



SEE Action

STATE & LOCAL ENERGY EFFICIENCY ACTION NETWORK

Building Energy Codes Working Group Executive Summary Blueprint

Laura Richardson, John Hogan

Executive Group Meeting

July 15, 2011



SEE Action

STATE & LOCAL ENERGY EFFICIENCY ACTION NETWORK

The Building Energy Codes Working Group of the State and Local Energy Efficiency Action Network is committed to taking action to increase investment in cost-effective energy efficiency. This Blueprint was developed under the guidance of and with input from the working group. The document does not necessarily represent an endorsement by the individuals or organizations of Building Energy Codes Working Group members.

The Building Energy Codes Working Group Blueprint is a product of the State and Local Energy Efficiency Action Network and does not reflect the views, policies, or otherwise of the federal government.

If this document is referenced, it should be cited as: State and Local Energy Efficiency Action Network (2011). Building Energy Codes Blueprint. www.seeaction.energy.gov

Vision

- Qualitative: All buildings will be designed and constructed to the IECC 2012 and ASHRAE/IESNA 90.1-2010, and their compliance with those documents will be readily verifiable on an annual basis
- Quantitative: In 2020, all new buildings and renovations to existing buildings—in all 50 states—will be compliant with IECC 2012 and ASHRAE/IESNA 90.1-2010



Impact of Model Code Adoption

Where we are today:

Projected 2020 Energy Consumption for all Residential and Commercial Buildings

Working Group goals:

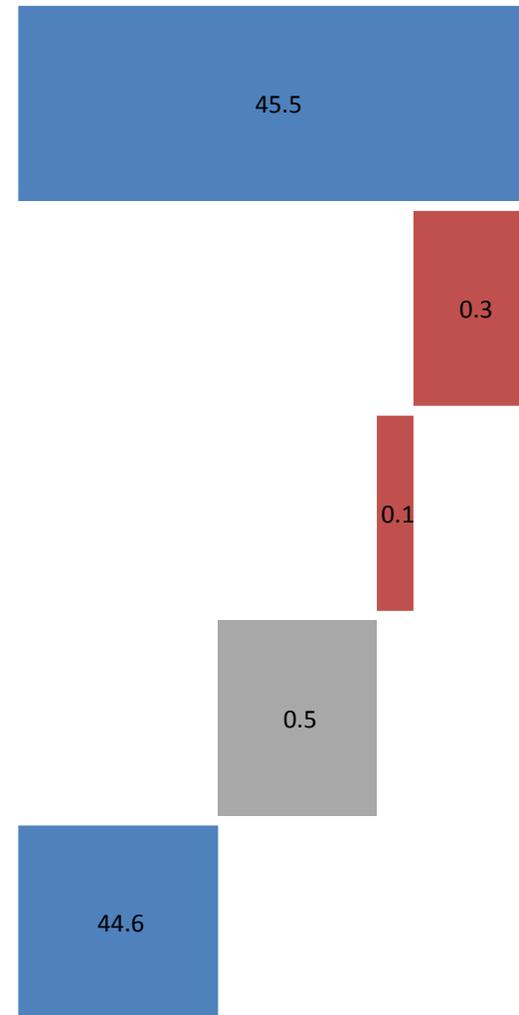
All states have adopted: 2009 IECC & ASHRAE/IESNA 90.1-2007 by 2015, 2012 IECC & ASHRAE/IESNA 90.1-2010 by 2020

Scope:

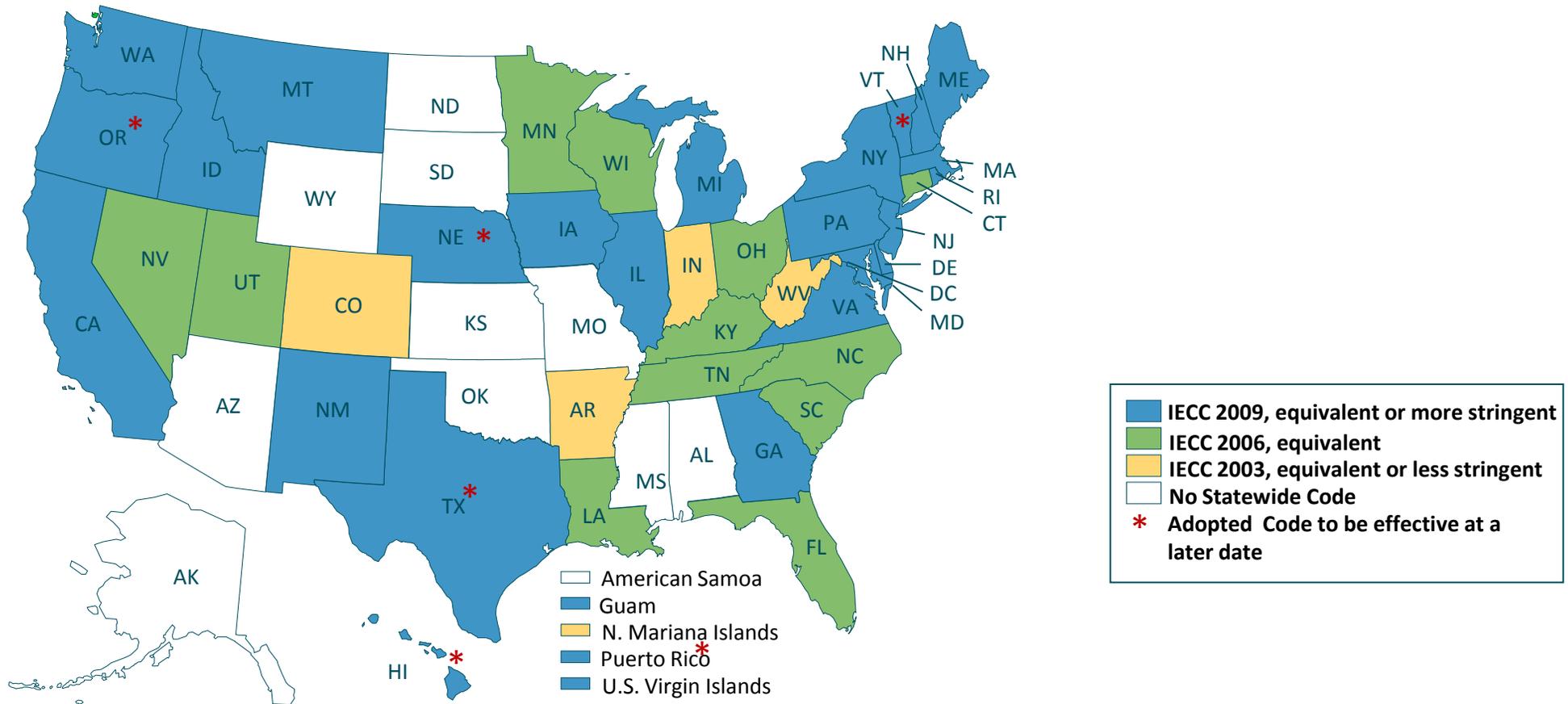
*Nearly half the new homes built 2010-2020 will be built before new codes are in place
State and local funding may not be adequate enough to achieve 100% compliance*

All Economic potential captured
(This accounts for model code impact only, as savings from stretch codes and voluntary programs are difficult to project)

Energy, quadrillion primary Btu's



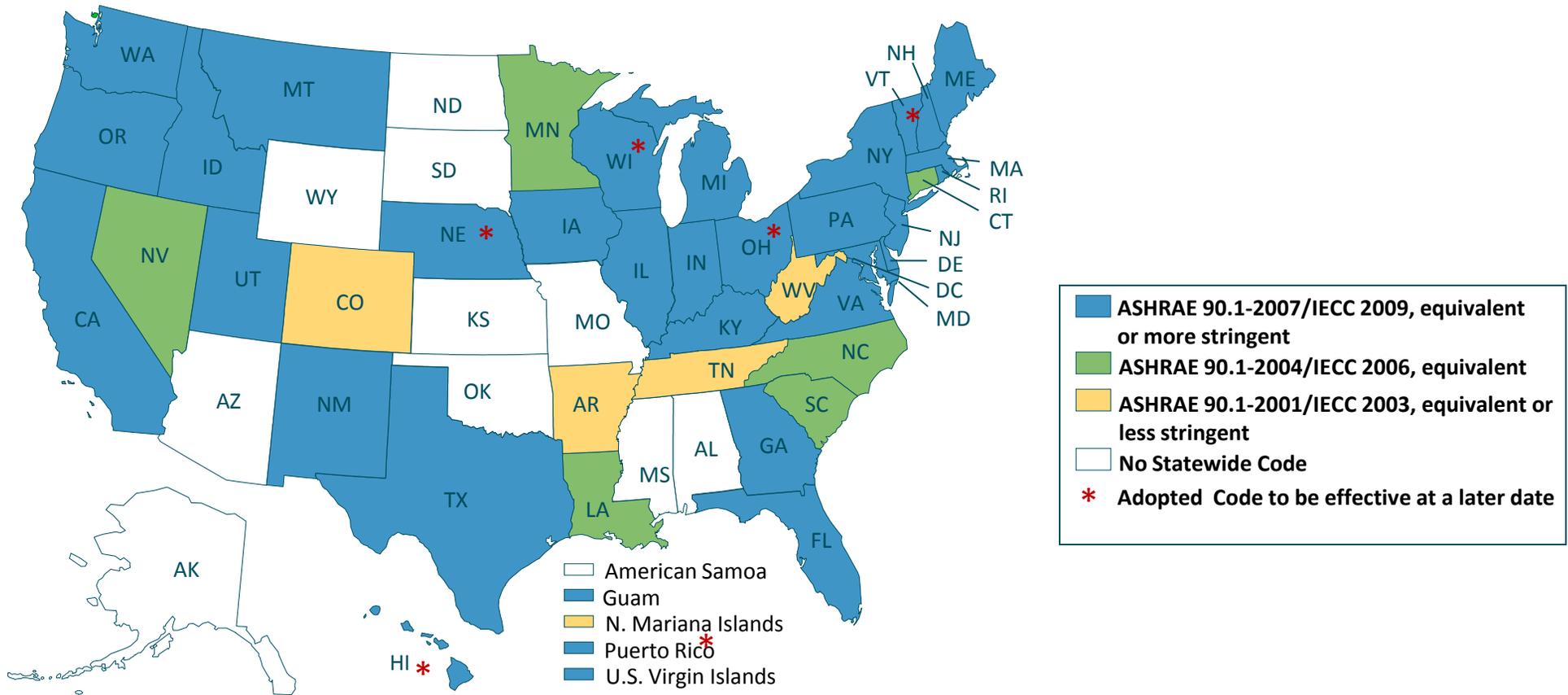
Baseline: About Half the States Have Adopted the IECC 2009 Residential Code



- 19 states, 1 district, and 2 territories have adopted 2009 IECC
- An additional 5 states and 1 territory have adopted with a later effective date

As of June 16, 2011

Baseline: Half the States Have Adopted ASHRAE 90.1-2007



- 25 states, 1 district, and 2 territories have adopted 90.1-07/2009 IECC or equivalent
- 5 states and 1 territory have adopted with a later effective date

As of June 16, 2011



Shortfall in Residential Code Adoption Today

- Ideal today: All 50 states should have adopted the latest code, 2009 IECC
- 12 states have adopted 2006 IECC or equivalent
- 4 states and 1 territories have adopted 2003 IECC, equivalent or less stringent
- 10 states and 1 territory have no state-wide residential energy codes



Shortfall in Commercial Code Adoption Today

- Ideal today: All 50 states should have adopted ASHRAE 90.1-07
- 6 states have adopted ASHRAE 90.1-04 or equivalent
- 4 states and 1 territory have adopted ASHRAE 90.1-01 equivalent or less stringent
- **10 states and 1 territory have no state-wide energy codes for commercial buildings**



Quantitative Goals Over Time: Model and Stretch Code Adoption

Model and Stretch Code Adoption		
Term	Goals	
Near Term – 2012	At least 25 states have adopted 2009 IECC and ASHRAE 90.1-2007 or equivalent	At least 10 states, or localities within 10 states, have adopted “stretch” codes that provide for design and construction of buildings that are 15% better than minimum code
Intermediate 2013-2014	At least 30 states have adopted 2009 IECC and ASHRAE 90.1-2007 or equivalent and 3 states have adopted 2012 IECC/90.1-2010	At least 10 states, or localities within 10 states, have adopted “stretch” codes that provide for design and construction of buildings that are 15% better than minimum code
Long Term - 2015	At least 40 states have adopted 2009 IECC and ASHRAE 90.1-2007 or equivalent	At least 10 states have adopted 2012 IECC and ASHRAE 90.1-2010

Quantitative Goals Over Time: Energy Code Compliance

Energy Code Compliance				
Term		Goals		
Near Term – 2012		At least 10 states have evaluated compliance by building type and system	At least 10 states or localities have developed proposed revenue options, and 5 states have implemented new revenue plans	At least 10 states or localities have developed training options, and 5 states have implemented training programs that have reached at least 80% of the states building construction industry
Intermediate 2013 – 2014	2013	15 states have 90% compliance plans in place	20 states with proposed revenue options and training options in hand	10 states have implemented new revenue and training programs that have reached at least 80% of the states building construction industry
Intermediate 2013 – 2014	2014	15 states have achieved 90% compliance by building		
Long Term 2015 – 2017	2015	At least 30 states have achieved 90% compliance		
Long Term 2015 – 2017	2016	At least 45 states have achieved 90% compliance		
Long Term 2015 - 2017	2017	All states, territories, and District of Columbia have achieved 90% compliance		



Top Barriers to Code Adoption and Compliance Have Been Identified

Barriers

Structural	Capital Constraint
	Awareness and Information
	Ownership transfer

Behavioral	Risk and uncertainty
	Awareness and information
	Custom and habit
	Elevated hurdle rate

Availability	Transaction Costs
	Political Reluctance and Perceived Costs
	Installation and use

Manifestation of barrier or opportunities

Building industry reluctant to increase first cost as they do not get benefit of lower bills

The value of higher efficiency is not marketed fairly or transparently.

Building industry reluctant to increase first cost as they are interested in the "quick flip"

States and local jurisdictions slow to adopt the latest version of codes due to concerns of economic impacts, as well as the increased burden on agencies already thinly staffed

Policymakers being presented conflicting information from competing influences.

Efficiency not at the forefront of consumers' minds. Granite countertops and stainless steel appliances are currently higher priorities than energy efficiency.

Consumer financing hurdles make builders / developers cautious of higher initial costs.

Some jurisdictions may be spread thin in terms of code enforcement.

States and local jurisdictions need to adopt latest version of codes.

The codes are only as effective as the level to which they are complied . Compliance is relatively low in many jurisdictions leaving significant potential energy savings to be had.



Priority Solutions & Actions to Achieve the Goal

Mid-term Goal (2013)

At least 30 states have adopted the 2009 IECC and ASHRAE 90.1-2007 or equivalent, and 3 states have adopted 2012 IECC/90.1-2010. 15 states have evaluated compliance by building type & system and have 90% compliance plans in place.

Two Pillars

Drive model and stretch code update processes

Increase compliance with existing codes

Priority Solutions Areas

Solution 1: Develop adoption strategies focused on energy/cost savings impacts, while branching out to new audiences such as the general public

Solution 2: Strategically team stakeholders to implement best practices for code adoption on state or local level

Solution 3: Increase the number and availability of compliance guides and field measurement tools

Solution 4: Develop and distribute training plans

Solution 5: Understand and share best practices for funding code enforcement



Mapping Solutions to Stakeholders: Increasing Adoption

		Stakeholder					
		Local Gov't.	State Gov't.	Federal Gov't.	Utilities	National, Regional NGOs	Industry Groups
Solution	Solution 1: Develop adoption strategies focused on energy/cost savings impacts, while branching out to new audiences such as the general public	Code Adoption					
		Local gov'ts that are code-savvy should consider offering their knowledge & expertise to help make the case for codes	State gov'ts that are code leaders should consider taking a more active leadership role in the codes community	Expand the Consumer Awareness Program for energy codes. (Current DOE Pilot) Perform energy/ cost savings impact analysis to cover all additional states that have not yet adopted the 2009 IECC or an equivalent code.	Create voluntary programs Provide data to help state & local governments understand the value of energy codes	Develop/update case studies with emphasis on gov'ts in "no-code" states Outline differences between stretch code and model code adoption	Create voluntary programs, in "no-code" states Educate members & public, Provide technical assistance
	Solution 2: Strategically team stakeholders to implement best practices for code adoption on State or Local level	Implement measures for best practices in update process, including moving from legislative process to regulatory body		Provide funding to regional and national NGOs to provide assistance with code adoption, compliance, development, and training activities in the states.	Work with gov'ts to ease the transition to more stringent codes	Coordinate the necessary participants on a state basis and deploy materials from Solution 1	Advocate for energy codes at the state and local level



Mapping Solutions to Stakeholders: Increasing Compliance

		Stakeholder					
		Local Gov't.	State Gov't.	Federal Gov't.	Utilities	National, Regional NGOs	Industry Groups
Solution	Solution 3: Increase the number and availability of compliance guides and field measurement tools	Code Compliance					
		<p>Ensure employees involved with energy code compliance are using the latest guides, such as Referencing DOE materials for State Compliance, http://www.energycodes.gov/arra/compliance_evaluation.stm</p> <p>Attempt to increase funding for compliance tools, including field measurement tools.</p>	<p>2nd Round of Compliance Pilot Programs</p> <p>Provide additional free code downloads of the 2009 IECC/ASHRAE Standard 90.1-2007</p>	<p>Implement a strategy to add basic energy codes to utility EE program portfolios in partnership with DOE/EPA and the advocacy community</p> <p>Partner with gov'ts and industry to take an active role in pushing for greater compliance.</p>	<p>Develop/update compliance tools, provide training, and help to distribute.</p>	<p>Provide technical assistance and be a compliance leader by offering products and solutions that meet or exceed the most stringent codes</p>	
	Solutions 4 and 5: Develop & Distribute Training plans & Funding options	<p>Provide training for employees involved with energy codes. Attempt to increase funding for codes programs through new revenue plans.</p>	<p>Support Builder Field Guides, with state customization, to promote better building science education and the link to code requirements.</p>	<p>Provide incentive programs to gov'ts and customers, and support training programs</p>	<p>Develop/update plans and options, help to distribute and provide courses.</p>	<p>Support training programs for industry members</p>	



Work Plan: Drive Model and Stretch Code Update Processes

Priority Area	Code Adoption Key Work	Role for Stakeholder Groups						First Year Schedule				At End of 1 year 2012	Year 2 2013	Year 3 2014	Year 4 2015
		Federal	State	Local	Regional EE groups	Building Communit	NGOs	1 st Q	2 nd Q	3 rd Q	4 th Q				
Solution 1: Develop adoption strategies focused on energy/cost savings impacts, while branching out to new audiences such as the general public	Identify needed analysis required on state and local levels, ie state specific first cost data, energy and carbon savings, and funding mechanism analysis.		X	X	X	X	X	X	X	X		Identify needs for 50 states			
	Implement steps to collect data/develop robust estimates in identified states	X	X		X	X	X	X	X	X		25 states with solid information on codes benefits	50 states	25 states update	50 states update
	Identify and develop "market and capture sales" approach with raw data from above task. Includes standardized presentation material to address messaging and public awareness.	X	X	X	X	X	X	X	X	X		25 states with marketing material	50 states	25 states update	50 states update
	Implement data through Strategic Stakeholder Teaming/Coordination on State or Local level	X	X	X	X	X	X	X	X	X		25 states have adopted up-to-date codes	30 states with model code/ 3 states with 2012 code	35 states, 5 states adopted 2012 IECC & 90.1-2010	40 states, 10 states adopted 2012 IECC & 90.1-2010



Work Plan: Drive Model and Stretch Code Update Processes

Priority Area	Code Adoption Key Work	Role for Stakeholder Groups						First Year Schedule				At End of 1 year 2012	Year 2 2013	Year 3 2014	Year 4 2015	
		Federal	State	Local	Regional EE	Buildings	NGOs	1 st Q	2 nd Q	3 rd Q	4 th Q					
Solution 2: Strategically team stakeholders to implement best practices for code adoption on State or Local level	Identify participants and new stakeholders		X		X		X	X								
	Identify code cycle process		X		X		X		X			25 states with solid info. and policy recs. supporting regular code updates	50 states			
	Implement measures for best practices in update process, including moving from legislative process to regulatory body		X		X		X			X	X	10 states have enacted policy requiring regular code updates	20 states	30 states	50 states	
	Identify and market incentives for code adoption	X	X	X	X	X	X	X	X	X		Identify market incentives for 25 states	Identify market incentives for other 25 states			
	Identify energy code champions for update process	X	X	X	X	X	X	X	X	X		Identify energy code champions in 20 states	Identify energy code champions in 40 states	Identify energy code champions in 50 states		
	Deployment of analysis results including outreach efforts to present and market the results in states.	X	X	X	X	X	X	X	X	X		25 states have adopted up-to-date codes	30 states with model code/ 3 states with 2012 code	35 states, 5 states adopted 2012 IECC & 90.1-2010	40 states, 10 states adopted 2012 IECC & 90.1-2010	

Work Plan: Increase Compliance with Existing Codes

Priority Area	Code Compliance Key Work	Role for Stakeholder Groups						First Year Schedule				At End of 1 year	Year 2	Year 3	Year 4
		Federal	State	Local	Regional/EE	Building	NGOs	1 st Q	2 nd Q	3 rd Q	4 th Q				
Solution 3: Increase the number and availability of compliance guides and field measurement tools	Develop materials derived from 90% compliance pilots	X	X		X	X	X	X	X	X	X	10 states with data and materials to aid in increasing compliance	20 states with data and materials to aid in increasing compliance	35 states with data and materials to aid in increasing compliance	50 states with data and materials to aid in increasing compliance
	Collect compliance "best practices" and lessons learned from builders and regions	X	X	X	X	X	X		X	X	X				
	Distribute compliance tools & info.	X	X	X	X	X	X			X	X				

Work Plan: Increase Compliance with Existing Codes

Priority Area	Code Compliance Key Work	Role for Stakeholder Groups						First Year Schedule				At End of 1 year 2012	Year 2 2013	Year 3 2014	Year 4 2015	
		Federal	State	Local	Regional IEE	Building Commu	NGOs	1 st Q	2 nd Q	3 rd Q	4 th Q					
Solution 4: Increase the number and availability of compliance guides and field measurement tools	Identify low cost training mechanisms	X	X	X	X	X	X	X	X							
	Identify and research best practices in training	X		X	X		X		X	X	X					
	Develop and distribute training plans to all parties involved from design to sale	X			X		X		X	X	X	10 states or localities within states have new low cost training program options in hand	20 states or localities within states have new low cost training program options in hand	35 states or localities within states have new low cost training program options in hand	50 states or localities within states have new low cost training program options in hand	
	Implement training plans		X	X	X		X				X	5 states or localities within states have implemented new low cost training programs	10 states or localities within states have implemented new low cost training programs	20 states or localities within states have implemented new low cost training programs	35 states or localities within states have implemented new low cost training programs	



Work Plan: Increase Compliance with Existing Codes

Priority Area	Code Compliance Key Work	Role for Stakeholder Groups						First Year Schedule				At End of 1 year 2012	Year 2 2013	Year 3 2014	Year 4 2015
		Federal	State	Local	Regional EE groups	Building Communit	NGOs	1 st Q	2 nd Q	3 rd Q	4 th Q				
Solution 5: Understand and share best practices for funding code enforcement	Research revenue options	X	X	X	X		X		X	X	X				
	Identify best practices in funding	X	X	X	X		X								
	Develop new revenue options	X	X	X	X		X		X	X					
	Develop funding toolkits for states	X			X		X		X	X	X	10 states with proposed revenue options in hand	20 states with proposed revenue options in hand	35 states with proposed revenue options in hand	50 states with proposed revenue options in hand
	Outreach and market toolkits	X	X	X	X	X	X		X	X	X	5 states have implemented new revenue plans	10 states have implemented new revenue plans	20 states have implemented new revenue plans	35 states have implemented new revenue plans

