Leveraging State Energy Office–Utility Partnerships to Advance Building Energy Codes

National Association of State Energy Officials

Christopher Wagner, Buildings Project Manager
Diana Lin, Buildings Program Manager

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The following organization prepared this report:

National Association of State Energy Officials (NASEO)

1414 Prince Street, Suite 200

Alexandria, VA 22314

Table of Contents

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List of Abbreviations and Acronyms

ACC	Arizona Corporation Commission
APS	Arizona Public Services Company
ADECA	Alabama Department of Economic and Community Affairs (State Energy Office)
ARRA	American Reinvestment and Recovery Act of 2009
BPA	Bonneville Power Authority
BCAP	Building Codes Assistance Project
BOP	Builder Option Package
BPI	Building Performance Institute
Btu	British thermal units
DCA	(Georgia) Department of Community Affairs
DCEO	(Illinois) Department of Commerce and Economic Opportunity
DET	Duct and Envelope Tightness
DOER	(Massachusetts) Department of Energy Resources (State Energy Office)
EEPS	Energy Efficiency Portfolio Standard
EERS	Energy Efficiency Resource Standard
GEFA	Georgia Environmental Finance Authority (State Energy Office)
GOEP	(Arizona) Governor's Office of Energy Policy (State Energy Office)
HBAG	Home Builders Association of Georgia
HERS	Home Energy Rating System
HVAC	Heating, ventilation, and air conditioning
ICC	International Code Council
IECC	International Energy Conservation Code
IEE	Institute for Electric Efficiency
IMT	Institute for Market Transformation
IOU	Investor-owned utility
IRC	International Residential Code
MEEA	Midwest Energy Efficiency Alliance
NASEO	National Association of State Energy Officials
NEEA	Northwest Energy Efficiency Alliance
NEEC	Northwest Energy Efficiency Council
NEEP	Northeast Energy Efficiency Partnerships
NYSERDA	New York State Energy Research and Development Authority (State Energy Office)
QA	Quality assurance
SEO	State and Territory Energy Office
SEP	State Energy Program
SRP	Salt River Project
SPE/I	Special Plans Examiner and Inspector
SWEEP	Southwest Energy Efficiency Project
TEP	Tucson Electric Power
UCG	Utility Code Group
WABO	Washington Association of Building Officials

Executive Summary

Increasing building energy code adoption and compliance represents an effective strategy for states to achieve both energy and cost savings for their citizens. An analysis conducted by the Alliance to Save Energy projects that if all states adopted the 2012 International Energy Conservation Code (IECC) and achieved full compliance by 2013, more than 3.5 quadrillion Btu of annual source energy could hypothetically be saved by 2030,[i] which is roughly equivalent to 260 medium-sized power plants.[ii] While many State and Territory Energy Offices (SEOs) are actively involved in promoting building energy code adoption and compliance, and have recently increased their levels of engagement with builders, contractors, utilities, and other state and local code agencies, declining funding threatens to disrupt recent progress. Moving forward, SEOs will need to continue to work closely with key stakeholders to better leverage resources and efforts. In particular, the state-utility[1] relationship is critical to the ongoing advancement of building energy codes, particularly at the regional, state, and local levels.

In recognition of this need and opportunity identified by its State Energy Office members, the National Association of State Energy Officials (NASEO) Board of Directors passed a resolution to encourage increased coordination between states and utilities on building energy codes. To support the Board's direction, NASEO conducted research on building energy code programs and developed this report as a resource for states.[2] This report illustrates successes and lessons learned from several existing SEO-utility partnerships on building energy code programs and outlines specific approaches for how SEOs can collaborate with utilities on these initiatives.

Through research on over a dozen states, NASEO identified four common approaches SEOs are taking to partner with utilities on building energy code programs:

1. **Training Programs.** Many SEOs, including those in Georgia, Arizona, Nebraska, New York, and Illinois, have implemented training programs on current or next-cycle building energy codes. These training programs target diverse audiences, including building code officials, architects, engineers, builders, trade associations, and local government officials responsible for implementation and enforcement of building energy codes. Utilities often participate by marketing workshops, refunding registration fees, providing free meeting space, or providing code books and training materials.

2. **Stakeholder Engagement Processes.** SEOs are uniquely positioned to convene diverse stakeholders involved in building energy code adoption, implementation, and compliance. For example, the Nebraska SEO formed a Building Codes Advisory Council to support code compliance and adoption in the state. Engaging utilities in these stakeholder processes is crucial to their success.

3. **Utility Oversight and Monitoring.** In some states, such as Minnesota and Massachusetts, SEOs have roles defined by legislation to provide oversight or guidance to utility ratepayer funded energy efficiency programs for meeting savings targets required by energy efficiency portfolio standards (EEPS)[3] or similar regulations. This creates a clearly recognized and formal platform for states and utilities to collaborate on various energy efficiency efforts, including building energy codes.

4. **Stretch Code Policies and Programs.** SEOs have been involved in designing new construction

1 Unless otherwise noted, "utility" is used to identify investor-owned utilities (IOUs), municipally-owned electric utilities, and rural electric cooperatives. Federally owned corporations responsible for electricity generation (e.g., the Tennessee Valley Authority) and power market administrators are also natural allies to the SEOs in building energy code programs. The report includes descriptions of both ratepayer funded programs and utility programs. When specifically referring to utility "ratepayer funded energy efficiency programs," this term or the abbreviated "energy efficiency programs" is used.

2 For the purpose of this report, "building energy code programs" are initiatives whose goals are to increase building energy code adoption, implementation, and/or compliance verification.

3 EEPS, also known as energy efficiency resource standards (EERS), are state policies that require utilities to meet quantitative targets for energy savings according to a set schedule. The energy savings targets detailed in an EEPS are typically set by a state legislature or public utility commission.

above code or "stretch code"[4] incentive programs in states such as Massachusetts, Iowa, and Oregon. These programs have the dual benefits of familiarizing the industry with a new building energy code, which improves the outlook for future adoption, as well as increasing workforce capacity to build to a new code, thereby improving compliance. SEOs can work with utilities to integrate forward-looking stretch codes into their new construction programs.

In addition to these four common approaches, examples from the states revealed several cross-cutting lessons that can help inform how SEOs engage with utilities on building energy code programs:

1. **Demonstrating the value of code adoption and compliance is the first step.** In states where utilities have not historically been involved in building energy codes, a key initial step for SEOs is to present the case for why code adoption and compliance can help utilities cost-effectively meet growing energy demand,[5] reach increasingly challenging energy savings targets, and improve grid reliability. For states whose utilities do recognize the value of building energy codes, SEOs can partner with utilities to expand their approach to new areas, such as building energy code training, compliance studies, or stretch codes.

2. **Determining energy savings measurement, attribution, and allocation protocols presents both a challenge and an opportunity.** While some states, such as California, have established an energy savings allocation protocol to give utilities credit for building energy code programs, many states have not defined an approach to measuring, attributing, or allocating savings.[6] SEOs that have a regulatory oversight role of utility energy efficiency programs, including those in Massachusetts and Minnesota, will need to work with utilities and regulators to ensure that energy savings measurement, attribution, and allocation protocols for building energy code programs are acceptable to all parties involved.[7] As these protocols become better defined and accepted, and as energy savings are recognized, utilities will be able to expand and scale up their building energy code activities and allocate additional ratepayer funding for these programs.

3. **Utility support can be multi-faceted.** Existing SEO-utility partnerships on building energy codes illustrate that utilities have numerous assets, beyond funding, for promoting building energy code adoption and compliance. A utility's political and social capital with state legislatures, builders, contractors, and other stakeholders can be crucial to a state or jurisdiction in passing a new building energy code. Likewise, access to utility data on energy use and new construction trends can help inform cost-benefit analyses for proposed building energy codes and demonstrate the impact of past codes.

4. **Integrating code activities into SEO-utility strategic energy planning may become increasingly important.** Building energy code adoption and compliance have an opportunity to play a greater role in utility integrated resource planning, as well as the energy planning functions of the SEOs. For example, by decreasing the consumption impact and peak loads of buildings, energy codes help lessen the stress on the grid, which increases grid reliability and may help defer expensive new generation needs. The conclusion of American Reinvestment and Recovery Act (ARRA) programs may cause states to revisit strategic energy planning processes that were deprioritized during ARRA.

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4 Stretch codes are also referred to as "reach codes."

5 For example, a 2003 study by the Washington State Energy Office showed that the cost for the utility system of implementing the 1991 residential state energy code was less than $.003/kWh. This translates to between $1.2 billion and $1.3 billion in electricity savings, which would have cost roughly $.0312/kWh if obtained through a mix of conservation and generation. (Schwartz, 1993)

6 For further discussion of the challenges for measuring, allocating, and attributing energy savings to utilities for involvement in building energy codes, see Elnecave, 2012

7 One project that holds promise to contribute to protocol development is the "Building Codes Attribution Project," which was recently launched by the Northeast Energy Efficiency Partnerships (NEEP), the Institute for Market Transformation (IMT), and the Institute for Electric Efficiency (IEE). This project aims to: 1) advance knowledge on how to capture and account for energy savings from building energy code policies and utility programs; 2) recommend next steps to policy makers; and 3) encourage quality and consistency in measurement approaches. States such as Delaware and Minnesota hope to use the results of this project to inform their savings measurement, attribution, and allocation protocols for building energy codes programs. See the project's request for proposals for more information: http://neep.org/uploads/EMV%20Forum/EMV%20RFPs/EMV%20Forum%20Building%20Codes%20Attribution%20RFP%20FINAL%202-9-12.pdf.

5. **Engagement with state and local code adoption and enforcement agencies should be a priority.** While some SEOs have the authority for adopting building energy codes and fostering compliance with those codes, in many states one or more separate agencies (e.g., health and safety departments) play this role. In these cases, SEOs should communicate and collaborate with the state code authority on building energy code programs, as these agencies have the authority to adopt, implement, and enforce building energy codes. State code authorities can contribute to the success of SEO-utility building energy code programs and ensure that they support on-going state priorities regarding building energy code adoption and compliance. Recent activity in Georgia demonstrates a successful collaboration between the SEO, state code authority, and a utility regarding building energy code adoption and implementation (see Appendix 1 for more information).

There are several examples of active SEO-utility collaboration on building energy codes, and successes in this area indicate that SEOs are well-positioned to increase utility support and commitment to building energy code adoption and compliance. SEO-utility partnerships can take several forms: from SEOs using utility funding to administer building energy code programs, to SEOs partnering closely with utilities to develop stretch codes or coordinate stakeholder processes. Furthermore, these approaches can be adapted to fit a state's needs, budget, capacity, and energy code status. Lastly, there is a key policy role that SEOs can play in encouraging utilities to support building energy codes, including establishing market expectation with the development of stretch codes and contributing to legislation that outlines opportunities for utilities to engage in building energy codes.

Background

In the past several years, cost-effective building energy codes covering residential and commercial buildings have become a high priority for many SEOs that are working to improve the energy efficiency of their new and existing building stock, reduce energy costs for consumers and business over time, and increase the resilience of their electric grid by lowering energy demand. This emphasis on building energy codes is due to a confluence of factors, including:

- Buildings are America's largest energy-consuming sector, as they use over 40 percent of the nation's energy and two-thirds of our electricity;[iii]
- Various stakeholders, including states, code officials, and energy efficiency advocates, have increased the importance of energy efficiency during the model code development processes at both the ICC and ASHRAE code forums, resulting in an increase in energy efficiency levels by approximately 30% during the past two national model code development cycles;
- As a condition of receiving ARRA State Energy Program (SEP) funding, states were required to commit to adopting building energy codes that meet or exceed the ICC IECC 2009 for residential buildings and ANSI/ASHRAE/IES Standard 90.1-2007 for commercial buildings,[8] and to develop active training/enforcement and annual compliance measurement programs as part of a plan to achieve 90 percent compliance with those efficiency requirements by 2017;[9] and
- Efforts to improve building energy codes can lock-in substantial savings, as these codes impact energy use over several decades of a building's lifetime. In the Northwest, for example, progressively more stringent state codes have contributed roughly 20% of the energy savings between 1992 and 2008. [iv]

While most SEOs are interested in promoting building energy code adoption and compliance and have recently increased their levels of engagement with builders, contractors, utilities, and other state and local code agencies, generally declining federal and state funding threatens to disrupt recent progress. Thus, SEOs will need to continue to work closely with key stakeholders to better leverage resources and efforts. In particular, the state-utility relationship is critical to the ongoing advancement of building energy codes.[10]

Utilities have an opportunity to impact building energy codes throughout the code development, adoption and compliance verification process, and utilities in several states have substantial efforts in this area.[11] However, a challenge to utility support for building energy code programs is that more stringent building energy codes have the adverse effect of reducing the amount of savings utilities can claim from other energy efficiency programs, such as new construction rebate programs. One strategy to mitigate this challenge and scale up building energy code programs is to define protocols for utilities to claim energy savings related to building energy code efforts. For utilities faced with ambitious annual savings targets, building energy code programs provide an underutilized strategy for meeting these goals. At present, several questions and challenges remain in establishing measurement, verification, and attribution methodologies.[12] Further progress in this area will enable an increasing number of states to allow utilities to integrate code activities into their ratepayer funded energy efficiency programs.

8 The IECC and ASHRAE 90.1 consider one- and two-family dwellings, townhouses, and multi-family residential buildings not over three stories in height as residential buildings. All other buildings are considered commercial buildings, including hotels, motels, dormitories, and multifamily residential buildings over three stories in height.

9 American Recovery and Reinvestment Act of 2009 § 410 (2009).

10 Utility involvement in building energy code programs is often tied closely to appliance standards, which provide another source of potential energy savings. However, appliance standards are beyond the scope of this report. For additional information on utility involvement in both building energy codes and appliance standards, see IEE, 2011.

11 For additional detail and examples, see IEE, 2011.

12 For further discussion of the challenges for measuring, allocating, and attributing energy savings to utilities for involvement in building energy codes, see Elnecave, 2012

Objectives

Strengthening partnerships with utilities on building energy code programs is one strategy SEOs can use to meet state needs in the areas of building energy code adoption, implementation, and compliance. To that end, the Board of Directors of the National Association of State Energy Officials (NASEO) recently passed a resolution encouraging SEOs to collaborate with utilities on building energy code programs (see Appendix 2).

In response to the need identified by its Board and state members, NASEO developed this report to serve as a resource to SEOs as they work to develop or strengthen partnerships with utilities to support building energy codes. To meet this objective, the report:

1. Illustrates successes and lessons learned from several existing SEO and utility building energy code programs; and

2. Describes specific approaches for how SEOs can collaborate with utilities regarding building energy code adoption, implementation, and compliance assessment.

Methodology

NASEO identified the states to include in this report through reviewing recent presentations, papers, and meetings pertaining to building energy code programs. Additional detail was obtained through a literature review of SEO strategic plans, utility ratepayer funded energy efficiency plans and reports, energy efficiency portfolio standards (EEPS) legislation, and publications, evaluations, and reports on SEO and utility building energy code programs. In order to confirm information and collect additional details for certain states, NASEO report authors conducted interviews with SEO staff, utility staff, program evaluators, or other individuals working closely with these programs.

NASEO selected Arizona, Georgia, Iowa, and Washington for case studies (see Appendix 1) based on their innovative approaches and also to represent diverse program types, state code environments (e.g., home rule versus authority to adopt statewide building energy codes), geographies, climates, and political environments. Additionally, NASEO sought to feature programs that would be relevant to other states.

Code developers, regional energy efficiency groups, SEO staff, utility staff, and other key stakeholders provided peer review.

Finally, while this report highlights numerous building energy code programs across the country, it is not exhaustive. Some states that have building energy code programs are not mentioned, and for states with multiple types of programs, all are not necessarily discussed. The aim of this report is to highlight unique programs in which SEOs and/or utilities support building energy code adoption, implementation, and/or compliance verification, rather than provide a comprehensive survey of all current programs.[13]

13 To assist further with peer-to-peer exchange on SEO-utility building energy code collaborations, NASEO encourages SEOs that are collaborating with utilities on building energy code programs not covered in this report to contact the authors.

Overview of Select Building Energy Code Programs

Each description below provides an overview of SEO and/or utility involvement in building energy code programs and, when relevant, lessons learned that can inform the design or implementation of similar programs in other states.[14] Some states have strong SEO-utility partnerships, while in others either the SEO or utilities have been more active to date. For example, states such as Delaware and Minnesota need to determine a savings attribution approach before utilities can partner with the SEO on building energy code programs. In New York and Illinois, the SEOs receive ratepayer funding to implement building energy code training, while other states, such as Georgia and Nebraska, partner with their utilities more directly to deliver training. Overall, the programs are diverse in terms of budgets and scope and are often developed in response to specific state needs in building energy codes, while taking into account SEO and utility strengths and capacities. Each summary below provides valuable lessons or approaches that can inform other SEOs looking to develop a building energy codes program. SEOs are encouraged to contact their peers for more information.

Alabama: Training for First Statewide Building Energy Code Supported by SEO

In anticipation of an October 1, 2012, effective date for Alabama's first mandatory statewide Energy and Residential Code, based on the 2009 IECC,[15] the Alabama Department of Economic and Community Affairs (ADECA)—the Alabama SEO—worked with Southface, an energy and sustainability non-profit organization based in the Southeast, to organize code training workshops throughout Alabama.[16] As part of the new residential code, envelope tightness must be verified through air leakage testing and, as of July 1, 2013, duct tightness must also be verified through leakage testing.[17] ADECA is currently in discussions with Alabama Power regarding potential roles for the utility to support compliance with the new building energy codes.[v] ADECA and Southface will also benefit from Southface's recent experience in Georgia delivering building energy code and Duct and Envelope Tightness Verifier training (see the Georgia case study in Appendix 1). The emphasis on leakage testing of duct systems and the building thermal envelope will likely become a trend as more states adopt the 2012 IECC.

Arizona: Utilities and SEO Promote Training and Adoption in Home Rule State

The Arizona Corporation Commission adopted a regulatory framework in August 2010 that outlines the energy savings that investor-owned electric utilities can claim for documented support of building energy codes efforts, which helped catalyze utility involvement in building energy codes. Because Arizona is a home rule state,[18] utilities and the Governor's Office of Energy Policy—Arizona's SEO—have worked with local jurisdictions and stakeholders to cosponsor building energy codes workshops that increase awareness on the benefits of improved building performance as guided by the IECC. These trainings, in addition to cost savings analysis and advocacy for building energy codes provided by utilities and other stakeholders, have prompted initiatives to adopt new energy codes in several local jurisdictions across

14 Although the SEO is not engaged in the effort, a summary on Rhode Island is included, as it is an example of a utility sponsoring building energy code compliance assessments, which is an approach to engaging utilities that SEOs in other states could consider. In Washington's case, while the SEO played a role (see Washington case study in Appendix 1), the Utility Code Group was a very utility-centric program. This example is included because several SEOs are considering third-party compliance verification approaches similar to the one implemented by Washington's Utility Code Group.

15 The commercial code is based on the 2009 IECC and the residential code on the 2009 IRC and 2009 IECC, plus amendments. For the full legislation, see http://energycodesocean.org/rule-305-2-4-alabama-energy-residential-and-code-revised-nov-9-2011.

16 Southface worked to ensure that workshop attendees could earn Continuing Education Credits recognized by American Institute of Architects, the Alabama State Board of HVAC Contractors, the Building Performance Institute (BPI) and the International Code Council (ICC).

17 As required by the new Alabama Energy and Residential Code, buildings must either: 1) undergo a blower door test that indicates less than 7 air changes per hour at a pressure difference of 50 Pascals ($ACH_{50} < 7$); or 2) undergo a rigorous visual inspection of proper air-sealing and insulation as detailed in Table N1102.42 of the 2009 IRC. The duct tightness testing is effective July 1, 2013 and is mandatory unless the ducts and air handler are completely located inside conditioned spaces.

18 States that are "home rule" do not have a mandatory statewide building energy code; rather, building energy code adoption and enforcement is handled by local jurisdictions.

the state. One public power utility not under the jurisdiction of the Arizona Corporation Commission, the Salt River Project, has also been active in these initiatives and has identified building energy code adoption and compliance as an important means to delivering money- and energy-saving opportunities to customers. Arizona's experience illustrates that funding is not the only valuable asset a utility provides when it comes to adopting building energy codes; leveraging a utility's data on building energy use trends and its relationships with policy makers, builders, and developers and can also be critically important. (See the Arizona case study in Appendix 1 for more information.)

California: SEO-Utility Collaboration on Comprehensive Code Efforts Realize Significant Savings

Since 2005, California investor-owned utilities (IOUs) have coordinated a Codes and Standards program funded through the state's public goods charge and the IOU procurement budgets. The California Energy Commission—California's SEO—oversees revisions to the state Building Energy Efficiency Standards in Title 24 of the California Administrative Code and works closely with utilities on codes and standards. The 2010-2012 Codes and Standards plan includes several initiatives related to building energy codes.[vi] First, to encourage local governments to adopt reach codes, utilities will develop a package of reach codes that surpass Title 24 (2008), with associated financial incentives, rebates, and technical assistance offerings. A second goal is to enhance the level of compliance with building energy codes, through training and supporting building officials and departments. Third, utilities will continue to engage in building energy code advocacy, which includes providing expert testimony at public workshops and hearings, communicating with industry, and developing Codes and Standards Enhancement studies, which are reports on energy-saving design practices and technologies prepared for the California Energy Commission to inform their updates to Title 24.[19] The budget for these three initiatives totals over $30 million from 2010-2012[vii] and the full Codes and Standards program is expected to produce first-year gross savings of an estimated 5,111 GWh and net savings of 2,178 GWh.[viii]

The Codes and Standards program has expanded in scope and budget due to the substantial energy savings potential and California energy regulators' acknowledgement that utilities have an important role in advancing codes and standards. The rigorous protocol for allocating energy savings to utilities that has been developed by the California Public Utilities Commission and other stakeholders enables the utilities to aggressively advocate for and capture codes and standards savings without undermining their ability to meet their required energy saving goals through energy efficiency programs.[20] States such as Massachusetts and New York have looked to the California protocol to inform development of their own approaches.

Delaware: SEO Convenes Energy Codes Coalition for Adoption and Compliance

The Delaware Division of Energy and Climate—Delaware's SEO—has legislative authority to review and adopt updated building energy codes every three years. Given this leadership role, the Division of Energy and Climate formed an Energy Codes Coalition in November 2011 as a platform for discussing code compliance and adoption and to inform the agency's work in these areas. This stakeholder group includes home builders, building code officials, and contractors, as well as representatives from the American Institute of Architects, and the Delaware Sustainable Energy Utility, a non-profit organization created by Delaware to foster a sustainable energy future for the state through conservation, energy efficiency, and renewable energy programs. The Building Codes Assistance Project (BCAP) and the Northeast Energy Efficiency Partnerships (NEEP) provide additional technical support to the Division of Energy and Climate. The coalition will use the Delaware Strategic Compliance Plan[21] as a roadmap to achieve 100% code

19 Utilities serve a similar role in providing Codes and Standards Enhancement studies for appliance standards, which are covered in Title 20 of the California Administrative Code.

20 For a summary of the protocol, see: Lee, 2008. For additional detail, see: California Public Utilities Commission, 2006.

21 For the full plan, see: http://energycodesocean.org/sites/default/files/resources/Delaware%20Strategic%20Compliance%20Plan_1.pdf.

compliance by 2017 and will also coordinate stakeholder input on future code adoption processes. One additional priority of the coalition is to work with the legislature, the Sustainable Energy Utility, and utilities to encourage ratepayer funded building energy code programs.[ix] The Division of Energy and Climate is closely following the NEEP, IMT, and IEE "Building Codes Attribution Project"[22] in order to gain insight into potential approaches Delaware can take regarding energy savings measurement and attribution for utility building energy code programs.[x]

Georgia: SEO and Utility Support Adoption of 2009 IECC and Testing Requirements

On January 1, 2011, the 2009 IECC (with amendments) became the mandatory Georgia building energy code, replacing the 2006 IECC. Testing requirements for building envelope air leakage and duct tightness became effective on July 1, 2011, making Georgia the first state to include these requirements in a mandatory statewide building energy code. The Georgia Environmental Finance Authority (GEFA); Southface, an energy and sustainability non-profit organization based in the Southeast; and the Georgia Department of Community Affairs (DCA) cosponsored a training series on the new code, including a Duct and Envelope Tightness (DET) Verifier training. Georgia Power, an IOU, was supportive of the DET Verifier training initiative and utilized the Southface curriculum to deliver additional DET Verifier trainings across the state, with a focus on rural areas. GEFA (Georgia's SEO) and DCA also coordinated the purchase of DET testing equipment, which the Home Builders Association of Georgia rents to contractors through its regional offices.[xi] GEFA has funded a report on building department best practices for enforcing the new energy code, which will be shared with building departments throughout the state in order to increase code compliance. The strong partnership among state agencies, utilities, home builders, local building departments, and other stakeholders in Georgia has contributed to adopting a building energy code that emphasizes energy efficiency performance testing and to creating and strengthening a collaborative building energy code environment in the state. (See the Georgia case study in Appendix 1 for more information.)

Illinois: Extensive Statewide Training Program Aims to Improve Compliance

In Illinois, the Energy Efficient Building Act requires the Illinois Energy Office, within the Department of Commerce and Economic Opportunity (DCEO), to provide technical assistance to local jurisdictions, builders, designers, engineers, and architects on the requirements of the state building energy code and methods of compliance. Illinois utilities are also required by the state's EEPS to "present specific proposals to implement new building and appliance standards that have been placed into effect."[xii] The DCEO has integrated this role into the energy efficiency programs it implements, which are funded by 25% of the public service charge collected on utility bills. For the 2011-2012 program year, DCEO organized free training courses on the residential (2012 IECC) and commercial (ASHRAE 90.1-2010) building energy codes; the adoption of these codes is anticipated in early 2013. Seventeen trainings have been held with over 575 attendees and an additional 13 trainings are scheduled, which is expected to bring the total number of people trained through the program to 1,300. Funding for this training program ranges from $150,000 to $200,000 annually and there are three main factors that influence the budget: 1) the number of trainings that need to be held; 2) the locations of the trainings; and 3) the number of expected attendees.[xiii]

DCEO is currently not attempting to claim energy savings from its training programs; however, it hopes to develop a methodology for its next three-year plan starting in 2014.[xiv] The methodology will likely take into account changes in compliance rates shown through statewide compliance studies. DCEO also anticipates that state utilities will want to get more involved in building energy codes, as they need new strategies for achieving aggressive energy savings targets in state legislation. One approach currently

22 See footnote 7

being considered is utility support for a special plans examiner and inspector program at the local level to increase compliance with the building energy code. These special examiners would focus on just the energy provisions of the code, lightening the increased burden of energy code implementation for code officials who focus primarily on life and safety issues.

Iowa: Above Code Program Implemented by Three Utilities

In 2011, a working group of the Iowa Energy Efficiency Collaborative, including representatives from the SEO and the Iowa Building Code Commission, designed an Advanced Builder Option Package (Advanced BOP). This program was created to fill a gap in the existing utility residential rebate programs, which were not adequately supporting the state building energy code. Each of Iowa's IOUs offer the Advanced BOP, which provides rebates for new homes built beyond the existing 2009 IECC code to many of the higher 2012 IECC code requirements. The Advanced BOP is intended to have the same impact as a stretch code and will allow utilities to support adoption of and compliance with the state building energy code. Through providing incentives to builders to meet the next iteration of the state code and verifying that these requirements are met the utility program educates builders on the future code and prepares them to comply with it. Additionally, this program has the advantage of allowing utilities to claim energy savings as they do with other residential incentive programs. Members of the working group that developed the Advanced BOP have identified aspects of the program that can improve in future years, including: 1) utilities should no longer offer alternative, less stringent incentive programs, which have the potential to reduce participation in the Advanced BOP, and 2) utilities should agree upon a standard rebate structure and code requirements for the Advanced BOP. (See the Iowa case study in Appendix 1 for more information.)

Massachusetts: Innovative Stretch Code Provides Overarching Policy Framework

In 2008, Massachusetts passed the Green Communities Act, which created a Division of Green Communities within the Department of Energy Resources (DOER)—Massachusetts' SEO—to work with municipalities to reduce energy consumption and costs. In May 2009, the Board of Building Regulations and Standards adopted the Massachusetts Stretch Code, which was designed to be roughly 20% more efficient than the 2009 IECC, the statewide building energy code at the time.[23] The Green Communities Act requires that Massachusetts adopt the latest version of the IECC within one year of publication. During this one year transition period, the Board of Building Regulations and Standards will consider adopting an updated stretch code to maintain a gap with the state base code.[xv] As of June 5, 2012, over 121 municipalities have voluntarily adopted the stretch code.[xvi] Utility rebates disbursed through the state's New Homes with ENERGY STAR program are used to help offset the additional first costs of building to the stretch code.

The Green Communities Act also created the Energy Efficiency Advisory Council, which provides oversight of the utilities' three-year energy efficiency plans and is chaired by the DOER Commissioner. Since 2011, the utilities have been working with DOER to design building energy code programs and determine an energy savings and attribution methodology. Two main areas that are being considered are code compliance support and stretch code advocacy.[xvii]

23 For more information on the Massachusetts Stretch Code, see: http://www.mass.gov/eopss/consumer-prot-and-bus-lic/license-type/csl/stretch-energy-code-information.html.

Minnesota: SEO Oversees Utility Programs and Development of Building Energy Codes Approach

In 2007, Minnesota passed the Next Generation Energy Act, which sets annual energy savings goals for investor-owned natural gas and electric utilities at 1.5% of gross annual retail energy sales.[24] The Division of Energy Resources within the Department of Commerce—Minnesota's SEO—oversees the utility energy efficiency programs. Based on a recent stakeholder process led by Environmental Initiative in Minnesota, the Division of Energy Resources is planning to move forward in exploring ways to measure energy savings resulting from adopting and implementing new building energy codes, assess the level of compliance, and develop program options to enhance compliance rates. Recommendations from this stakeholder process include a special plans examiner and inspector program modeled after the Washington Utility Codes Group (see below and the Washington case study in Appendix 1), research on high-priority technical solutions that could lead to increased compliance, and stronger training for local code officials.[xviii]

With possible adoption of the 2012 IECC for new residential and commercial construction in 2013, utilities might have a role to play in supporting compliance efforts leading up to and following the effective date of a new building energy code. Currently, the next step for the Division of Energy Resources is to refine the savings attribution model and to continue to engage utilities on the recommendations outlined through the Environmental Initiative process. Funding for these early activities could potentially come from Minnesota's Conservation Applied Research and Development (CARD) fund, a flexible fund that exists to seed or scale innovative and emerging technologies and practices.[xix]

Nebraska: SEO-Utility Collaboration on Code Adoption, Training, and Regional Conference

Nebraska is the only wholly "public power" state in the country and no investor-owned electric utilities operate in the state. This unique condition has fostered relatively high levels of utility involvement in building energy codes, as they provide a cost-effective way for public power utilities to keep costs low. The Nebraska Power Association, which represents many public power utilities in the state, works closely with the Nebraska Energy Office—the state's SEO—on building energy codes and recently provided testimony supporting the adoption of the 2009 IECC. In October 2010, the Nebraska SEO formed a Building Codes Advisory Council, which includes representatives from utilities, to inform its building energy code compliance and adoption program. The council supported the SEO as it organized a 2011 training series (11 workshops with 700 attendees) on the 2009 IECC and ASHRAE 90.1-2007,[xx] which became the statewide building energy codes in August 2011. The Omaha Public Power District, through its membership in the Building Codes Advisory Council, provided free facilities for some of these workshops. Nebraska utilities are also supporting the SEO's 2012 Regional Energy Codes Conference by providing funding, marketing the event, and reviewing presentation proposals.[xxi]

New York: SEO Manages Energy Codes Training and ENERGY STAR Homes

The New York State Energy Research and Development Authority (NYSERDA)—New York's SEO—manages the energy efficiency programs in the state, which include an Energy Code Training and Support Initiative and New York ENERGY STAR Homes.[xxii] The Energy Code Training and Support website is a one-stop shop for information on the 2010 Energy Conservation Construction Code of New York State (2009 IECC with state amendments), the current building energy code, as well as registration to free and low-cost energy code training opportunities. As part of this code compliance initiative, NYSERDA, in conjunction with the New York Department of State Division of Code Enforcement and Administration, offers a series of in-person and online trainings for code enforcement officials, builders, designers, and energy modelers.

24 For more information, see: http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=MN18R&re=1&ee=1.

The Energy Code Training and Support Initiative also funds free plan review assistance to the design, construction, and code enforcement communities of New York State, as well as energy code advisement and support to municipalities. Funding for this program, which comes from the state's systems benefits charge, totals $16.7 million over five years.[xxiii] The New York ENERGY STAR Homes program, which achieved approximately 25% of market share in new single-family home starts in 2011, effectively serves as a stretch code in the state.[xxiv] The 2012 program is transitioning to ENERGY STAR for New Homes Version 3.0 and is expected to produce homes that are significantly more efficient than homes built to the current code.

Rhode Island: Utility Ramps Up Building Energy Code Activities

In Rhode Island,[25] the electric utility, National Grid, has an active building energy codes program and has been working for over a year with the Rhode Island Building Code Commission and NEEP to develop and implement several initiatives.[26] The Building Code Commission organizes building energy code workshops that all building officials in the state are required to attend and National Grid often provides financial support for these workshops.[xxv] Additionally, the group is developing plans for a third-party inspection program to increase building energy code compliance. Lastly, National Grid and the Building Code Commission are currently co-funding residential and commercial code compliance studies to help inform future compliance initiatives and to help establish baselines to reference when allocating savings from future utility building energy code programs. National Grid's involvement in these code compliance studies was supported and approved by the Rhode Island Energy Efficiency Board (which oversees utility energy efficiency programs approved by the Public Utility Commission), and the company will be allowed to claim energy savings from their efforts. The specific methodology that will be used is still to be determined.[xxvi] The 2013 building energy code program will be informed by results from the code compliance studies.[xxvii]

Washington: Utility Code Group Experience Helps Inform Other States

In 1993, Washington created a Utility Code Group (UCG) to enforce and increase compliance with a new statewide commercial building energy code that was a dramatic change from the state's energy codes up to that point. The UCG was successful at creating a forum for utilities to collaborate on supporting building energy code activities, which included a training initiative and a Special Plans Examiner and Inspector (SPE/I) program. The training program, which was designed by a broad base of stakeholders, was able to reach diverse audiences and improve builder and designer attitude regarding the new code. The administration of the SPE/I program was later passed on to the Northwest Energy Efficiency Council (NEEC). Today, NEEC provides training and technical support for the commercial portions of the Washington State Energy Code, with funding from the Northwest Energy Efficiency Alliance (NEEA). NEEA also funds code development and training activities and conducts compliance studies throughout the region, using ratepayer funding. One major success of the UCG was a large increase in compliance resulting from the SPE/I program; jurisdictions that participated had a compliance rate of 83%, compared to a 60% statewide compliance rate.[xxviii] This program is informing SEOs in other states, such as Minnesota, as they design approaches to improve code compliance. (See the Washington UCG case study in Appendix 1 for more information.)

25 Although the SEO is not engaged in this effort, a summary on Rhode Island is included, as it is an example of a utility sponsoring building energy code compliance assessments, which is an approach to engaging utilities in energy codes that SEOs in other states could consider.

26 For an overview of National Grid's plans, see National Grid, 2011 (pg. 25).

Conclusions and Recommendations for SEOs

There are several common building energy code programs that serve as models for how SEOs can engage utilities in building energy code adoption, implementation, and/or compliance verification.

1. **Training Programs.** SEOs in Georgia, Arizona, New York, and Illinois have implemented training programs on current or next-cycle building energy codes. In these cases, SEOs recruit trainers, determine venues, and conduct outreach and marketing for the workshops. These training programs target diverse audiences, including building code officials, architects, engineers, builders, trade associations, and local government officials. Utilities often provide support, such as advertising workshops to their builder and contractor network, providing administrative funding or rebates on registration fees, and providing free meeting space, training materials, or code books. These training programs are often follow-on activities to code adoption efforts. For example, utilities in Georgia and Arizona have been key advocates for recent code adoptions, and they also recognized the need to conduct a training program in order to increase contractor and building official capacity to implement and enforce the new building energy code requirements.

   For the most part, training programs have not designed savings attribution methodologies. Utilities and SEOs either claim no savings or the funding comes from "Education and Technical Assistance" budgets that do not require savings to be evaluated. Nevertheless, these programs are increasing in number and play a central role in many states' approach to improving building energy code compliance. Over time, measured energy savings from these efforts may justify more dedicated investment.

2. **Stakeholder Engagement Processes on Code Adoption and Compliance.** SEOs are uniquely positioned to convene diverse stakeholders interested in building energy code adoption and compliance. The Nebraska SEO formed a Building Codes Advisory Council, which includes representatives from utilities, to inform its building energy code compliance and adoption program. In other states, such as Iowa, SEOs have been involved in stakeholder processes that identified opportunities for utility energy efficiency programs to support ongoing code adoption and compliance. Engaging with utilities is critical to the success of these efforts. As states allow utilities to receive energy savings credit from building energy code programs, consumer advocates and energy efficiency organizations will closely monitor the goals and evaluation of these programs. There will be a growing need for buildings energy codes advocates to have a sustained and transparent relationship with utilities on building energy codes and other efficiency programs. SEOs can serve as a key facilitator in these processes.[27]

3. **Utility Oversight and Monitoring.** In states such as Minnesota and Massachusetts, SEOs have roles defined by legislation to provide oversight or guidance to utility ratepayer funded plans for meeting required energy efficiency savings targets or other state policy goals (see Appendix 3). This creates a formal framework for utilities and SEOs to work together on building energy code programs, whether it is creating a stretch code, determining an attribution framework for savings from building energy code programs, or conducting compliance studies. SEOs that have a role in reviewing and approving proposed code adoptions, such as in Georgia, can use this as an entry point to engaging utilities on building energy codes; as code revisions are proposed, SEOs and other stakeholders can work to gain support from utilities, increasing the likelihood that they will advocate for the new

27 While each state has unique stakeholders invested in building energy codes, the following is a sampling of organizations, associations, or agencies (other than SEOs and utilities) that are often involved in building energy code stakeholder processes: state code agencies; contractors; other state government agencies (e.g., commerce, labor, etc.); home builder associations; architect, designer, and engineer associations; consumer protection organizations/citizens utility boards; building officials or building official associations; energy efficiency advocate organizations; and technical or community colleges.

building energy code and support its implementation and enforcement.

4. **Stretch Code Policies and Programs.** SEOs have been involved in designing new construction "stretch code" programs in states such as Massachusetts, Iowa, and Oregon that include rebates from utilities. Above code and stretch code programs that provide incentives to builders and designers for going beyond the minimum code have the dual benefits of familiarizing the industry with the future base code, which improves the outlook for future adoption, as well as increases workforce capacity to build to a new code, thereby improving compliance. States play a key policy role in creating the framework for how a stretch code relates to the minimum code and establishing an expectation of continuous and regular improvement to the code. Utilities can support these policies and incent industry to build to a stretch code or some set level above the adopted minimum code. This approach enables utilities to support building energy codes while allowing them to claim energy savings based on well-established incentive programs.

While these approaches are common among the building energy code programs that NASEO researched, there are additional options that have potential for increased SEO-utility collaboration. For example, code compliance studies have been a priority in many states and were most recently supported by ARRA funds.[28] Moving forward, more compliance studies will be needed to establish code compliance baselines against which future compliance rates can be measured and energy savings can be determined. Utilities can provide financial support and technical assistance for these studies, and some utilities, such as National Grid in Rhode Island, are already engaging in this activity. In developing partnerships with utilities on building energy codes, SEOs should take into account both their state's biggest needs pertaining to codes and which programs lack sustainable funding; in some cases, such as with compliance studies, these factors may align to form a ripe opportunity for collaboration.

In addition to these common approaches, NASEO's research revealed several cross-cutting lessons that can help inform how SEOs engage utilities in building energy code programs:

1. **Demonstrating the value of code adoption and compliance is the first step.** In states where utilities have not historically been involved in building energy code programs, a key first step for SEOs and other stakeholders is to present the case for why code adoption and compliance can help meet a utility's energy and customer-service needs. SEOs can deliver the messages that building energy codes are a cost-effective strategy for meeting growing energy demand, have long-term benefits for grid reliability, and are important to integrate into utility resource planning. For states whose utilities do recognize the value of building energy codes, SEOs can partner with utilities to expand their activities to new areas, such as code trainings, compliance studies, or supporting stretch codes. For utilities whose service areas may cross state lines, multiple SEOs can work together to make the case to a utility for supporting building energy code adoption, implementation, and compliance.

2. **Determining energy savings measurement, attribution, and allocation protocols presents both a challenge and an opportunity.** While some states, such as California, have established an energy savings attribution protocol for utility codes activities, many building energy code programs have not defined an approach to measuring, attributing, and allocating savings impacts of these programs. SEOs that have a regulatory oversight role of utility energy efficiency programs, including those in Massachusetts and Minnesota, will need to work with utilities, regulators, and other stakeholders to ensure that energy savings protocols are acceptable to all parties involved.[29] As protocols become better defined and accepted, and energy savings are recognized, utilities will be able to expand and scale up their building

28 For an overview of compliance activities, see the DOE Building Energy Codes Program website: http://www.energycodes.gov/states/maps/stateComplianceActivities.stm.

29 To accomplish this, stakeholders and utilities in each state will need to agree on an attribution approach to appropriately credit energy savings to utility activities. This involves consensus around how to establish a baseline, measure the additional impacts of utility work, and divide savings and credit among various participating utilities. For further discussion of measuring energy savings and developing savings attribution and allocation frameworks, Elnecave, 2012.

energy code activities and allocate additional ratepayer funding for these programs.

3. **Integrating code activities into SEO-utility strategic energy planning may become increasingly important.** Building energy code adoption and compliance have an opportunity to play a greater role in utility integrated resource planning, as well as the state energy planning functions of the SEOs. For example, by decreasing the consumption impact and peak loads of buildings, energy codes help lessen the stress on the grid, which increases grid reliability and may help defer expensive new generation needs. For states, building energy codes can support policy goals in economic development, job creation, energy security, and environmental stewardship. The conclusion of ARRA programs may cause states to revisit strategic energy planning processes that were deprioritized during ARRA.

4. **Utility support can be multi-faceted.** Existing SEO-utility partnerships on building energy codes illustrate that utilities have numerous assets, beyond funding, for promoting building energy code adoption and compliance. A utility's political and social capital with state legislatures, builders, contractors, and other stakeholders can be crucial to a state adopting a new building energy code. Likewise, utility data on consumer energy use and new construction trends can help inform cost-benefit analysis for proposed codes. Finally, utility involvement in building energy codes does not always need to be part of a large, company-wide program; in some cases, finding one respected and well-positioned utility employee who is an advocate for building energy codes can produce results, such as in receiving utility sponsorship for building energy code trainings.

5. **Engagement with state and local code adoption and enforcement agencies should be a priority.** While some SEOs are responsible for adopting or enforcing building energy codes, in many states separate agencies (e.g., health and safety departments) play this role. In these cases, SEOs should involve the state code agency in building energy code programs, as these agencies have the authority to adopt, implement, and enforce building energy codes. In many states, including Georgia and New York, SEOs and utilities have worked closely with the state code agency. Developing close working relationships with these agencies should continue to be a priority for SEOs, as this collaboration helps ensure state resources are effectively leveraged to improve code adoption and compliance.

SEOs have worked with utilities in a variety of ways to support code adoption and compliance, such as through building energy code training, supporting stretch codes, and conducting compliance assessments. While key challenges remain, such as developing accepted energy savings attribution protocols, SEOs have opportunities to expand utility involvement in active building energy code programs and develop new initiatives, including stretch codes or compliance studies. This strategy will help states, and the country, meet goals regarding energy savings and grid reliability.

About NASEO

The National Association of State Energy Officials (NASEO) is the only national non-profit organization whose membership includes the governor-designated energy officials from every state and territory. NASEO was formed by the states in 1986. The organization was created to improve the effectiveness and quality of state energy programs and policies, provide policy input and analysis, share successes among the states, and to be a repository of information on issues of particular concern to the states and their citizens. NASEO is an instrumentality of the states and derives basic funding from the states. Members are senior officials from the State and Territory Energy Offices, as well as affiliates from the private and public sectors.

About NASEO's Buildings Committee

NASEO's Buildings Committee was established to help SEOs and NASEO Affiliate members work together to address state, regional, and national issues in the areas of residential, commercial, and public buildings and building energy codes. The committee provides opportunities for peer-to-peer exchange of state experiences, approaches, and model documents and coordinates with technical assistance efforts from the Building Technology Program in the U.S. DOE. Ward Lenz, Director of the North Carolina State Energy Office, chairs the committee.

Appendix 1:

Case Studies on SEO and Utility Involvement in Building Energy Code Programs

ARIZONA CASE STUDY: Utilities and SEO Support Training and Adoption in Home Rule State

The Arizona Corporation Commission (ACC) adopted a regulatory framework in August 2010 that outlines the energy savings that investor-owned electric utilities can claim for documented support of building energy codes efforts, which helped catalyze utility involvement in building energy codes. Because Arizona is a home rule state,[1] utilities and the Governor's Office of Energy Policy (the GOEP) have worked with local jurisdictions and stakeholders to cosponsor building energy codes workshops that increase awareness on the benefits of improved building performance as guided by the IECC. These trainings, in addition to cost savings analysis and advocacy for building energy codes provided by utilities and other stakeholders, have prompted initiatives to adopt new energy codes in several local jurisdictions across the state. One public power utility not under the jurisdiction of the ACC, the Salt River Project, has also been active in these initiatives and has identified building energy code adoption and compliance as an important means to delivering money- and energy-saving opportunities to customers. Arizona's experience illustrates that funding is not the only valuable asset a utility provides when it comes to adopting building energy codes; leveraging a utility's data on building energy use trends and relationships with policy makers, builders, and developers and can also be critically important.

Arizona Building Energy Code	
Current Building Energy Code	Arizona is a home rule state and has no statewide building energy code. Roughly one-third of Arizona's 111 municipalities have adopted a version of the IECC.
State Code Authority	None. Codes are adopted and enforced at the local government level.

Program Details

Scope and Activities

An Electric Energy Efficiency Standard unanimously adopted by the ACC in August 2010 requires Arizona's investor-owned utilities (IOUs) to achieve cumulative energy savings from demand side management of 22% by the end of 2020.[2] The Standard allows regulated electric utilities to claim up to one-third credit for savings from energy code initiatives, if those efforts are documented and evaluated. Recent energy efficiency plans from Arizona's two largest IOUs, Arizona Public Services Company (APS) and Tucson Electric Power (TEP), include energy code support programs.[3] Arizona's largest public power utility, the Salt River Project (SRP), is not regulated by the ACC but is pursuing savings from energy codes as a means to achieve its own target of generating 20% of retail energy from Sustainable Resources by 2020.[4] Overall, utilities are active in two separate but related areas:

1 States that are "home rule" do not have a mandatory statewide building energy code; rather, building energy code adoption and enforcement is handled by local jurisdictions.

2 The cumulative energy savings of 22% refers to 2019 electric energy sales. For more information and the specific legislation, see http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=AZ27R&re=1&ee=1.

3 As of April 9, 2012, the ACC has not made a ruling on the TEP plan; therefore, TEP has not begun a building energy codes program. TEP's potential codes activities fall into the categories of code adoption and compliance.

4 The SRP Board of Directors set the 20% goal. Sustainable Resources include renewable energy, energy efficiency, behavioral programs, and up to 50% of documented savings from building energy codes programs. Reference: SRP Board of Directors, "Resolution Regarding Revisions to Sustainable Portfolio Principles," 23 May, 2011.

1. Code Adoption

Arizona is a home rule state and there are many opportunities for utilities and other stakeholders to promote code adoption in municipalities. For instance, in 2010 and 2011, utilities supported the City of Mesa's initiative to adopt its first building energy code, the 2009 IECC for both commercial and residential buildings. Mesa conducted a year-long engagement process with policy makers and stakeholders, including residents, building owners, designers, contractors, home builders, building officials, and property managers. Utilities, including SRP, provided information on building energy use trends and residential new construction programs, which indicated that most builders were already meeting the 2009 IECC. The GOEP supported Mesa through providing building energy code trainings to contractors, designers, and city staff. SRP also collaborated with other organizations, such as the Southwest Energy Efficiency Project (SWEEP), to advocate for the code to city council members, builders, and developers. This collaborative effort allowed the organizations to reach a broader audience than they could individually. The data and advocacy that utilities provided was crucial to the Mesa City Council adopting the 2009 IECC in July 2011.[5] Similar efforts by SRP and other utilities helped Avondale, Chandler, and Tempe adopt the 2009 IECC.

2. Code Implementation and Compliance

In 2010 and 2011, the GOEP received funding from the U.S. Department of Energy (DOE) for a "train the trainer" initiative called the Energy Code Workshop. Twenty energy code trainers were certified and delivered over 40 workshops on the 2009 IECC to roughly 1,000 participants. In spring 2011, SRP became a cosponsor of the workshops, which included providing meeting space and producing training DVDs. The Energy Code Workshop created a cadre of energy code trainers that have been a valuable ongoing resource as utilities have further increased energy code training efforts. For instance, SRP contracted one of the trainers to conduct outreach on energy codes in its service territory and several of the trainers led code workshops in April 2012 that were organized by APS and cosponsored by SRP and GOEP, among other organizations. This new capacity in the state to deliver code trainings has been especially important to jurisdictions that have recently adopted new energy codes and need educational support upon code implementation. Furthermore, increased capacity supports the state's current priority to expand training to both traditional and non-traditional audiences.

2012 Program Cost			
Utility[6]	**Energy Codes Budget**	**Total Energy Efficiency Program Budget**	**Program Status**
Arizona Public Services Company[7]	up to $100,000[8]	$61.2 million	Approved by ACC
Tucson Electric Power[9]	$73,288	$18.5 million	ACC approval pending

Energy Savings and Evaluation

To claim savings from a building energy codes program, Arizona IOUs are required to document their efforts and submit a Monitoring, Evaluation, and Research report that evaluates the program's cost-effectiveness, determines levels of energy savings and demand reductions, and describes whether to continue, modify, or terminate the program. Each utility is responsible for hiring a third-party to conduct the analysis. Utilities regulated by the ACC can claim up to one-third of the documented and evaluated energy savings from involvement in building energy codes.[10] Once the energy savings are determined, the utilities need to make a case for their level of involvement and the proportion of savings they should receive. This approach encourages all regulated utilities to become active in building energy codes, as utilities are vying for a limited amount of savings generated from code adoption or increased compliance.

5 One specific resource SRP provided was data on utility bill reductions, emissions reductions, and other economic benefits from adopting a new building energy code. See Exhibit D at: http://mesa.legistar.com/LegislationDetail. aspx?ID= 870788&GUID= 36435D0D- B36D-4E32-B49BD1B8D5FCE5C1&Options=&Search=
6 SRP's budget for building energy codes programs is expected to be a similar amount.
7 Southwest Energy Efficiency Project, "Arizona Public Service Company 2012 Energy Efficiency Budgeted Investment," 26 Apr. 2012, http://www.swenergy.org/news/news/documents/file/APS%202012%20Energy%20Efficiency%20Budgeted%20Investment.pdf.
8 The APS budget of $100,000 is for a Codes and Standards program. The amount for codes only is unknown.
9 Tuscon Electric Power Company, "2010 Modified Energy Efficiency Implementation Plan," 31 Jan. 2012, http://images.edocket.azcc.gov/docketpdf/0000133827.pdf.
10 As mentioned above, SRP, which is not regulated by the ACC, will claim up to 50% of documented savings.

GEORGIA CASE STUDY: SEO and Utility Support Adoption of 2009 IECC and Testing Requirements

On January 1, 2011, the 2009 IECC (with amendments) became the mandatory Georgia building energy code, replacing the 2006 IECC. Testing requirements for building envelope air leakage and duct tightness became effective on July 1, 2011, making Georgia the first state to include these requirements in a mandatory statewide building energy code. The Georgia Environmental Finance Authority (GEFA), the State Energy Office; Southface, an energy and sustainability non-profit organization based in the Southeast; and the Georgia Department of Community Affairs (DCA) cosponsored a training series on the new code, including a Duct and Envelope Tightness (DET) Verifier training. Georgia Power, an investor-owned utility (IOU), was supportive of the DET Verifier training initiative and utilized the Southface curriculum to deliver additional DET Verifier trainings across the state, with a focus on rural areas. GEFA and DCA also coordinated the purchase of DET testing equipment, which the Home Builders Association of Georgia rents to contractors through its regional offices.[1] GEFA has funded a report on building department best practices for enforcing the new energy code, which will be shared with building departments throughout the state in order to increase code compliance. The strong partnership among state agencies, utilities, home builders, local building departments, and other stakeholders in Georgia has contributed to adopting a building energy code that emphasizes energy efficiency performance testing and to creating and strengthening a collaborative building energy code environment in the state.

Georgia Building Energy Code	
Current Residential Code	2009 IECC (with amendments)
Current Commercial Code	2009 IECC with reference to ASHRAE 90.1-2007
State Code Authority	The Georgia DCA authorizes updates or amendments to the state minimum standard codes, including energy codes. Revisions to the building energy code (IECC) must also be approved by GEFA's Division of Energy Resources.

Program Details

Scope and Activities

Two state agencies, GEFA and DCA, collaborated with Georgia Power[2] and numerous other stakeholders to adopt the new building energy code and support code implementation.

1. Code Development and Adoption

Georgia electric and gas utilities, as well as GEFA and other stakeholders, participated on a 17-member 2009 IECC Task Force that began meeting in late 2009. The Task Force's role was to assess the difference between the 2009 IECC and the statewide building energy code at the time, which was the 2006 IECC with amendments, and develop amendments to the 2009 IECC that the State Codes Advisory Committee should consider.[3] The Task Force developed an amendment to the 2009 IECC that required duct and envelope tightness testing by a certified individual; additionally, the testing results must be included on a certificate that is placed on the home's electrical panel.[4] Other stakeholder groups, such as the Home Builders Association of Georgia (HBAG), supported the DET amendment but had concerns that the home builder industry lacked the training and

1 Georgia Department of Community Affairs, "January 2012 Newsletter," http://www.dca.state.ga.us/main/News/downloads/newsletters/January2012DCAnewsletter.pdf.

2 Georgia Power is the largest subsidiary of Southern Company, one of the nation's largest generators of electricity.

3 The IECC Task Force was convened by DCA. For more information on the code adoption process, see: Institute for Market Transformation (IMT), "Residential Performance Testing in Georgia," winter 2012.

4 DET verifiers include Building Performance Institute (BPI) Building Analysts, Home Energy Rating System (HERS) raters, Home Performance with ENERGY STAR contractors, or anyone who completes a DET Verifier course approved by the Georgia DCA. The duct tightness tests must show that the post construction total leakage is less than 12%. A blower door test (for envelope tightness) must result in less than 7 air changes per hour at a pressure difference of 50 Pascals ($ACH_{50} < 7$). For more information on the amendments, see: Southface, "Georgia Residential Energy Field Guide," 2011.

equipment to effectively implement the testing requirement. To respond to this need, GEFA agreed to develop a statewide training program on the commercial and residential building energy codes, as well as the DET Verifier course,[5] and Georgia Power agreed to hold additional DET training courses in rural parts of the state. While the 2009 IECC became effective as of January 1, 2011, the DET requirement became effective July 1, 2011, in order to allow time to develop and implement the DET training course.

2. Energy Code Training and Equipment Rental

In late 2010, GEFA selected Southface to execute the building energy code and DET Verifier training program. Southface developed curricula for training courses on the commercial and residential building energy codes, and a DCA-approved DET Verifier Course, which included a written and practical exam. Southface provided the DET curriculum to Georgia Power, which used it to deliver DET Verifier workshops in rural parts of the state.[6] Georgia Power also helped sponsor the Southface building energy code and DET workshops by providing printed manuals. Additionally, Southface trained 50 technical college instructors from 16 different technical colleges as part of a train-the-trainer program, so that they could provide training courses in future years once the GEFA-sponsored program ended. See Table 1 for more information on the Southface and Georgia Power DET training programs.

Table 1:

Georgia DET Verifier Training Summary			
Organization[7]	**Trainings Delivered**	**Certified Trainees**	**Participant Cost Per Training**
Southface	27	431	$225
Georgia Power	20	215	$40

GEFA also recognized the need to offer home builders and contractors affordable testing equipment. GEFA provided ARRA funding to DCA to purchase 30 blower door and duct blaster kits for an equipment rental program, administered by the state home builders association, HBAG, who took on this role because many of its members recognized DET testing as a potential new line of business.[8]

Impact on Compliance

While Georgia has not conducted a formal compliance assessment on its new statewide building energy code, anecdotal evidence indicates that home builders and HVAC contractors have deepened their knowledge of home construction due to the DET training and requirements and take professional pride in achieving low leakage rates.[9] Additionally, GEFA is sponsoring a report on building department best practices for enforcing Georgia's energy code, with the main audience being building departments and local governments.[10] Building departments in Georgia, or other states, will be able to utilize the recommendations in the report to refine their approaches to enforcing building energy codes. For instance, the research highlights two strategies some local building departments are taking in order to increase compliance: 1) requiring that all builders submit a compliance certificate to the building department prior to issuing a certificate of occupancy; and 2) spot checking DET test results, either through watching DET Verifiers perform the test or verifying results after DET tests are complete.

5 A Pacific Northwest National Laboratory grant funded the training program.

6 At this time, Georgia Power is not quantifying energy savings from its involvement in building energy codes. It is involved in these activities in order to reduce energy consumption in the state, link code updates into their residential new construction program, and to stay informed on the statewide building energy code development process. Reference: Darrell Howell, Georgia Power, Interview by author, 30 Apr. 2012.

7 Nineteen businesses have also been approved by DCA to be DET Verifier Trainers (using the Southface curriculum) and have trained an 44 people. There are 463 other qualified DET Verifiers (e.g., HERS Raters, etc.).

8 Jennifer Wilson, Georgia Environmental Finance Authority, Interview by author, 7 May 2012.

9 Diana Burk, Southface, Interview by author, 16 Apr. 2012; Howell Interview, Apr. 2012.

10 Wilson Interview, May 2012. The report is being completed by Southface, the Southeast Energy Efficiency Alliance, and the Building Codes Assistance Project and is funded by a State Energy Program (SEP) ARRA grant.

IOWA CASE STUDY:
Above Code Program Implemented by Three Utilities

In 2011, a working group of the Iowa Energy Efficiency Collaborative, including representatives from the SEO and the Iowa Building Code Commission, designed an Advanced Builder Option Package (Advanced BOP). This program was created to fill a gap in the existing utility residential rebate programs, which were not adequately supporting the state building energy code. Each of Iowa's IOUs offer the Advanced BOP, which provides rebates for new homes built beyond the existing 2009 IECC code to many of the higher 2012 IECC code requirements. The Advanced BOP is intended to have the same impact as a stretch code and will allow utilities to support adoption of and compliance with the state building energy code. Through providing incentives to builders to meet the next iteration of the state code and verifying that these requirements are met the utility program educates builders on the future code and prepares them to comply with it. Additionally, this program has the advantage of allowing utilities to claim energy savings as they do with other residential incentive programs. Members of the working group that developed the Advanced BOP have identified aspects of the program that can improve in future years, including: 1) utilities should no longer offer alternative, less stringent incentive programs, which have the potential to reduce participation in the Advanced BOP, and 2) utilities should agree upon a standard rebate structure and code requirements for the Advanced BOP.

Iowa Building Energy Code	
Current Residential Code	2009 IECC
Current Commercial Code	2009 IECC with reference to ASHRAE 90.1-2007
State Code Authority	Iowa Building Code Advisory Council reviews code on three-year IECC cycle

Program Details

Iowa's gas and electric investor-owned utilities (IOUs), municipal utilities, and rural electric cooperatives are required by law to offer energy efficiency programs to their customers.[1] The Iowa Office of Consumer Advocate, along with an Energy Efficiency Collaborative, works closely with the Iowa Utility Board (IUB) to provide oversight of these programs. In early 2011, the Energy Efficiency Collaborative began discussing potential utility energy efficiency programs that would support energy code compliance. Given that the collaborative was large (over 30 people) and the leaders from the Office of Consumer Advocate did not have a technical background in codes or building science, 12 individuals with expertise in building energy codes and residential construction formed a working group to develop a program.[2]

Over eight meetings from March to June 2011, the working group designed an Advanced Builder Options Package (Advanced BOP), which provides rebates for new homes that are built to a set of 2012 IECC code requirements.[3] Intentionally designed to be above 2009 IECC, the state's current code, Advanced BOP aims to produce more energy savings than the existing Builder Options Package program (which barely meets the current 2009 IECC) and also to be less time consuming for contractors than ENERGY STAR for New Homes Version 3. Given that utilities need to meet rebate spending requirements and are uncertain how the Advanced BOP will perform in its first year, they are still offering the existing Builder Options Package and ENERGY STAR New Homes programs. However, the working group believes that Advanced BOP will attract participation from home builders who already construct energy-efficient homes because of market differentiation or customer demand reasons.

1 Iowa Code § 476.6, https://www.legis.iowa.gov/DOCS/ACO/IC/LINC/Section.476.6.pdf

2 The working group included representatives from the Iowa Energy Division within the Iowa Economic Development Authority (the State Energy Office), Home Builder Association of Iowa, home builders and subcontractors, HERS raters, the Office of Consumer Advocate, the Department of Safety's Building Code Bureau, state and city code officials, energy raters, building science professionals, and industry consultants.

3 Single-family homes or duplexes qualify for the program.

Scope and Activities

In 2012, Iowa's three investor-owned utilities (IOUs) are offering Advanced BOP to their customers, with slightly different rebate structures and code requirements (see Table 1).

Towards the end of 2012, the Energy Efficiency Collaborative will hold a meeting with the three Iowa utilities to analyze Advanced BOP's results and compare participation in Advanced BOP with participation in the normal Builder Options Package and ENERGY STAR for New Homes Version 3. The working group hopes that there will be enough participation in Advanced BOP to discontinue the less-stringent BOP program and that the utilities will set identical code requirements and rebates across the Advanced BOP program for 2013, which are two weaknesses in the current program.[4]

Table 1: Rebates Levels and Building Energy Code Requirements of Iowa Advanced BOP Utility Programs

	Alliant Energy	MidAmerican	Black Hills
Rebate Levels			
Heating and Cooling Customers	$2,800	$1,750	NA
Cooling Only Customers	$840	$500	NA
Natural Gas Heating Only Customers	$1,960	$1,250	$1,000 (plus additional $300 rebate for HERS Rating)
Geothermal Customers	$1,200 (plus additional prescriptive geothermal rebate)	$1,300 (plus additional Residential Equipment rebate)	NA
Building Energy Code Requirements			
Link to Requirements	2012 New Home Construction Builder Guide	2012 EnergyAdvantage® New Homes Program	2012 Residential New Construction Program

Energy Savings

One strength of the Advanced BOP program is that it engages utilities in code adoption and compliance while allowing them to claim savings in the same manner that they would for other residential incentive programs. In this case, utilities determine energy savings by comparing projected energy use of homes built to the Advanced BOP with projected energy use if they were built to the 2009 IECC.

Program Cost

The utilities fund the Advanced BOP program as part of their energy efficiency plans. The amount of rebates will be contingent upon participation levels in the program. It is too early in the construction year to make predictions.

Quality Assurance and Evaluation

All projects that participate in Advanced BOP must receive a HERS inspection from a certified HERS rater that scores 70 or less and confirms compliance with the 2009 IECC.[5] The utilities are also organizing a quality assurance (QA) initiative. For 10% to 20% of homes that participate in the Advanced BOP program, a utility QA contractor will observe HERS rater inspections. This approach is meant to both evaluate the work of the individual HERS rater and ensure that inspections are accurate. However, there is concern among some members of the working group that this QA approach is not adequate. Conducting field verifications after the HERS rater inspections could remove the bias of raters behaving differently when observed.[6]

4 Brian Bishop and David Ruffcorn, Iowa Department of Safety, Building Code Bureau, Interview by author, 4 Apr. 2012.

5 The Energy Efficiency Collaborative working group recommended a HERS score of 59 or less, as ENERGY STAR for New Homes Version 3 requires a 55 or less, but the utilities have set the score at 70.

6 Erin Wiggins, Cenergy, Interview by author, 10 Apr. 2012.

WASHINGTON CASE STUDY:
Utility Code Group Experience Helps Inform Other States

In 1993, Washington created a Utility Code Group (UCG) to enforce and increase compliance with a new statewide commercial building energy code that was a dramatic change from the state's historical codes up to that point. The UCG was successful at creating a forum for utilities to collaborate on supporting building energy code activities, which included a training initiative and a Special Plans Examiner and Inspector (SPE/I) program. The training program, which was designed by a broad base of stakeholders, was able to reach diverse audiences and improve builder and designer attitude regarding the new code. The administration of the Special Plans Examiner and Inspector program was later passed on to the Northwest Energy Efficiency Council (NEEC). Today, NEEC provides training and technical support for the commercial portions of the Washington State Energy Code, with funding from the Northwest Energy Efficiency Alliance (NEEA). NEEA also funds code development and training activities and conducts compliance studies throughout the region, using ratepayer funding. One major success of the UCG was a large increase in compliance resulting from the Special Plans Examiner and Inspector program; jurisdictions that participated had a compliance rate of 83%, compared to a 60% statewide compliance rate.[1] This program is informing State Energy Offices in other states, such as Minnesota, as they design approaches to improve code compliance.

Program Details

Scope and Activities

The Washington UCG was created as a non-profit organization in December 1993 to ensure strong rates of enforcement and compliance with a new commercial building energy code taking effect on April 1, 1994.[2] The major public and private utilities in Washington funded the UCG with ratepayer funds and each participating utility received one seat on the Board of Directors, with Bonneville Power Authority (BPA) representing many of the small public utilities.

The UCG's main activities included:

1. Training Program

The UCG developed training courses for building contractors and other industry groups and, based on feedback from training surveys, designed a new series of modules, with a track for designers and a track for contractors.[3] A group of trainers—who had expertise in one or more course topics — and three circuit riders[4] conducted the UCG-led trainings. From April 1994 through August 1996 there were over 7,500 participants in training courses and 910 participants in brown bag trainings at design and contracting firms.[5] Over 2,700 building officials, architects, engineers, and contractors utilized a free informational hotline organized by the Washington State Energy Office.[6]

2. Special Plans Examiner and Inspector Program

The UCG funded a third-party compliance verification program, known as the Special Plans Examiner and Inspector program, to increase building energy code compliance and give local jurisdictions flexibility in enforcing the code. In jurisdictions that voluntarily participated in the program, building applicants hired a certified contractor to perform a building plan check and/or site inspection and were reimbursed by their

1 David Baylon, Aaron Houseknecht, Jonathan Heller, and Les Tumidaj, "Compliance with the 1994 Washington State Nonresidential Energy Code (NREC)," Ecotope, Jun. 1997, 84-85.

2 The commercial code was also referred to as the nonresidential energy code (NREC).

3 For a list of training courses, see: Rick Kunkle, "The Washington State Energy Code: Energy Code Privatization – The Utility Code Group Story," Washington State University Extension Energy Program, Jan. 1997.

4 The circuit riders were contractors who led training courses and brown bag sessions in a specific region in the state.

5 Kunkle, 1997.

6 For a full list of technical assistance resources, see Kunkle, 1997.

utility.[7] One of the key advantages to this approach is that it increased building energy code compliance while not burdening local code officials, who had resisted the new energy code because they viewed it as a distraction from their main health and safety responsibilities. By early 1997, roughly half of all jurisdictions in Washington used the Special Plans Examiner and Inspector program. The UCG spent over $200,000 per year on the program.[8] (See Table 1 for a summary of key program expenses.)

Program Cost

Total Program Budget: $5 million over 3.5 years[9]

Funding Sources: 98% Ratepayer funds, 2% Other[10]

Table 1: Expenses of Main UCG Activity Areas[11]

Main UCG Activity Areas	Percentage of Total Budget
Training	60%
Special Plans Examiner and Inspector Program	15%
Quality Assurance/Evaluation	10%

Results

The UCG commissioned a compliance study on commercial buildings permitted in 1995 that showed an overall compliance rate of approximately 60%, which, while not as high as desired, was a marked increase over the 50% compliance rate found in a study on new commercial buildings in 1990.[12] Additionally, buildings that were approved by a Special Plans Examiner/Inspector showed a compliance rate of 83%. The training program had an impact on the attitude among building officials and designers, who took the commercial code much more seriously than the previous code. However, the Special Plans Examiner and Inspector program was the most "significant factor in achieving higher compliance."[13]

Following the UCG

The utilities stopped funding the UCG, as planned, in March 1997. The UCG identified NEEC as its successor organization, and NEEC still organizes training for the commercial building energy code. NEEA currently organizes code compliance studies and promotes stronger building energy codes in the region, with funding coming from ratepayers. However, the Special Plans Examiner and Inspector program was largely dormant by 2002, as funding was no longer available and the commercial code had evolved since 1994. While there recently has been interest in reviving the program due to increasing complexity in building energy codes, code officials indicate that they do not see a need for a Special Plans Examiner and Inspector program, and there are currently no plans to reinstate it.[14] Washington State's experience with this program provides useful reference for other states who may glean lessons and strategies to improve code compliance in their own jurisdictions.

7 The Washington Association of Building Officials (WABO) administered the program. Building departments could contact WABO to receive a list of certified individuals. By June 1996, there were 150 examiners and 140 inspectors (Kunkle, 1997).

8 Northwest Energy Efficiency Council (NEEC), "Special Plans Examiner/Inspector System in Washington State," Accessed 29 Mar. 2012, https://conduitnw.org/Pages/File.aspx?RID=590.

9 Kunkle, 1997.

10 Other sources of revenue included fees for service and U.S. Department of Energy grants.

11 Percentages are based on information in the Kunkle report and the NEEC report on the SPE/I program (see earlier footnotes) and do not add up to 100.

12 Baylon, et al., 1997. In both studies, a building was deemed non-compliant if one component failed inspection. In 1995, compliance with each component of the code increased compared to 1990.

13 Baylon, et al., 1997.

14 Todd Currier, Washington State University Extension Energy Program, Interview by author, 15 Mar. 2012.

Appendix 2:

NASEO Board of Directors Resolution Supporting Utility Involvement in Energy-Efficient Building Codes

WHEREAS, State and Territory Energy Offices have long recognized the importance of energy efficiency in the development of a successful national energy policy; and

WHEREAS, homes and commercial buildings are America's largest energy-consuming sector – together using over 40 percent of the nation's energy, two-thirds of our electricity consumption, one-eighth of our water use, and responsible for almost 40% of our carbon dioxide emissions;[1] and

WHEREAS, reducing building energy consumption is an important objective for our country; and

WHEREAS, studies show that these energy efficiency improvements enhance the affordability, security, comfort, and health and safety of home ownership by generating net positive cash flow for homeowners; and

WHEREAS, building energy codes help safeguard commercial owners and tenants from long-term financial burdens that can result from short-term design and construction decisions and can afford protection from energy price volatility; and

WHEREAS, energy-efficient buildings provide energy, economic, and environmental benefits for many years, and enhance our national security by reducing our dependence on foreign oil; and

WHEREAS, building energy codes are a key component of a sustainable future for our country; and

WHEREAS, building energy codes set minimum requirements for energy-efficient design and construction of new and renovated buildings that impact energy use and emissions over the decades-long lifetimes of the buildings; and

WHEREAS, building energy codes make our daily lives better by improving indoor air quality and public health, promoting environmentally-friendly behaviors such as recycling and generating less waste and providing a more comfortable and productive work environment; and

WHEREAS, building energy codes help drive the development, deployment, and innovation of new building technologies and design strategies; and

WHEREAS, more education, training and awareness continue to be needed at the local level on the tools, applications, best practices and support materials for greater building energy code adoption, implementation and compliance; and

WHEREAS, building energy codes decrease the impact and peak load of buildings, helping to lessen the stress on the electricity grid system, which increases grid reliability; and

WHEREAS, many of the country's electric and gas investor-owned utility companies and consumer- owned electric and gas utilities administer and implement energy efficiency and demand side management programs that complements the state energy office programs and policies; and

1 U.S. Department of Energy, Building Technologies Program. Building Energy Codes Resource Guide for Policy Makers. PNNL-SA-81023. June 2011.

WHEREAS, many opportunities exist for utilities to be more active in building energy code related activities, including but not limited to, providing local builder and code official training, offering incentives for more energy efficient new building construction, promoting technologies and design approaches that are above minimum code, integrating building energy codes into resource planning, providing direct access to end-use customers, and sharing program experiences in support of new building energy codes.

NOW, THEREFORE, BE IT RESOLVED, that the National Association of State Energy Officials (NASEO) encourages state energy officials and state utility commissions to 1) recognize the critical role that electric and gas investor-owned utility companies and consumer-owned gas and electric utilities can play in helping with the successful development, adoption, implementation, enforcement and compliance of building energy codes; 2) provide state energy policies and opportunities for utilities to incorporate building energy code related activities in their energy efficiency portfolios and resource planning; and 3) establish policies that recognize, evaluate and provide credit for the energy savings resulting from utilities' support for energy codes related activities.

Recommended by NASEO's Buildings Committee and adopted by the NASEO Board of Directors on Dec. 15, 2011.

Appendix 3:

Example Legislation Outlining SEO Oversight or Monitoring of Utility Energy Efficiency Plans

Massachusetts and Minnesota have legislation that defines a role for the State Energy Office to provide oversight or guidance for utility ratepayer funded plans to meet required energy efficiency savings targets. Brief descriptions of legislation from Massachusetts and Minnesota and links to the full legislation text are provided below:

Massachusetts

In 2008, the Massachusetts adopted the Green Communities Act (S.B. 2768). Massachusetts investor-owned electric and gas utilities and the Cape Light Compact are required to prepare energy efficiency plans every three years that "provide for the acquisition of all available energy efficiency and demand reduction resources that are cost effective or less expensive than supply." The law also requires the Department of Public Utilities to appoint and convene an 11-member Energy Efficiency Advisory Council, chaired by the Commissioner of the Department of Energy Resources (DOER), Massachusetts' SEO. The Energy Efficiency Advisory Council is responsible for reviewing and approving the energy efficiency plans and is supported by the DOER staff.

Minnesota

In 2007, the Minnesota Legislature passed the Next Generation Energy Act of 2007 (Minnesota Statutes 2008 § 216B.241). Investor-owned natural gas and electric utilities are required to reach annual savings goals equivalent to 1.5% of gross annual retail energy sales, calculated on the most recent three-year weather-normalized average. Each utility must develop a Conservation Improvement Plan that offers energy efficiency programs to residential and business customers. The legislation requires that Conservation Improvement Plans must be submitted to the Commissioner of the Department of Commerce every three years. The Minnesota Department of Commerce, Division of Energy Resources—the SEO—reviews and approves each Conservation Improvement Plan. For more information on the Division of Energy Resources' role, visit: http://mn.gov/commerce/energy/topics/conservation/How-CIP-Works.jsp.

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[iii] U.S. Department of Energy, Building Technologies Program, "Building Energy Codes Resource Guide for Policy Makers," PNNL-SA-81023.

[iv] Northwest Power and Conservation Council, "Energy Efficiency in the Future: The Sixth Northwest Power Plan," accessed 15 Apr. 2012, http://www.nwcouncil.org/library/2010/2010-08.htm.

[v] Karen Clifton, Alabama Department of Economic & Community Affairs, e-mail to author, 18 May, 2012.

[vi] California Public Utilities Commission, "Decision Approving 2010 to 2012 Energy Efficiency Portfolios and Budgets," Decision 09-09-047, 24 Sep. 2009.

[vii] The Cadmus Group, Inc., "California Statewide Codes and Standards (C&S) Program: Draft Evaluation Plan," 17 Feb. 2012, http://www.energydataweb.com/cpucFiles/68/20102012CodesandStandardsEvaluationPlan_1.pdf, 10.

[viii] *Ibid.*, 12.

[ix] Bahareh Van Boekhold, "The Delaware Energy Codes Collaborative," presentation to NASEO Buildings Committee, 17 Apr. 2012, http://www.naseo.org/codes/events/2012-04-17/.

[x] Bahareh Van Boekhold, Delaware Division of Energy and Climate, e-mail to author, 3 May, 2012.

[xi] Georgia Department of Community Affairs, "January 2012 Newsletter," http://www.dca.state.ga.us/main/News/downloads/newsletters/January2012DCAnewsletter.pdf.

[xii] Illinois General Assembly, 220 ILCS 5/8-103, Section (f)(2).

[xiii] David Baker and Bruce Selway, Interview by author, 11 Apr. 2010.

[xiv] *Ibid.*

[xv] "Stretch Appendix to the Building Energy Code in Massachusetts, Question and Answer," Aug. 2010, http://www.cityofboston.gov/Images_Documents/EOEEA%20q_and_a_stretch_code_tcm3-21504.pdf, 5.

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[xvii] Northeast Energy Efficiency Partnerships (NEEP), "Regional Building Energy Codes Working Group Meeting," 27 Oct. 2011, http://neep.org/uploads/NEEPResources/id804/NotesAndPresentations_BECWorkingGroupMeeting_Oct27.pdf, 43.

[xviii] Minnesota Environmental Initiative, "1.5% Energy Efficiency Solutions Project," Mar. 2011.

[xix] Joe Plummer, Jessica Burdette, and Bruce Nelson, Minnesota Division of Energy Resources, Interview by author, 11 Apr. 2012.

[xx] Nebraska Energy Office, "2011 Annual Report," 28.

[xxi] Danielle Jensen, Nebraska Energy Office, e-mail to author, 19 Apr. 2012.

[xxii] New York State Energy Research & Development Authority (NYSERDA), "Energy Code Training Website," https://nyserdacodetraining.com/.

[xxiii] NYSERDA, "Technology and Market Program Operating Plan for 2012-2016," Dec. 2011, 9-54.

[xxiv] NYSERDA, "EPA Recognizes NYSERDA with 2012 ENERGY STAR Sustained Excellence Award," 16 Mar. 2012.

[xxv] Carolyn Sarno, Northeast Energy Efficiency Partnerships, Interview by author, 18 May, 2012.

[xxvi] *Ibid.*

[xxvii] Rhode Island Public Utilities Commission, "National Grid Energy Efficiency Plan for 2012," 1 Nov. 2011, Docket No. 4295.

[xxviii] David Baylon, Aaron Houseknecht, Jonathan Heller, and Les Tumidaj, "Compliance with the 1994 Washington State Nonresidential Energy Code (NREC)," Ecotope, Jun. 1997, 84-85.

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