected for inspection by an independent official or private entity.

Preliminary research and stakeholder input also indicated that there were several options for increasing code compliance under the current system. Stakeholders placed considerable emphasis on the need for additional outreach and education around the energy codes, highlighting multiple paths that could be pursued to spread information. In addition, existing frameworks at the local level such as town zoning rules and town plans presented further options for incorporating energy codes into various guidelines impacting the building sector.

Overall, the numerous creative ideas from stakeholders were an encouraging sign of support for energy code compliance efforts and suggested that pursuing multiple paths with continued stakeholder engagement would be the most promising way to achieve energy code compliance goals.

# 5. Cross-Cutting Compliance Issues

While residential and commercial energy code compliance pathways and approaches are generally distinct, there are still quite a few similarities. Both these common approaches and then the unique approaches are covered in each of the following four sections: measurement and evaluation, leadership and policy, outreach and education, and resources and funding.

Throughout this Compliance Plan, specific recommendations are provided. Recommendations include a "priority" level (i.e., critical, high, medium or low) and a rough subjective estimate of an annual "budget" that would be required. Many of the recommendations require new position functions in order to accomplish that particular task, and these are noted as "position function". This clearly outlines what recommendations would be most effectively completed by new position functions and what recommendations would come at an additional incremental cost. It is important to note that new position functions could take a variety of forms (with-in and/or outside state government) and that thinking "outside the box" likely will be required to fund any new position functions due to state budget pressures.

## 5.1. Residential and Commercial Commonalities

Common opportunities and challenges for residential and commercial energy code compliance approaches include:

- dedicated energy code positions
- development and support of a standing coalition of interested individuals and organizations in an Energy Code Compliance Coalition
- outreach and education activities
- compliance verification initiatives
- enforcement approaches
- compliance tracking and reporting strategies
- evaluation
- sustainable funding

These aspects are covered in more detail below.

## 5.2. Scope: New Construction & Renovations

The recently adopted 2011 RBES and CBES are both applicable to additions, alterations, renovations and repairs, in addition to all new construction. While this is generally consistent with previous commercial requirements, renovations, as well as new construction of 500 square feet or less, are a new scope for residential buildings. Achieving 90% compliance for new construction will be difficult, but renovations--especially to residential buildings--pose new and significant challenges. This plan prioritizes the development of a compliance process and infrastructure to ensure high rates of compliance for new construction. This approach is consistent with the state's strong interest in ensuring the energy efficiency of new buildings, with a focus on the life cycle of buildings and the lost opportunity of energy savings that would accrue if a new building was not built to meet the applicable energy code. As the process and support mechanisms are developed, the code compliance leadership should expand the focus to include residential renovations and develop initiatives to address these more specifically over time. While the recommendation here is to start

with new construction, it by no way diminishes the importance of renovations and their potential impact on energy savings. Lessons learned with new construction can be applied to renovations, but completely new approaches will also need to be developed as a much broader net will need to be cast to prioritize and address renovation projects. The recommendation is to address new construction first, and then to follow with the development of a plan for energy code compliance for renovation projects, while continuing to educate the construction industry that renovations are now part of the energy code.

***Recommendation:***

- **Chronological focus of efforts and resources on increasing compliance rates should be as follows:**
    - **New construction: commercial and residential *(Priority: Critical)***
    - **Renovations: commercial *(Priority: High)***
    - **Renovations: residential *(Priority: Medium)***

## 5.3. Multiple Paths to Compliance

There is not one path that most residential or commercial buildings will follow that provides a single opportunity to ensure compliance; therefore, there are several paths to consider. A single project may be affected by one, several or none of the following approaches:

- participating in an Energy Efficiency Utility (i.e., EVT, VGS or BED) program;
- financing through a lender;
- applying for a building permit (for residential: in a town that requires a building permit) or under the purview of a state permit review process (Act 250, DPSafety.)

Vermont will need to consider each one of these paths and develop mechanisms to ensure energy code compliance in order to achieve the 90% goal. This Compliance Plan addresses each of these paths.

# 6. Measurement & Evaluation

Ongoing monitoring and assessment of compliance activities and compliance rates is essential for meeting the ARRA target of 90% Compliance. Evaluating the effectiveness of all of the other policy, outreach and educational efforts is critical to ensure that the desired results are achieved in the most cost-effective manner.

## 6.1. Compliance Tracking & Reporting Through the Property Transfer Tax Return System

Vermont's Property Transfer Tax Return (PTTR) system is utilized daily by lenders, attorneys, town clerks and others to record and monitor the transfer of properties throughout Vermont. While most (~60%) transactions are still recorded by paper, use of the internet-based electronic system is growing and an optical scanning system is now used to upload these paper copies into a complete web-based system. This system is familiar and established and appears to provide a platform for tracking and monitoring energy code compliance in Vermont buildings. While further research is needed to determine implementation details, preliminary investigation indicates promise for using this existing system to monitor energy code compliance, for both residential and non-residential buildings.

In order to capture as much of the code compliance data as possible, in addition to sending energy code documentation to the DPService, as specified in current law, builders, architects, town clerks or others could fill in the appropriate fields in an "Energy Performance" section of the PTTR database. (The RBES/CBES certificate would still need to be filed with the town clerk and posted in the building.) Data on code compliance rates could then be pulled from the PTTR database for tracking and reporting purposes and supplemented with data from other sources to build out the compliance picture.

If use of the PTTR to track energy code compliance is determined to be viable, appropriate legislative or other permissions should be sought, the system will need to be updated with a new "Energy Performance" section, new forms should be produced, integration of this new section will need to be included in training, instructions, and fine schedules, and education on its presence and use will need to be provided to users. Despite a good deal of work needed to enhance the PTTR system, piggy-backing onto this existing system to record and track energy code compliance will be vastly more efficient than creating some sort of new tracking system.

***Recommendation:***

- **Work with the Vermont Department of Taxes to add a new "Energy Performance" section to the PTTR website. This section should include check boxes for recording of compliance with CBES or RBES (including design, interim and final documentation) and also allow for future recording of existing building energy rating/labelling, and include a mechanism for regular tracking and reporting. *(Priority: High. Budget: $10,000/year 1.)***
- **DPService should then establish a system for regularly monitoring the PTTR for documentation of compliance with RBES and CBES and enforce the energy code by**

**following up with those who are missing energy code documentation.** ***(Priority: High. Budget: Position function.)***

## 6.2. Measuring Progress Towards 90%

As the responsible Vermont entity for code compliance, the DPService is obligated to work towards demonstrating 90% energy code compliance to the 2011 adopted codes by 2017. To ensure that progress is being made and to enable adjustments along the way, periodic evaluation and on-going tracking are critical. Annual check-ins using the PTTR system can provide some indication of progress and could be used as the basis for any periodic reporting the U.S. Department of Energy (DOE) requires. Additionally, in 2017, the DPService should plan on another full residential and commercial Market Assessment Study to measure the progress towards 90% compliance. Since such a Study is already planned as part of the regular evaluation activities, the additional costs for determining code compliance rates should be treated as an incremental cost over these already-budgeted costs.

***Recommendation:***

- **Monitor the PTTR system and work to enhance its use and accuracy as an indicator of energy code compliance with a goal of transitioning over to this system in the future if the Market Assessment Studies are able to validate the results and capture-rate of the PTTR system.** ***(Priority: High. Budget: Position function + $10,000/year.)***
- **Consider applying the DOE's Building Energy Code Compliance protocols[16] (modified to IECC 2009) to the current Market Assessment Study results to determine Vermont compliance rates utilizing the uniform national approach. Consider including this approach in future Market Assessment Studies, as well.** ***(Priority: Medium. Budget: $20,000 in 2014 and 2017.)***
- **As part of the DPService's planned future Market Assessment Studies of new residential and commercial buildings, add an incremental task to determine code compliance. Schedule the Market Assessments to complete in 2014 and in 2017 to ensure meeting the ARRA requirements. The DPService should engage an evaluator early enough to provide adequate time to perform field research and synthesize compliance results in 2014 and 2017.** ***(Priority: Low (currently, but high in 2014 and 2017). Budget: $150,000 incremental costs in 2014 and 2017.)***
- **Circuit rider performs field verification and the associated documentation to assess compliance on an ongoing basis.** ***(Priority: Medium. Budget: Position function)***
- **The DPService and the Energy Code Compliance Coalition should consider the use of periodic surveys as discussed in the U.S. DOE's Building Energy Code Program Manual "BECP Manual" to provide additional information on progress towards compliance.** ***(Priority: Low. Budget: $20,000/years 2103 and 2016.)***

## 6.3. Compliance Tracking - Commercial

DPService should institute a tracking process that can document the level of compliance throughout the building industry in Vermont. The tracking process should include each step of the process by tracking:

[16] See http://www.energycodes.gov/arra/compliance_evaluation.stm.

1. The COMcheck software documentation report submitted with the Building Permit,
2. Inspection certifications such as the U.S. DOE energy code compliance checklist,
3. The Compliance Certificate submitted to DPService at construction completion, and
4. The DPSafety final occupancy inspection checkout sheet.

With these documents in place and sporadic inspections to verify the documentation reflects the actual buildings, Vermont will be able to determine the level of energy code compliance and for the benefit of the building owners in the state.

***Recommendation:***

- **Determine whether using the PTTR database could provide a vehicle for this tracking with some modifications. If not, review the current tracking database in use by the DPService and the DPSafety and evaluate for capability to track energy code compliance. Add fields that would enable random selection and tracking of projects for compliance review and track the results of those reviews in that database. *(Priority: Medium. Budget: $15,000/year 2.)***

## 6.4. Training/Outreach Assessment

Understanding how effective the current trainings and outreach and educational materials are should be a priority before spending a lot more budget to grow and expand current activities. An assessment of current activities and materials will help determine what is needed going forward.

***Recommendation:***

- **Assess the current energy code training activities to determine adequacy of methods, materials and reach into the marketplace, opportunities for future training (including partnering with private-sector businesses, municipalities, non-profit organizations, other state agencies and others), locations for future trainings, and outreach needs. Develop a training plan. *(Priority: High. Budget: $20,000/year 1.)***
- **Assess the current Residential Energy Code Handbook and any other code support materials to determine effectiveness, and then make changes and improvements accordingly. *(Priority: Medium. Budget: $20,000/year 2.)***

# 7. Leadership & Policy

In order to meet the 90% compliance goal, Vermont will need to rely on some key state agencies to play important roles. Although the DPService is the designated energy code lead the Department will also need to rely on multiple market actors to step up and participate in this effort. This leadership, combined with policies to encourage compliance, will serve as the driving force toward 90% compliance.

## 7.1. Energy Code Compliance Coalition

In order to foster the broad support necessary to achieve 90% code compliance it is essential to establish a collaborative of engaged stakeholders to further develop, refine and support the strategies outlined in this plan. This "Energy Code Compliance Coalition" will provide a forum for stakeholders to discuss and act on energy code compliance issues. Chaired and led by representative(s) from the DPService and the DPSafety, should include key industry representatives such as: Associated General Contractors of Vermont (AGC), the Vermont chapter of the American Institute of Architects (AIA), the Vermont chapter of the American Society of Heating, Refrigerating and Air-Conditioning Engineers (AHSRAE), the International Code Council Building Safety Association of Vermont (ICC), the Home Builders and Remodelers Associations (HBRA), green building groups, as well as other key stakeholders. The Coalition could advise on what can realistically be implemented state-wide and how to prioritize and carry out the tasks necessary to ensure greater compliance with Vermont's residential and commercial energy codes. Further, the coalition could provide ongoing support for DPService and the overall efforts in advocacy, outreach, and technical areas and could also advise on future code updates.

Based on experiences in other states, the Coalition may take two years or more to coalesce into a strong working group that engages with peers and works within the industries represented by members to make significant inroads in energy code compliance. Throughout this compliance planning process, stakeholders have expressed a strong interest in continuing to be involved energy code compliance efforts. Stakeholder outreach meetings have been well attended, and many stakeholders expressed interest in participating in such a coalition when polled informally at a meeting to review a draft of this plan.

### 7.1.1. Coalition Roles

The Coalition will play a crucial role in guiding the implementation of this plan. As part of that work, the Coalition will provide further research and develop broad support for necessary code compliance policy, programmatic and other initiatives that will increase code compliance. DPService would then be in a position to oversee and influence many of these initiatives, similar to a board-staff relationship in many non-profit organizations. Such initiatives may include:

#### *A Clearinghouse on Code Information*

The Coalition serves as an authoritative source for code-related information.

### *Targeted Outreach*

Using first-hand knowledge of how to reach specific market actors and what issues compel them, the Coalition can be well-positioned to craft and support targeted outreach campaigns.

### *Securing Funding for Projects*

Through its expertise and connections, the Coalition could work to help the DPService identify and possibly secure future funding.

### *Ongoing Compliance Reviews*

The Coalition could assist the DPService in monitoring statewide compliance rates and recommend activities and strategies targeted at addressing deficiencies identified in compliance studies.

### *Consider, and Develop Support for Policy Initiatives*

Changes in state policy could be considered and developed by the Coalition. This would enable the development of industry support for initiatives before these are brought to the Legislature. The Coalition's input would be especially useful on complex and multifaceted issues.

### *Develop an Energy Code Ambassador Program*

A program to develop energy code ambassadors could pull from various sources, including: Building Performance Institute (BPI) contractors, Town Energy Coordinators, local environmental advocates, community leaders, and others to promote energy code compliance at local cities and town and commission meetings, schools, farmers markets, fairs and other venues[17]. With guidance from the Coalition, staff could follow through to help identify, train and support energy code ambassadors.

### *Recommend Future Code Updates*

When it comes time to update the current version of the energy code, the Coalition could serve the DPService in guiding the timing of the updates, recommending additions or modifications to the national model code to better suit it to Vermont, and suggesting the most effective stakeholder process.

***Recommendation:***

- **Create, support and engage regularly with an Energy Code Compliance Coalition including key stakeholder representation.** ***(Priority: High. Budget: $10,000/year)***

## 7.2. Compliance Verification

There are a number of important market actors that can assist with enhanced code compliance.

### 7.2.1. Energy Efficiency Utilities

Currently Efficiency Vermont, Vermont Gas and the Burlington Electric Department (collectively referred to as Vermont's "Energy Efficiency Utilities") all offer programs supporting the adoption of beyond code energy efficiency measures in new construction. Energy code compliance documentation is required for participants in the Vermont residential ENERGY STAR Homes and Code Plus energy efficiency services. Currently, some Vermont commercial energy efficiency programs do not require participants to demonstrate compliance with code minimum energy efficiency levels in order to receive funding. Stakeholders indicated that they look to these energy

[17] An example is the ICC/BCAP ACAP Project, see http://bcap-ocean.org/news/2010/september/21/energy-code-ambassadors-update-idaho-illinois-and-more.

efficiency programs to support compliance and promote increased levels of efficiency. A minimum requirement that projects receiving ratepayer-funded incentives demonstrate compliance with the applicable energy code should be established for all energy efficiency programs operating in the state.

***Recommendation:***

- **Require consistent energy code documentation in order to receive incentives through energy efficiency programs offered by the Energy Efficiency Utilities (EVT, VGS and BED). *(Priority: High. Budget: Position function)***

### 7.2.2. Act 250

While all buildings constructed in Vermont are supposed to comply with RBES and CBES, including projects that go through the Act 250 review process, there is not a consistent energy code plan review or enforcement mechanism in place to ensure full compliance of all projects.

For Act 250 projects, one of the issues with non-compliance is that a permit is typically issued before the project breaks ground with little follow-through verification of compliance upon completion. Efforts should be undertaken with the Vermont Natural Resources Board to determine an effective compliance mechanism to ensure submission of energy code documentation post-construction. The state of Vermont has the right to inspect any Act 250 project regarding permit compliance as a general permit condition.

Additionally, a state agency (such as the DPService) could review Act 250 applications to determine whether a project meets Act 250 energy efficiency requirements.[18]

***Recommendation:***

- **Consider conducting inspections of residential and nonresidential Act 250 projects as part of the existing mechanism that is already in place but is not utilized. *(Priority: High. Budget: $50,000/year)***
- **Ensure consistent documentation of RBES and CBES compliance as a condition of every Act 250 project. Work with the Vermont Natural Resources Board to institute this policy and establish a compliance verification mechanism within the Act 250 review process to ensure timely disclosure of this requirement up front and request energy code documentation upon project completion. *(Priority: Low. Budget: Position function)***

### 7.2.3. Modify RBES Certificate

While the current RBES legislation allows for issuing the energy code certification by a builder, a licensed professional engineer, a licensed architect or an accredited home energy rating (HERS) organization, it is rare when anyone but the builder signs the certificate due to liability concerns. The architect, engineer or HERS organization generally feel that since they have not been present during the construction to observe that every cavity is filled with insulation and every crack and joint air sealed, they don't want to take on the liability if the homeowner finds a deficiency later. The RBES certificate could be modified to add an additional signature for the HERS compliance path to encourage others to sign it by including language such as "to the best of my professional ability and

[18] Act 250 residential projects must meet RBES and no individual project review is allowable pursuant to Vermont statute, given the presumption of compliance per legislation.

based on what was observable based on the HERS score that has been determine to achieve RBES...".

Opening the certificate up to more than just the builder signing it may allow a greater use of others to assist with compliance. It would also help alleviate some of the issues that have arisen with lawyers looking for missing RBES certificate in subsequent sales of a new home. If the builder is no longer available to provide the signature (e.g. left the state, business is defunct, etc. as has occurred in some cases), currently, no one is willing to sign the certificate. With modified language, others may be willing to inspect the home and sign the certificate to enable these subsequent sales to proceed.

The RBES certificate could also potentially be used to track energy code compliance if it was set up as a web-based application and required to be uploaded to the internet after completion. However, there would be many details that should be explored before moving in this direction.

***Recommendation:***

- **Modify the current RBES language to allow for a qualified person (certified inspector, architect, and engineer) to sign the RBES certificate while limiting their liability. *(Priority: High. Budget: Position function.)***

### 7.2.4. Compliance Verification – Commercial

It is typically the intent of design and construction professionals working on commercial buildings in Vermont to comply with the energy code. The current documentation requirements for CBES include self-certification of design compliance with code and that the construction was in accordance with the building's design. In the stakeholder meetings, some design professionals indicated that self-certification puts them in the role of enforcing the code when owners ask for below code construction. In addition, lack of enforcement provides an uneven playing field with non-code compliant designs typically costing less than energy code compliant buildings.

In order to support design professionals in their efforts to design to code and to ensure that cost reductions and construction short cuts do not result in non-compliant buildings it is essential that independent verification of code compliance be instituted as a standard practice in Vermont. This section covers how this can be accomplished.

As part of the US Department of Energy (DOE) Building Energy Code Program (BECP), the Pacific Northwest National Laboratory (PNNL) report "Measuring State Energy Code Compliance" (March 2010) established a federally-accepted protocol for states to verify 90% energy code compliance. This protocol includes verification of the design through COMcheck software and documentation of inspections during the construction phase using a checklist designed by PNNL.

***Recommendation:***

- **Require that COMcheck documentation be included on the plans (not in specifications or as a separate submission) as part of the building permit documentation. This additional documentation will help ensure that the critical code requirements for the building have been reviewed and documented in the design of the building. *(Priority: Critical. Budget: Position function.)***

- **Develop compliance verification mechanisms, including the following:**

- **Positions noted in section 9 could provide periodic review of plans, specifications, construction and compliance documentation to verify compliance. *(Priority: High. Budget: Position function)***
- **As noted elsewhere a pool of certified third-party compliance professionals could be deployed to verify and document code compliance. *(Priority: Medium. Budget: $75,000/year 3.)***

### 7.2.5. Builders

The current builder self-certification approach to RBES is not likely in its current form to be sufficient to support the 90% compliance goal for meeting both technical and administrative requirements of the energy codes. While it appears that more than two-thirds[19] of Vermont homes have historically been built to the previous energy code, the number of code certificates that have been filed is a much smaller proportion. With the new more stringent 2011 energy code now in place, the bar has been raised on the technical standards. New approaches will need to be implemented on multiple fronts in order to meet the 90% compliance goal. While some of these activities have been discussed already in other sections, approaches specific to builders are addressed below.

#### *Builder Self-Certification for Registered/Certified Builders (Voluntary Program)*

As was reported at both stakeholder group meetings, the Home Builders and Remodelers Association of Vermont has developed a voluntary program they are prepared to roll out that would promote builders who sign up and commit to complying with a number of standards when building a new home, including RBES. If homebuyers were made aware of the distinctions between registered or certified builders and sought these out, this program could be an effective way of using information and the marketplace to drive energy code compliance.

***Recommendation:***

- **Support the Homebuilders and Remodelers Association (HBRA) in their development of the Registered/Certified Builder Program. *(Priority: Medium. Budget: $0)***

#### *State Law to Register Builders*

The Home Builders and Remodelers Association is working with the Vermont Attorney General's Office to consider working with the Vermont Legislature to introduce a bill that would require builder registration in order to perform construction in Vermont.

***Recommendation:***

- **Support the HBRA in their effort with the Vermont Attorney General's office to implement a program to register builders in Vermont. *(Priority: Medium. Budget: Position function.)***
- **Include on the builder registration form a statement to the effect that the builder promises to follow the laws of the state and use this as a means of educating and enforcing energy code compliance. *(Priority: Medium. Budget: Position function.)***

[19] The report is available on the website of the U.S. Department of Energy's Building Energy Codes Program: http://www.energycodes.gov/publications/research/documents/codes/vt_rbes_analysis_061009.pdf

### *Builders' Code of Ethics*

In the two potential builder registration programs mentioned above, there is the opportunity to encourage the organizers to include a statement in the registration process that asks the builder to commit to following certain practices, including building to the energy code. Developing the language for such a "code of ethics" and floating it by the organizers may make it easy for them to consider its inclusion.

***Recommendation:***

- **Develop a code of ethics to incorporate into the HBRA Registered/Certified Builder Program and any state law that registers builders that includes reference to compliance with state laws, including energy codes. *(Priority: Medium. Budget: Position functions.)***

## 7.2.6. Lender, Realtor, Attorney & Appraiser Checklists

Lenders, Realtors, appraisers and attorneys are involved with upholding Vermont and Federal laws. However, it is unknown how many regularly check for energy code compliance as part of providing a mortgage on a new home or financing of a new commercial building. If all lender, Realtor, appraiser and attorney mortgage/financing materials (both for pre-qualification approval and at closing) included a check-box indicating asking for evidence of energy code compliance as part of their materials—and they passed that requirement down the line to the loan recipient—this could go a long way towards meeting the 90% goal.

***Recommendation:***

- **Work with the Vermont Bankers Association, Vermont Mortgage Bankers Association, Association of Vermont Credit Unions, Vermont Bar Association, the Vermont Association of Professional Real Estate Appraisers and the Vermont Association of Realtors to educate their members about the importance of ensuring that buildings they list, appraise, title search, finance and sell comply with Vermont law. Aid them in adding a check box to their pre-qualification letters, closing documents and checklists that informs borrowers about energy code requirements, and then records whether an energy code certificate has been provided. *(Priority: Medium. Budget: Position function)***

## 7.2.7. Third-Party Energy Code Inspectors

Meaningful enforcement of energy code compliance would generate adequate demand to foster a market-based infrastructure of third-party energy code compliance inspectors for both residential and commercial buildings. Qualified individuals would need to be trained, pass a test, attend regular continuing education courses and commit to quality assurance in order to uphold a certification to conduct code inspections. Certified Energy Code Inspectors could be home inspectors, energy specialists, builders, architects, engineers, commissioning agents and others who are interested in offering another line of business. These individuals could complete design compliance documentation based on plans provided by others, verify that buildings are constructed in accordance with the code compliant design documents and provide additional testing as required to demonstrate compliance with performance based code requirements. Third- party Energy Code Inspectors should be able to sign off on the code compliance certificate (see below).

In order to ensure consistent code enforcement across third-party providers, the DPService should include projects receiving third-party compliance verification in enforcement and evaluation samples.

***Recommendation:***

- **After development of a meaningful code enforcement system and determination that there will be adequate demand to justify the investment, work to develop and then support the administrative components of a third-party energy code inspection program.** ***(Priority: Medium. Budget: $100,000 over years 2, 3 and 4)***
- **In year 3, after establishment of the third-party energy code inspection administrative program, reach out to potential participants and building-related associations and work cooperatively to recruit a pool of certified third party compliance professionals to verify and document code compliance and support them through a training, education and certification initiative.** ***(Priority: Medium. Budget: $75,000 in year 3).***

## 7.3. Enforcement

Enforcement of energy codes means that a body with some authority is watching to make sure that building comply. A number of players and mechanisms are poised to play an energy code enforcement role in Vermont.

### 7.3.1. Towns' Roles

Towns and cities that desire a role in enforcement through their current permitting, zoning and/or energy coordination activities are in an excellent position to enforce energy code compliance. Through existing permit processes and as a condition of issuing a Certificate of Occupancy, towns could require documentation of energy code compliance.

#### *Zoning & Building Permits*

Many Vermont jurisdictions already provide code enforcement and administration services, primarily in the areas of environmental or zoning regulation. Towns can require that an energy code compliance requirement be provided as part of a town zoning and/or building permit application.

#### *Notification of Applicants*

Towns should inform permit applicants early and often of the energy code requirements.

#### *Building Code Officials*

Currently, ten Vermont towns and cities currently employ building code inspectors. [20] Some of these inspectors look at existing buildings only, and most of these inspectors currently may not inspect for and enforce the energy code as part of their health, life and safety review duties. Subsequent versions of the IECC [21], as well as other non-energy related building codes, will require increased blower door and duct blaster testing for building air and duct leakage, as well as system or building commissioning capabilities. Building code officials may not be in a position to take on these new future responsibilities.[22] Either code officials will need to take on the training and certification to offer performance testing, or a third-party system of certified performance testing specialists will need to be put in place. The latter would seem to be more likely.

[20] See http://firesafety.vermont.gov/code/inspection_agreements.
[21] IECC 2012 requires blower door tests on every home. The current IECC update cycle occurs every three years. The next version is scheduled to be the 2015 IECC.
[22] Some of these building code officials are engaged with the ICC Building Safety Association of Vermont (BSA, at www.buildsafevt.org/).

### *Certificate of Occupancy*

Many Vermont towns and cities currently require a Certificate of Occupancy prior to habitation of a new building. This is an excellent opportunity to enforce documentation of energy code compliance. The DPService could provide model ordinance or bylaws for towns to adopt, if desired or needed, and then materials and templates that require documentation of the energy code.

### *Energy Committees*

Town energy committees and energy coordinators may wish to add energy code compliance documentation verification to their policy packages for jurisdiction-wide energy management.

***Recommendation:***

- **Inform permit applicants of the requirement to building to RBES or CBES as a condition for receiving a zoning and/or building permit;**
- **Work with towns to provide them with materials that could help them adopt and support a local Certificate of Occupancy; and**
- **For towns that require a Certificate of Occupancy, require documentation of energy code compliance prior to issuing a certificate of occupancy or issue a conditional Certificate of Occupancy, consistent with DPSafety's protocols in extenuating circumstances.**
- ***(Priority: Medium. Budget: Position function)***

## 7.3.2. Compliance Payments

Fines are currently levied for certain non-compliance through the DPSafety for commercial building code violations and by the Department of Taxes for missing and inaccurate information in the Property Transfer Tax Return (PTTR) reporting system. Compliance payments could be levied as a last resort for failure to follow energy codes in order to demonstrate that Vermont is serious about code compliance, but only after a concerted effort working with non-compliers to remedy sub-code buildings or fix a pattern of non-compliance. However, it is recommended that Vermont proceed cautiously with full consideration of the implications and impacts of compliance payments, including the amount and triggers for such payments.

***Recommendation:***

- **In order to enforce the legislative mandate for minimum energy efficiency levels administered through the adoption of energy codes, the state should explore the development of a plan for compliance payments in coordination with the Departments of Public Safety and Taxes, and then publicize and levy them in order to enforce energy code compliance. Compliance payments should only be levied as a last resort. *(Priority: Medium. Budget: Potential minimal revenue source/year)***

## 7.3.3. Certificate of Occupancy

Almost every other state in the U.S. has a Certificate of Occupancy mechanism in place to ensure minimum building standards are in place prior to occupancy. This is administered through a system of building code officials and typically is incorporated in general fire and safety building codes. This Certificate of Occupancy mechanism is the most effective leverage that zoning and building officials have to enforce fire, health, egress, energy efficiency, environmental and other codes and standards. Without a Certificate of Occupancy requirement in place, the options for enforcement are greatly diminished.

### *Residential Issues*

Some selected towns have chosen to put in place a Certificate of Occupancy requirement, but most Vermont towns have not. Legislating a statewide Certificate of Occupancy requirement that incorporates energy code documentation may meet significant resistance in the legislature and among Vermonters, which leaves most towns without a Certificate of Occupancy mechanism.

In the absence of a statewide Certificate of Occupancy, the DPService should work with interested towns to help them adopt a local Certificate of Occupancy mechanism that includes RBES. There may also be an opportunity in towns considering PACE (Property Assessed Clean Energy) financing requesting a small portion of PACE fees to support local town energy code compliance (or requiring compliance documentation as a part of participating in PACE). Developing a prepared package of templates and language around Certificate of Occupancy that towns could adopt would help grease the skids for adoption. Towns with an active Energy Committee may be more inclined to put in place a Certificate of Occupancy mechanism to ensure energy code compliance.

***Recommendation:***

- **The DPService (and the Energy Code Compliance Coalition) should consider next steps on developing stakeholder support for a local residential Certificate of Occupancy requirement, including the following.**
- **Work closely with the towns and cities (through VLCT and VECAN) to determine their potential interest in a local Certificate of Occupancy provision. *(Priority: Medium. Budget: Position function.)***
- **Develop support materials including drafting enabling ordinance or bylaws language for local town adoption and developing support materials for the towns to use in promoting and enforcing a local Certificate of Occupancy. *(Priority: Medium. Budget: $10,000/year 2.)***

### *Commercial Issues*

Vermont *does* have an equivalent to a Certificate of Occupancy mechanism in place for commercial buildings, administered through the DPSafety. DPSafety uses inspection forms that either grant or deny occupancy. CBES compliance is on the list of code requirements, but the DPSafety acknowledges that their over-burdened staff focuses primarily on the other safety related codes. As part of the development of this Code Compliance Plan, the DPService and the DPSafety agreed on a mechanism by which the DPService would review and follow up with commercial building projects that did not submit CBES documentation. Energy code non-compliance will not necessarily halt the construction process. The DPSafety will issue a conditional Certificate of Occupancy if an energy code compliance certificate is not present, and the DPService can then follow up with the building owner. As a last resort, an ability to levy compliance payments for non-compliance could serve as an effective enforcement mechanism for the DPService. However, compliance payments should only start to be levied after a period of time and some experience with the process to see whether this DPSafety and DPService cooperative energy code review is effective without having to impose compliance payments.

***Recommendation:***

- **Continue coordination efforts between the DPService and the DPSafety. Formalize the relationship wherein the DPService regularly reviews commercial project permit**

**applications and inspection reports and follows up with projects that lack CBES documentation.** ***(Priority: Critical. Budget: Position function.)***

### 7.3.4. Spot Inspections

As an effective means of letting the construction community know that their projects are being watched, code compliance position functions should include random inspections of residential and commercial projects. If five percent of projects were inspected annually, this should provide enough of a deterrent while not posing too much of a burden. These inspections should really be treated as an educational opportunity for builders and contractors, rather than a concerted attempt to seek out non-compliers.

***Recommendation:***

- **Conduct spot inspections of 5% of newly-permitted DPSafety or Act 250 projects each year.** ***(Priority: High. Budget: Position function.)***

### 7.3.5. State Agencies & the Commercial Sector

There is a limited commercial and industrial new construction market in Vermont with 103 new construction projects recorded in the 2007 Census Data. The market includes a significantly larger number of renovation and tenant fit up projects. However, at the same time the market segment is very influential in the economic picture of Vermont. The energy consumption of these new and renovated buildings has a long-term economic impact; reducing the energy costs of these buildings through increased code compliance will provide economic benefits for many years after construction is complete. The code compliance of these buildings will help ensure Vermont's businesses remain the efficient and competitive with businesses in other states.

The DPService has the responsibility to update the state's energy codes. All commercial construction in Vermont is required to be permitted by the DPSafety. The DPSafety also performs inspections of commercial construction and grants or denies occupancy for commercial buildings. These two departments have agreed to cooperate and share information regarding energy code documentation and permit applications. These agreements and the recommendations below are a solid first step to establishing an enforcement infrastructure in the commercial market. The DPSafety has also taken the initiative to add energy code information to its plan review check-off sheet located on its website. This coordination is essential and should continue to be fostered.

In order to reach a 90% compliance goal, the state must increase the enforcement of the current requirements and be able to document compliance. In order to accomplish this, the DPService will need to take responsibility for verifying documentation and for the enforcement of the code.

Note that the handful of towns and cities that have code inspection capabilities should implement energy code compliance programs similar to that recommended at the state level.

***Recommendation:***

- **The DPSafety should regularly work with the DPService to provide a list of the current permit applications under review along with the buildings database of currently-permitted (new construction and renovation) commercial projects.** ***(Priority: Critical. Budget: Position function.)***

- **The DPSafety and DPService should work to include verification of filed energy code compliance documents as part of its permit review process. Where deficiencies are found in energy code compliance documentation, these should be identified in the building permit documents and the DPService should be provided with copies of such documents. *(Priority: Critical. Budget: Position function.)***

- **The DPSafety and DPService should work to verify the posting of the required energy code compliance documents in projects receiving their occupancy inspection. They should note deficiencies on the inspection form and copy the DPService on all such documentation. *(Priority: Critical. Budget: Position function.)***

- **Follow up should occur on selected projects with deficient code documentation by contacting the building owner regarding deficiencies. *(Priority: High. Budget: Position function)***

- **Explore the possibility of allowing the State to impose compliance payments to increase the leverage needed to obtain the necessary documentation and come into code compliance. *(Priority: Medium. Budget: Position function)***

- **The DPService and DPSafety should work with towns and cities with plan review and code inspection capabilities to ensure that energy code compliance mechanisms are in place state wide. *(Priority: Medium. Budget: Position function)***

- **The DPService should periodically perform code compliance review inspections for projects with completed energy code documentation and should ensure that projects that did not complete the necessary energy code compliance documentation are in fact being designed and built to meet the code through a random inspection process. This effort could be performed by the Circuit Rider or could be subcontracted. The DPService does not currently have the staffing or funding resources to achieve the recommended level of energy code design and documentation enforcement. *(Priority: Medium: Position function)***

## 7.4. Additions, Alterations, Renovations or Repairs – Residential

With the implementation of the new 2011 RBES, the coverage of the energy code expands beyond just new construction and additions of more than 500 square feet, to all additions, alternations, renovations or repairs to an existing building, building systems or portion of the building (with a few exceptions[23]). This change represents a huge leap in coverage for RBES. Given that it is going to represent a significant challenge just to reach 90% compliance for new construction, attempting to ensure compliance of these other existing home renovations would seem to be an extraordinary challenge at this point in time. This Plan prioritizes the development of a compliance process and infrastructure to ensure high rates of compliance for new construction. As the process and support mechanisms are developed, these should consider renovations and expand to address them more specifically over time.

23 http://publicservice.vermont.gov/energy/ee_files/rbes/VT%20Energy%20Code%20Handbook_8%2025%2011.pdf, page 6.

Coordinating through existing channels will be the best way to grow compliance in the renovation market. Working with the infrastructure of BPI-certified Home Performance (HP) contractors, Weatherization Assistance Programs (WAP) initially would be a good start. Developing a plan for increasing coverage commensurate with budgets and enforcement resources within a few years would seem to be a good next step.

***Recommendation:***

- **Coordinate energy code outreach and education and compliance efforts with HP and WAP contractors.** ***(Priority: Low. Budget: Position function)***
- **Develop a plan through an RFP process to address the renovation market energy code compliance in 2014, after a few years of experience with implementation of the energy code for new construction.** ***(Priority: Low. Budget: $80,000/year 3)***

# 8. Outreach & Education

Outreach, education and training on both RBES and CBES are crucial to ensure future energy code compliance. The plan recommends expanding both the audience and delivery mechanisms for these activities. One of the key new messages is that the energy code now applies to additions, alterations, renovations and repairs of existing buildings in addition to new construction. The audiences and delivery entities include:

*Table 7. Outreach, Education and/or Training Products & Services by Audience*

| Audience | Products & Services |
|---|---|
| **Consumers** | • Outreach and collateral material from a variety of providers<br>• Energy Code Assistance Center support<br>• Reminders that additions, alterations, renovations, and repairs are now part of the energy code |
| **Design & Construction Professionals** | • Quarterly training sessions<br>• Provide access to code documents<br>• Energy Code Assistance Center support<br>• Reminders that additions, alterations, renovations, and repairs are now part of the energy code for all buildings |
| **Energy Code Compliance Coalition** | • Oversee outreach and education activities<br>• Foster relationships to increase engagement<br>• Help identify ongoing training and material needs |
| **Energy Efficiency Programs** | • Provide training<br>• Educate participants about importance of energy code compliance |
| **State Agencies (DPService and DPSafety)** | • Facilitate and support code education efforts<br>• Provide outreach to a variety of stakeholders<br>• Publish and maintain compliance materials on web site |
| **Towns & Cities** | • Outreach to increase awareness and knowledge of codes and increase engagement in outreach<br>• Provide code compliance materials and information regarding compliance requirements and enforcement to builders and consumers<br>• Support in development of local certificate of occupancy options<br>• Energy Code Assistance Center support |

| Audience | Products & Services |
|---|---|
| **Trade Allies** | • Provide outreach to increase engagement<br>• Training to raise baseline sales practices to code<br>• Energy Code Assistance Center support<br>• Request from Trade Allies:<br>o Training support (funding, hosting, outreach)<br>o Provide materials to design and construction professionals and consumers |
| **Utilities** | • Provide materials in bills<br>• Reach out to customers with new meters regarding importance of code compliance |

Many market actors require training in order to effectively understand the benefits of and their role in supporting the code as well as knowing the details of the code. The following sections outline activities needed and/or provided by the various groups. This plan assumes that any new position functions and the Energy Code Coalition have an active role in advancing the education and outreach activities addressed below.

## 8.1. Training of Design and Construction Professionals

The building design and construction community requires continual training on both RBES and CBES to make sure that everyone understands the energy code and how to apply it to their next project to ensure future energy code compliance. Informed by the training assessment (section 6.4) to understand what is working and what needs to be improved with the current training, materials should be updated and a total of at least eight trainings (split between residential and commercial) should be delivered in the four quadrants of Vermont on an annual schedule for design and construction professionals, coordinated and sponsored by trade allies, towns, cities, utilities and other market actors. Education and training of builders and construction officials should be a minimum part of any registration, licensing or other initiatives being proposed. With such training requirements in place, third-party market-based trainers could step in to offer these services without cost to the state.

***Recommendation:***

- **Assess the adequacy of the training activities, methods and materials as part of the evaluation process and update materials; (covered under section 6.4).**
- **Conduct at least four residential and four commercial trainings annually.** ***(Priority: High. Budget: $80,000/first year after new code adoption, $50,000/year two, $40,000/year for each year thereafter).***

## 8.2. Trade Allies

Increasing the knowledge and engagement of industry groups, construction suppliers and real estate professionals will increase the attention and resources devoted to code compliance in typical new

construction market transactions.

### *Industry Groups*

Key industry groups should be enlisted as private-sector partners to provide outreach and education on energy code compliance to their members. Examples of industry groups that should be engaged include the following:

- American Institute of Architects (AIA), Vermont Chapter
- Associated General Contractors (AGC) of Vermont
- American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), Vermont Chapters
- International Code Council (ICC) Building Safety Association of Vermont
- Home Builders and Remodelers Associations (HBRA)

These groups can play an important role in providing outreach and education on energy codes to their members. As a first step in engaging these groups, outreach should be conducted to explain the energy code compliance effort and provide copies of educational materials on Vermont's energy codes. Once brought on board, these groups could provide outreach and education to their members by distributing the educational materials, surveying their members on energy code compliance issues, and holding trainings around the state to ensure that members are aware of the energy codes and are following them accordingly. Encouraging and facilitating the engagement of these industry groups would be a low-cost approach to increase awareness of energy code requirements.

***Recommendation:***

- **Engage and partner with key industry groups such as AIA, AGC, ASHRAE, ICC and HBRA to encourage them to educate their members about the Vermont energy codes.**
- ***(Priority: Medium. Budget: Position function)***

### *Construction Suppliers*

Building suppliers, wholesale distributors and lumber yards can provide energy code books and supporting materials, sponsor trainings and provide other educational opportunities. Building supplier employees can be trained on the energy codes, so that they could serve as a technical resource to builders and as code ambassadors. By knowing more about the energy code, they would also more likely stock code compliant products and materials.

Estimators and sales people at the building supply outlets are key go-to resources who are regularly utilized by the building industry. These people could be trained to mentor to builders, subcontractors, homeowners and other building materials buyers to be sure they meet the energy code as they consider projects.

Developing Energy Code Mentors can be a good way to start to get at the energy code compliance issues with existing homes, as well. For commercial suppliers that are regional and not within Vermont, coordinating activities with regional groups such as the Northeast Energy Efficiency Partnerships (NEEP) may be one way to reach outside of Vermont’s borders and provide for commercial Energy Code Mentors.

***Recommendation:***

- **Engage and partner with building suppliers and lumber yards to increase their engagement.**
- **Identify and train key people at building supply outlets to become Energy Code Mentors, list them on a website as a resource, and promote them as local experts to builders, buyers, subcontractors and others.**
- **Work with NEEP to develop an Energy Code Mentor initiative for the region for regional commercial suppliers.**
- ***(Priority: Low. Budget: Position function)***

### *Realtors & Appraisers*

Little training is provided for real estate and appraisal professional licensing and continuing education on energy codes currently. Given the influence these professionals have in the building and financing sectors, there should be an effort placed on working with the commissions, boards, trainers and associations involved with real estate professionals and appraisers to incorporate information on RBES, CBES, compliance and enforcement.

***Recommendation:***

- **Engage with the Vermont Real Estate Commission, Vermont Board of Real Estate Appraisers, Vermont Office of Professional Regulation, Vermont Real Estate School Online, the Vermont Association of Realtors and the Vermont Association of Professional Real Estate Appraisers to review current training, licensing and continuing education materials and determine if there is current energy code compliance information included. Work to incorporate the newest information in existing materials and determine whether it is possible to create new educational materials for licensing and continuing education credits[24]. *(Priority: Medium. Budget: Staff duties+ $5,000/year)***

## 8.3. Towns & Cities

Vermont towns and cities are well positioned to provide outreach and education to builders, contractors and new building owners. Further, towns and cities may desire a role in enforcement, through their current permitting, zoning and/or energy coordination activities; these roles are addressed under the enforcement section.

### *Energy Committees*

There are 67 town energy committees currently listed on the Vermont Energy and Climate Action Network (www.vecan.net/member_list.php). However, *staff[25] report that there are really approximately 100,* and if you include towns with energy coordinators, approximately 150. These local committees could support code outreach and education activities by hosting training, providing outreach to design and construction professionals, trade allies and consumers and they may support the education of town officials.

[24] This may have value to communities, as the ISO Building code Effectiveness Grading Schedule assessing insurance risk based on municipal code capacity/capability.
[25] Johanna Miller from Vermont Natural Resource Committee in 11/12/11 e-mail to R. Faesy.

### *Vermont Energy Climate Action Network*

The Vermont Energy and Climate Action Network (VECAN, at www.vecan.net) is a network of state wide Vermont organizations with a mission to start, support and strengthen town energy committees. VECAN could promulgate outreach and education materials to the Town Energy Committees and may assist towns in obtaining funding to support outreach and training activities.

### *Vermont League of Cities and Towns*

The Vermont League of Cities and Towns (VLCT, at www.vlct.org) is a non-profit, nonpartisan organization that serves Vermont's municipal officials by providing:

- Educational workshops and consulting advice for municipal officials so that they can deliver excellent service to their citizens;
- Information for the public so that it can better understand local government;
- Support for legislation that strengthens local government;
- Comprehensive insurance coverage for municipalities; and
- A Municipal Assistance Center for consultation on a wide range of municipal issues.

The VLCT could serve as a conduit, liaison and ally with the Vermont towns providing education to increase their understanding of the energy code and its benefits. Some towns already are very supportive and engaged with the energy code. The knowledge and activities of these towns could be leveraged through the VLCT network to encourage and support others to take a more active role in supporting energy code compliance.

### *Towns with Zoning Permits*

Seventy-seven percent[26] of Vermont towns have zoning and may initially, or over time, be interested in providing administrative or enforcement roles for the energy codes. These towns have the opportunity to provide information on the energy code when applying for a permit.

***Recommendation:***

- **Coordination and Support: Reach out, engage and provide on-going support to VECAN, VLCT and the towns with zoning/building permits in the development and coordination of Town energy code compliance activities. *(Priority: Critical. Budget: Position function)***
- **Assisting Towns & Cities: Assist municipalities with establishing and enforcing energy codes in their jurisdictions, in alignment with their current zoning or other code project review or approval activities. *(Priority: High. Budget: Position function)***
- **Information at Time of Permit: Provide energy code books to all town offices to be given out when architects/builders/contractors apply for a zoning or building permit. *(Priority: Medium. Budget: Staff duties + $5,000/year)***
- **Town Web Sites: Encourage towns with web sites to post energy code information on them. *(Priority: Medium. Budget: Position function)***

## 8.4. Utilities

[26] http://www.dhca.state.vt.us/Planning/index.htm: select "Municipal Status Information" which is included under the heading entitled "Planning Resources".

Every new building that is connected to the electrical grid interacts with a distribution electric utility. When new electric meters are requested and scheduled for installation is an opportunity for providing information on Vermont's energy codes to new customers.

***Recommendation:***

- **Develop a brochure in coordination with the electric and gas distribution utilities that can be provided to all potential and new customers on RBES and CBES. Stock energy code materials at utility offices for customers seeking more detailed information. *(Priority: Medium. Budget: Staff duties + $5,000/year)***
- **Engage distribution utilities in outreach regarding code compliance for residential remodel through bill stuffers or other means. *(Priority: Low. Budget: Position function)***

## 8.5. General Education

### 8.5.1. Consumers

Increasing consumer demand for compliance with the state's energy codes is an important part of reaching compliance goals. Stakeholders within the building industry have noted that unless consumers are fully educated about code requirements, there is a risk that compliant builders may be undercut by competitors who are willing to forgo the code and offer a reduced price. In order to level the playing field, it is important for all consumers to know that the energy codes exist and that they apply to additions, alterations, renovations and repairs of existing buildings as well as all new construction. Consumers should understand that any designer or builder who does not comply with the energy code is violating state law.

A broad media campaign to educate consumers is unfortunately not possible given budget constraints. However, there may be other ways to educate the general public. Town energy committees can reach out to residents in their towns. Utilities can provide educational materials to their customers about the energy codes. Vermont's energy efficiency utilities (EVT, VGS and BED) can educate program participants about the energy codes as part of their outreach efforts. In addition, on a limited basis, it may be possible to conduct some statewide media outreach by using materials that have already been prepared by other states or the federal Department of Energy, which are intended to be adapted in individual states. These could then possibly be distributed through public service announcements (PSAs) or other low/no cost means if co-sponsored by others (e.g. building suppliers). Developing an effective strategy for outreach to consumers and the general public would be an ideal role for the Energy Code Compliance Coalition.

***Recommendation***

- **Explore ways to providing additional outreach to the general public regarding Vermont's energy codes and increase consumer demand for energy code compliance.*(Priority: Medium. Budget: $20,000/year)***

### 8.5.2. General Educational Materials

Materials that support the energy code need to be maintained, developed and made available to all involved in construction. The RBES Energy Code Handbook is relatively user-friendly and makes a point of avoiding too much code language that is contained in the RBES code. As building practices and construction materials change over time, the support materials and training presentation will also need to be updated. As well, if policies around energy code compliance were to change at a state or local level, materials will need to be developed to support these efforts.

Currently, there are few materials focused on consumers and informing them why the energy code is important with very little mention of the fact that additions, alterations, renovations, and repairs of existing buildings now also need to comply. Building public support for energy code compliance activities will be important in order to demonstrate support for funding to Legislators.

If the materials assessment mentioned in the Evaluation section 6.4 above finds certain aspects lacking, these materials will need to be developed.

***Recommendation:***

- **Assess the need for education and outreach materials as part of the evaluation process.**
- **Develop the necessary materials to support energy code design and construction, training and building consumer demand.*(Priority: Medium. Budget: Position function + $15,000/year)***

## 8.6. Energy Code Assistance Center

The Energy Code Assistance *Center (ECAC) currently serves as Vermont's resource for ene*rgy code technical assistance and materials. The ECAC is staffed by the Vermont Energy Investment Corporation (VEIC) to answer questions and send out code handbooks, certificates and other materials. Historically, the ECAC has primarily focused on *residential* energy codes. Going forward, it will be useful to broaden the scope of the ECAC in order to provide a single technical assistance resource to builders, contractors, designers and others for both the residential *and* commercial sectors. With available funding, the optimal arrangement would be to contract implementation of the ECAC to an organization like VEIC where there is a high likelihood of talking to a person when calling in. With more constrained resources, the two office-based staff proposed in this plan could provide the technical resources necessary to operate the ECAC. The ECAC is an important resource that needs to continue to be supported as the "go-to" place for energy code questions.

***Recommendation:***

- **Support the Energy Code Assistance Center for both residential and commercial sectors. *(Priority: High. Budget: $30,000/year)***

## 8.7. Commercial Sector Outreach and Education

The commercial code was implemented state-wide in 2007. In the commercial construction market licensed professionals are required to design and construct buildings in Vermont. Design professionals (licensed Architects and Engineers) consistently indicate that they design to meet or exceed code. However, anecdotal experience working in the commercial market has indicated that there are knowledge gaps that have persisted and may be increasing as the complexity of the commercial energy code increases. The pool of design professionals working in Vermont includes small in-state firms and larger national and international firms which are typically hired to design "show case" projects such as the University of Vermont's Davis Center. In the experience of the EFG Team, smaller, Vermont-based firms tend to have greater knowledge of the energy code and energy efficient design practices. This is at least partially attributable to the on-going energy code and energy efficiency outreach and education efforts in Vermont over the past decade.

Contractors working on Design/Bid/Build projects in the commercial market have responsibility to construct the buildings and systems as they are designed and therefore have lower code related training and education requirements. However, those contractors engaged in Design/Build projects

have a great deal more flexibility relative to the level of project documentation developed which can result in code compliance deficiencies due to a variety of issues such as suppliers providing equipment that doesn't meet code minimum efficiency levels, building envelope construction that does not meet code and mechanical system control sequences of operation that do not include code required algorithms. From market experience, small commercial general contractors, who often serve both the residential and commercial markets, may be less familiar with commercial code requirements and they may rely on small subcontractors who similarly work across markets and are likely to be less familiar with the stringent mechanical and lighting requirements in the commercial energy code.

Continuing to educate and update the industry on the applicable energy code is essential to maximize compliance. The current method of DPService sponsored training sessions throughout the state when the energy code has been revised is crucial to reaching a large portion of the architects, designers and engineers. In addition, DPService could sponsor annual CBES trainings in the four quadrants of Vermont to inform design and construction professionals about the code and provide a forum to discuss interpretation and building methods for code compliance.

Although the current trainings reach a significant percentage of in-state design firms, smaller contractors and out of state firms are unlikely to participate. Identifying opportunities for additional outreach to out of state design professionals, design/build contractors and smaller commercial contractors is recommended. The Energy Code Coalition along with the training assessment may provide additional insight in this area. As noted in Section 5, building suppliers and lumber yards may reach a number of the smallest commercial builders who are also likely to work in the residential market and should be equipped to provide commercial code information and notify customers about commercial code trainings. Ensure trainings are announced in all possible avenues – locations where zoning and building permits are obtained, EEU program correspondences, as well as the state organizations stated in Section 5 above.

***Recommendation:***

- **Update all state agency code information documentation and websites (i.e., Division of Fire Safety "State Adopted Code" list and the "Code Information Sheet") to include the CBES as a required code. *(Priority: High. Budget: Position function.)***

- **Ensure Permit Specialists at the Environmental Assistance Offices and the Department of Environmental Conservation "Permit Handbook" educate applicants about requirements for Energy Code compliance for construction permits and occupancy inspections. *(Priority: High. Budget: Position function.)***

- **DPService sponsors annual CBES training in each of the four quadrants of Vermont for builders and designers; (covered under section 7.1).**

- **Update the Vermont DPService "Building Energy Codes Program" webpage to include the commercial code information in the "Adoption Process", "Enforcement Process" and "Compliance Process" sections. *(Priority: Medium. Budget: Position function.)***

- **EEUs should provide energy code documents to design firms unfamiliar with the code engaged in high profile, green projects. *(Priority: Medium. Budget: $5,000/year 3)***

- **Identify opportunities to educate building owners about the benefits of using design firms who are familiar with Vermont's energy code.** ***(Priority: Low. Budget: Position function.)***

# 9. Resources & Funding

## 9.1. Energy Code Positions

It is essential to identify and secure funds to carry out and support the activities outlined in this plan. Without trained and dedicated personnel focused on energy code compliance, Vermont likely will not achieve the 90% compliance, especially given the newer more stringent energy codes that have recently gone into effect.

It is estimated that up to three positions will be required to support all of the compliance and enforcement activities identified in this Plan. This includes an in-field energy code circuit rider[27] to foster code outreach and education activities, along with in-field inspections. The other office–based positions would provide code interpretations and coordinate with other state agencies and towns on compliance review, provide enforcement follow-up, and address variances, in addition to other more general support activities. As mentioned earlier in the Plan, the character and placement of new positions could take a variety of forms (with-in and/ or outside state government) and thinking "outside the box" will be required to fund any new positions due to state budget pressures.

***Recommendation:***

- **Secure funding for additional position(s) to support outreach, compliance and enforcement activities, no earlier than FY 2014.**
    - **One energy code position *(Priority: Critical. Budget: $100,000/year)***
    - **Two energy code positions *(Priority: High. Budget: $200,000/year)***
    - **Three energy code positions *(Priority: Medium. Budget: $300,000/year)***

## 9.2. Budget & Funding

Vermont energy code compliance and enforcement will yield significant energy savings and greater security and comfort in our built environment, but will come at a cost. Without a budget to accompany the activities described herein, it will not be possible to provide the positions to oversee and manage energy code compliance and enforcement activities listed in this section, provide the regular review of filings and databases to determine compliance, support inquiries and determinations on energy code interpretation issues, and pursue enforcement actions. Creative thinking will be required to fund any new positions as there is currently no budget for the recommended additional positions in the DPService' FY 2013 budget, nor is there approval for hiring additional FTE's. Funding for any additional positions at DPService or elsewhere would need to be included in FY 2014 budgets.

Assuming that 2012 will not yet be fully staffed and the bulk of the energy code activity will ramp up in 2013 and later years, the following estimate of energy code activity is based on assumptions taken from the recommendations provided in this Plan. For 2013 – 2017 the estimated average annual

[27] A "circuit rider" could provide numerous energy code support services, including on-site education, distribution of code materials, small-group trainings, technical assistance, mentor training, spot inspections, compliance verification, etc.

cost would be $639,000. Total budget for all activities from 2013 – 2017 is anticipated to be $3.2 million.

*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** |

Potential funding mechanisms to meet these costs could include grants, increased permit fees,[28] participation of trade allies and energy efficiency programs in supporting outreach and compliance activities, redirecting US DOE State Energy Program (SEP) allocations, among others..

***Recommendation:***

- **Design and establish a multi-pronged funding plan to support code compliance and enforcement efforts that examines costs and potential revenues, including the following:** ***(Priority: Critical. Budget: Position function.)***
    - **Explore establishing an energy code compliance permit fee that is based on the building size (e.g., $.15/sq. ft.) to help defray the costs of implementing an energy code compliance and enforcement system (i.e., DPService energy code support staff, circuit rider, database maintenance, training materials, etc.).**
    - **In-kind contributions for trainings, printing and distribution of materials from the private sector (that benefits from selling more energy efficient products and services)**
    - **DOE funding for specific projects**
    - **Grants from foundation or other sources**

[28] Montpelier Stakeholder meeting participant indicated that Vermont's permit fees are well below those found in neighboring states.

# 10. Appendix

10.1. Energy Code Compliance Plan Timeline

10.2. Matrix of Recommendations and Market Actors

10.3. Other States Research Report

10.4. Survey Results