

MINUTES OF THE SENATE UTILITIES COMMITTEE

The meeting was called to order by Chairman Jay Emler at 9:30 A.M. on January 31, 2007 in Room 526-S of the Capitol.

Committee members absent:

Committee staff present: Raney Gilliland, Kansas Legislative Research Department
Tatiana Lin, KSU Legislative Fellow
Mike Corrigan, Revisor of Statutes
Ann McMorris, Committee Secretary

Conferees appearing before the committee:

Don Low, Kansas Corporation Commission
Bruce Snead, Kansas Energy Council
Paul Snider, Kansas City Power & Light
Paul Johnson, Kansas Catholic Conference
Colin Hansen, Kansas Municipal Utilities
Mark Schreiber, Westar Energy
Tom Thompson, Sierra Club
David Sprunge, Citizens' Utility Ratepayer Board
Sandy Jacquot, League of Kansas Municipalities
Chris Wilson, Kansas Builders

Others in attendance: See attached list

Introduction of Bills

Jere White, Kansas Corngrowers Association, requested introduction of a bill dealing with the natural gas access issues. He noted the Revisor's are in the process of drafting the language for this bill.

Moved by Senator Taddiken, seconded by Senator Reitz, approve introduction of a bill dealing with the natural gas access issues. Motion carried.

Chairman announced that final action is scheduled on **SB 49** on Wednesday, February 7.

Janet Buchanan of KCC has provided the information requested by the committee on **SB 49**.
(Attachment 1)

Chair opened the hearing on

SB 128 - Requiring certain electric utilities to provide energy conservation information to consumers, establishing the energy conservation promotion education advisory group.

Proponents:

Don Low, Kansas Corporation Commission, noted KCC has a general investigation open regarding utility energy efficiency programs and he listed five of the issues they will need to consider. (Attachment 2)

Bruce Snead of the Kansas Energy Council addressed several aspects of the **SB 128** and its benefits. He discussed recommended actions, responsible parties, implementation deadline, budget requirements, and pros and cons of the proposal. (Attachment 3)

Paul Snider, Kansas City Power & Light, stated an important part of **SB 128** is the flexibility it affords utilities to tailor education efforts to their own customers. He offered some suggested changes in the bill language. (Attachment 4)

Paul Johnson, Kansas Catholic Conference, requested two improvements to **SB 128** - (1) expand energy conservation education advisory group to include a representative from SRS LIHEAP; and (2) the advisory group should report annually to the Senate and House Utilities Committees on their progress. (Attachment 5)

CONTINUATION SHEET

MINUTES OF THE Senate Utilities Committee at 9:30 A.M. on January 31, 2007 in Room 526-S of the Capitol.

Colin Hansen, Kansas Municipal Utilities, noted **SB 128** addresses the objective of having more informed groups of customers. **SB 128** attempts to understand and recognize the jurisdictional issues and concerns of our collective memberships. (Attachment 6)

Mark Schreiber, Westar Energy, noted **SB 128** enhances the efforts of every utility to encourage customers to use energy efficiently. Two changes were offered in the language of the bill. (Attachment 7)

Tom Thompson, Kansas Chapter of the Sierra Club, voiced support for **SB 128** because it promotes energy efficiency and conservation. (Attachment 8)

David Springe, Citizens' Utility Ratepayer Board, presented some changes in the language of **SB 128** for the committee to consider. (Attachment 9)

Opponents

Sandy Jacquot, League of Kansas Municipalities, voiced support for the establishment of an energy conservation education advisory group but had concerns about the language and offered some changes for the committee to consider. (Attachment 10)

Chris Wilson, Kansas Building Industry Association, offered some changes to the language in **SB 128** and said she would be willing to participate in developing an amendment to the disclosure form. She provided ENERGY STAR Qualified Homes Codes & Standards Information. (Attachment 11)

Chair closed the hearing on **SB 128**.

Adjournment.

Respectfully submitted.

Ann McMorris, Secretary

Attachments - 11

SENATE UTILITIES COMMITTEE GUEST LIST

DATE: JANUARY 31, 2007

Name	Representing
Paul Snider	KCP&L
Dan Hatchaus	KEC
PHIL WAGOS	KEPCO
LARRY BEGG	MIDWEST ENERGY
Dan Springs	CWB
Joe Dick	KCBPU
Mark Schreiber	Westar Energy
Kimberly Schauer	ITC Great Plains
Colin HALLS	K&U
Bruce Suss	KEC
Whitney Jamm	KS Gas Service
Lindsey Douglas	HLF
Don Lan	KLL
Steve Johnson	Kansas Gas Service/ONEOK

January 30, 2007

The Honorable Senator Emler
Senate Utilities Committee, Chairman
State Capitol
300 SW 10th
Topeka, KS 66612

Dear Senator Emler:

Attached is some of the information requested by members of the Senate Utilities Committee during the hearing for SB49. I have not been able to gather all of the information requested. Specifically, I have not yet gathered information that would provide committee members with the dollar amount contributed by VoIP carriers to the KUSF on a voluntary basis. I will get that information to the committee as soon as it is available.

A list of VoIP providers is attached. This list was developed for the Commission's use in the proceeding where it is currently considering whether to assess VoIP providers' intrastate revenues for KUSF purposes in Docket No. 07-GIMT-432-GIT. Those carriers with an asterisk by their names are carriers that currently pay KUSF assessments. However, it should be noted that these carriers provide services, in addition to VoIP services, that are assessable for KUSF purposes. Staff has not yet been able to contact the carriers to determine whether they are providing assessments only on non-VoIP services or both VoIP and non-VoIP services. Additionally, Staff has not yet determined the dollar amount associated with any voluntary payments on VoIP services. As indicated above, that information will be delivered to the Committee as soon as it is available.

A map of the areas in the state where cable providers offer broadband service is also attached. While the information is 2002, it provides some general information regarding where VoIP services could be provided by cable operators. Staff has not yet had the opportunity to discuss the availability of more current information with the Kansas Cable and Telecommunications Association. However, if the Committee would like current information, Staff will work with the Kansas Cable and Telecommunications Association to provide that as soon as a new map as soon as possible.

Finally, attached is a spreadsheet indicating the availability of broadband as reported by incumbent local telephone carriers in their Annual Reports filed with the Commission. Data are provided for 2003, 2004, and 2005. Data are provided to the Commission for each exchange served by the carrier. Some carriers have marked this information as confidential. In those instances where the availability was not uniform over the exchanges served by the carrier, Staff has provided the range of availability and the average availability over all exchanges. Also included is an approximate subscribership level for the broadband service offered by the incumbent local telephone carriers for the same years.

Senate Utilities Committee
January 31, 2007
Attachment 1-1

I hope you will find this information useful. If you or members of the Committee have additional questions, please contact me at (785) 271-3293 or j.buchanan@kcc.state.ks.us. Again, additional information will be sent as soon as it can be compiled.

Sincerely,

Janet Buchanan

List of VoIP Providers

Information gathered from Docket No. 07-GIMT-432-GIT

* Indicates that the carrier contributes to the KUSF

1TouchTone

8x8, Inc

AllDigitalVoice

AT&T *

BroadVoice, Inc

Broadvox, Ltd

Cable One

Cebridge Communications

Centric Voice

Cinergy Communications *

Clarity Telecommunications

Comcast Phone of Kansas LLC, d/b/a Comcast Digital Phone *

CommPartners

Convergent Networks

Cox Kansas Telecom, LLC d/b/a Cox Communications, Inc *

DIECA Communications, Inc, d/b/a Covad Communications Company *

Eagle Communications, Inc

Earthlink, Inc *

FonVantage

Google, Inc.

iConnectHere

Level 3 Communications, LLC (wholesale service provider)

Lightyear Network Solutions *

Maximus Telecom

Mediacom Cable

Midwest Connections

My Phone Company

Nuvio Coporation

NuVox Communications of Kansas, Inc *

Opex Communications, Inc *

Packet 8

Primus Telecommunications *

Qwest Communications Corporation *

rocketVoIP

SKT, Inc *

Skype Technologies

SunRocket, Inc

TelCove Investment *

Time Warner *

Verizon (Voicewing) *

ViaTalk, Inc

VoicePulse, Inc

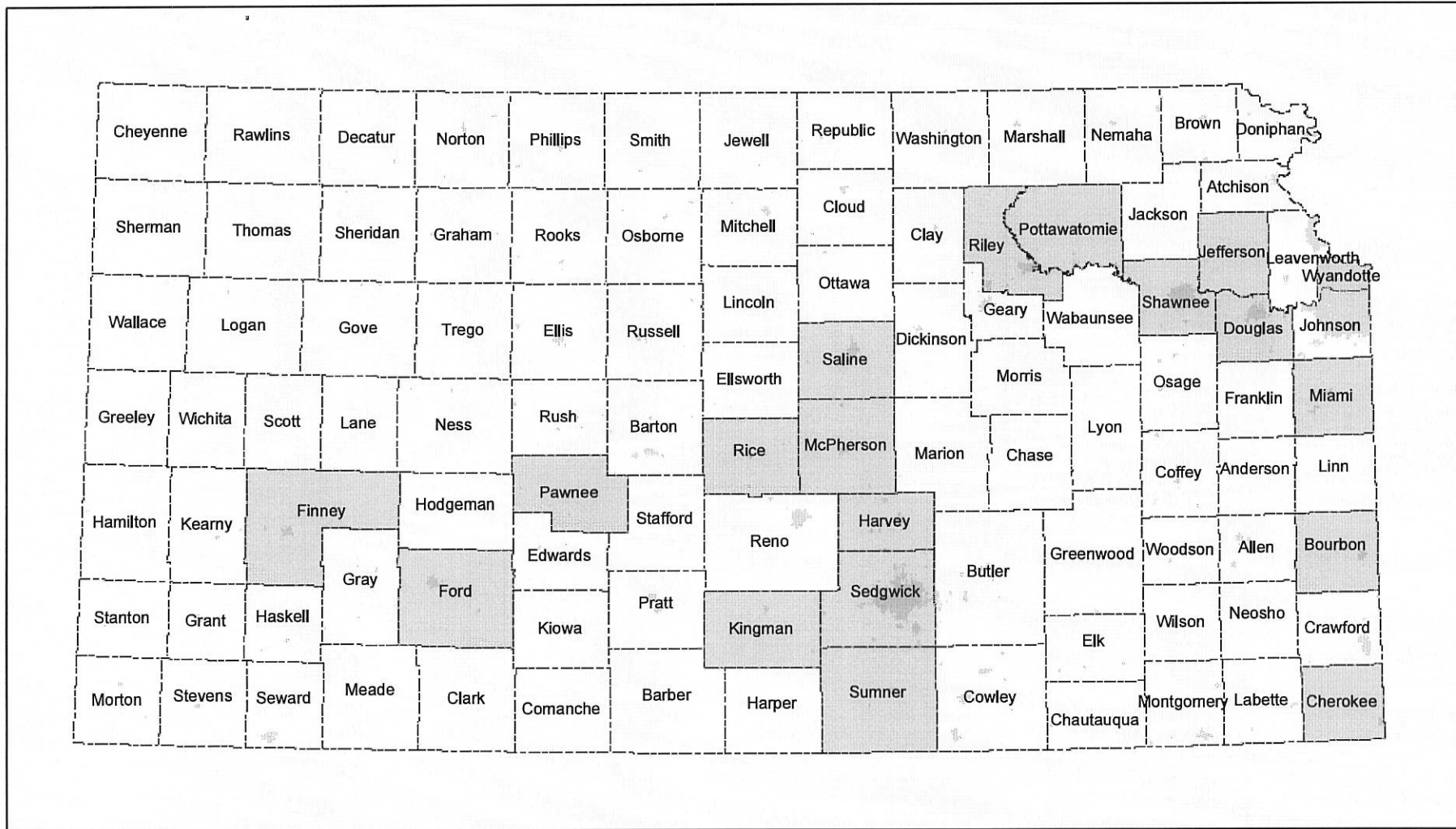
VoIP Incorporated

Vonage America, Inc

Yahoo!, Inc

Cable Broadband Service Availability

5-1



Cable data is from The Kansas Cable & Telecommunications Association December 2002. The KCC makes no guarantee to accuracy or completeness

 Cable Broadband



Kansas Corporation Commission
Information Resources, GIS Section
4 February 2004

BROADBAND DATA FROM ANNUAL REPORT

1-6

Company Name	2003 Data		2004 Data		2005 Data	
	% of Access Lines with Broadband Available	Approximate Subscribership	% of Access Lines with Broadband Available	Approximate Subscribership	% of Access Lines with Broadband Available	Approximate Subscribership
Bluestem	N/A	N/A	N/A	N/A	30%	N/A
Blue Valley	100%	12%	100%	18%	100%	8%
Cass County	71%-100% Average=82%	6%	92%-100% Average=95%	15%	80%-100% Average=90%	16%
Columbus	100%	N/A	100%	N/A	100%	N/A
Council Grove	100%	6%	100%	N/A	100%	8%
Craw Kan	0%-70% Average=44%	8%	0%-70% Average=48%	12%	0%-60% Average=57%	17%
Cunningham	43%-75% Average=41%	N/A	N/A	N/A	0%-87% Average=53%	8%
Elkhart	80%	19%	80%	21%	92%	23%
Golden Belt	100%	8%	100%	16%	100%	25%
Gorham	N/A	N/A	100%	28%	100%	12%
H&B	N/A	N/A	N/A	N/A	100%	N/A
Haviland	N/A	N/A	N/A	N/A	100%	19%
Home	80%-90% Average=74%	8%	0%-95% Average=81%	13%	20%-95% Average=85%	21%
JBN	60%	1%	60%	5%	60%	5%
KanOkla	65%-90% Average=83%	12%	65%-100% Average=98%	19%	100%	26%
LaHarpe	N/A	N/A	N/A	N/A	N/A	N/A
Madison	100%	8%	100%	8%	100%	12%
Mo-Kan	N/A	N/A	N/A	N/A	N/A	N/A
Moundridge	75%	6%	85%	10%	80%	13%
Mutual	100%	12%	100%	15%	100%	19%
Peoples	100%	15%	100%	15%	100%	16%
Pioneer	100%	4%	100%	4%	100%	N/A
Rainbow	100%	14%	100%	20%	100%	27%
Rural	85%	12%	85%	19%	85%	30%
S&A	100%	10%	100%	14%	100%	N/A
S&T	100%	12%	100%	17%	100%	N/A
South Central	36%-91% Average=77%	6%	38%-91% Average=77%	17%	38%-91% Average=78%	N/A
Southern Kansas	0%-98% Average=90%	9%	0%-98% Average=91%	15%	95%-98% Average=97%	15%
Sunflower	N/A	N/A	N/A	N/A	30%	N/A
Totah	0%	0%	0%-40% Average=28%	2%	0%-60% Average=46%	7%
Tri County	100%	5%	100%	11%	100%	19%
Twin Valley	100%	30%	100%	49%	100%	52%
United Telephone Assoc.	99%	17%	99%	20%	99%	23%
Wamego	99%	13%	99%	21%	100%	29%
Wheat State	N/A	N/A	0%-100% Average=89%	13%	85%-100% Average=98%	19%
Wilson	84%	3%	56%-94% Average=84%	7%	44%-90% Average=85%	11%
Zenda	35%	5%	35%	8%	34%	34%
AT&T Kansas	0%-100% Average=69%	N/A	0%-100% Average=80%	N/A	0%-100% Average=81%	N/A
Embarq	0%-88% Average=39%	3%	0%-95% Average=57%	7%	0%-95% Average=57%	8%

BEFORE THE SENATE UTILITIES COMMITTEE

Presentation of the Kansas Corporation Commission January 30, 2007

SB 128

Thank you, Chairman and members of the Committee. I am Don Low, Director of the Utilities Division for the Kansas Corporation Commission. I appreciate the opportunity to testify for the Commission on SB 128. The Commission supports the bill.

As the Committee may know, the Commission has a general investigation open regarding utility energy efficiency programs. Now that reply comments were submitted earlier this month by interested parties, the Commission will need to decide how to proceed with regard to the numerous issues that have been discussed in the comments. Some of those issues are:

- 1 What is the appropriate benefit cost test or tests to be used to screen energy efficiency programs?
- 2 Should there be initial focus on low income programs, "Pay As You Save" type arrangements or should the KCC require comprehensive efforts as quickly as possible?
- 3 Should there be a third party administrator of such programs rather than the individual utilities?
- 4 What kind of cost recovery and incentives for such programs is appropriate and desirable?
- 5 Should the Commission consider a "decoupling" of revenue requirements from sales volumes?

The Commission will likely be able to provide only general and tentative guidance on many of these issues and will need further proceedings to consider some of the issues in more detail. In any event, we don't believe that there's any question that customer education about energy efficiency and conservation is desirable regardless of how the

Commission might answer the various questions in that energy efficiency docket. With such education, customers may take steps on their own to become more efficient consumers of energy and thereby mitigate the need for other programs by utilities. The Commission consequently supports SB 128.

I will be happy to answer any questions.

**Utilities Committee
Kansas Senate
Written Testimony of Bruce Snead**

Energy Efficiency Representative
Kansas Energy Council
State Extension Specialist in Residential Energy
Engineering Extension at K-State
Manhattan, Kansas

January 31, 2007

SB 128

Mr. Chair and members of the committee, thank you for the opportunity to testify on this bill. I support this bill and would like to address several aspects of it and its benefits. The following section of my testimony is taken directly from the Kansas Energy Plan 2007 Policy and Program Recommendations presented to you on January 16 which was used to formulate the bill.

As a first step towards increasing energy conservation in the state, the state's electric utilities would be required to provide all of their customers with information about energy conservation opportunities and options, including information on energy-related services that are locally available.

Key features of this proposal are:

1. that all of the state's electric utilities participate;
2. that it is designed to increase general awareness and understanding of conservation opportunities;
3. that it is designed to further direct consumers so they may increase their understanding of particular conservation opportunities that are specific to their energy-use situations;
4. that separate "curricula" will be developed for the general public, K-12 students, local governments, as well as for the residential, commercial, and industrial utility classes, as well as the transportation sector;
5. that energy conservation information for residential customers will initially focus on the conservation measures listed in the Energy Efficiency Disclosure Form (see Attachment A), and
6. that the conduct of the utility-operated programs, including the release and content of all informational and promotional materials, will conform with standards developed by the Kansas Energy Office and advisory group (see Recommended Actions, below).

The program standards will include information about (1) how to access energy conservation services, such as energy audits, throughout the state; (2) financing energy conservation improvements; (3) existing government programs, such as the state's Weatherization Assistance Program and energy efficiency loan program (KEEP). Other

details of the standards, including a consideration of relevant targets and goals, will be developed during the initial planning phase by the advisory group. The advisory group may form separate committees to develop the different "curricula."

Once the planning phase is completed and guidelines have been developed, jurisdictional utilities will be responsible for developing and delivering their own energy education and conservation promotion programs that comply with statewide guidelines.

Municipal utilities and cooperatives will also be responsible for delivering energy education and conservation promotion programs that comply with statewide guidelines. However, it will be the responsibility of the Kansas Energy Office, either by contracting with the state associations (Kansas Electric Cooperatives and/or Kansas Municipal Utilities) or with a non-profit or educational entity, to develop programs for the municipal utilities and cooperatives that are consistent with the guidelines.

The proposed program does not require or prohibit utilities from developing additional energy efficiency and conservation services charged to customers on a fee-for-service basis.

In order to monitor the effectiveness of this program, measurable goals (defined as a percentage of energy consumption) should be established. The Kansas Energy Office will consult with the advisory group prior to adopting baseline data and goals, data-collection methodology, and reporting formats. Reports should be generated annually by the utilities and presented to the Kansas Energy Council, the Kansas Energy Office, and the Legislature.

Recommended Actions

Responsible parties

The Kansas Corporation Commission will have oversight on the implementation of these educational and promotional programs offered by jurisdictional utilities.

The Kansas Energy Office will work with the advisory group to develop program guidelines during the planning phase. During the implementation phase, the Kansas Energy Office will monitor the implementation of the programs developed by (or for) the municipal utilities and cooperatives.

All Kansas electric utilities will be required to provide, to all classes of customers, energy education and conservation promotion programs that are consistent with statewide program guidelines.

Implementation timeline

The statewide programs will be implemented in two phases, with a separate budget for each phase. Phase 1, the planning phase, will begin on July 1, 2007, and Phase 2, the implementation, will begin on July 1, 2008.

Budget requirements

State funding of \$50,000 is estimated for the Phase 1 planning and development of the statewide program guidelines. The budget requirements for Phase 2 will be determined after the planning effort is completed. Costs incurred by the jurisdictional utilities may be reviewed by the KCC as part of the standard rate case procedures.

Advisory group

During Phase 1, an advisory group will work with the Kansas Energy Office to develop the statewide requirements and guidelines for the utility-operated energy education and conservation promotion programs. The advisory group will consist of (1) one representative from the municipal electric utilities, (2) one representative from the electric cooperatives, (3) two representatives from the investor-owned electric utilities, (4) two representatives from natural gas utilities (investor-owned and municipal), (5) one representative from the Citizens' Utility Ratepayer Board (CURB), (6) one representative from Kansas State University Engineering Extension, (7) two representatives from the KCC, (8) one representative from Kansas Housing Resources Corporation, and (9) one representative from the KU Transportation Center.

Implications of Proposal

Pros

- Increases utility customer awareness of opportunities for saving energy (and, thus, money), and of particular energy conservation measures that are available to them and the potential energy savings and net dollar savings they may deliver.
- Increases utility customer awareness of the availability of energy conservation measures in their community.
- Increases utility customer awareness of options for financing energy conservation improvements (or of accessing free services if they meet income guidelines).
- May decrease statewide demand for electricity and natural gas, putting downward pressure on prices both now and in the future.
- May defer utility investments in new generation.
- Provides emission reductions generally associated with adoption of energy conservation practices.
- May increase utility customer satisfaction and goodwill toward the utility.

Cons

- Requires state funds.
- Requires additional staffing resources at the Kansas Energy Office.

Additional comments regarding the bill and its proposals:

- 1 Statewide program formulation, coordination and directed delivery will be most efficient in message and impact and allow for economies in promotion and marketing, which are essential to any program's success
- 2 It is a result of a year long KEC planning process with significant negotiation and discussion having occurred
- 3 Electric utilities are identified as the primary delivery mechanism because almost everyone has electric service, not all have natural gas or propane service.
- 4 Information on all end uses and fuels should be considered, not just electricity
- 5 Formulation of programs, curricula, measures and goals should use the wealth of existing materials, resources and lessons learned in other states and programs
- 6 A July 1, 2008 start date allows enough time to form these recommendations and enable program startup.
- 7 Requiring utility reports beginning with the legislative session in 2010 allows only a year and a half of program operation to generate results, evaluate performance and measure progress towards goals. This is a minimum of time and some programs will be difficult to measure and see results in that period.
- 8 Nothing in the bill prevents utilities from implementing other efficiency and conservation services on a for fee basis
- 9 Cost recovery for the utilities to implement programs will be through the normal rate making process
- 10 The Kansas Energy Office is the most logical administrative arm for this program and builds on existing capacity there.

Thank you for your interest and I will try to answer any questions.

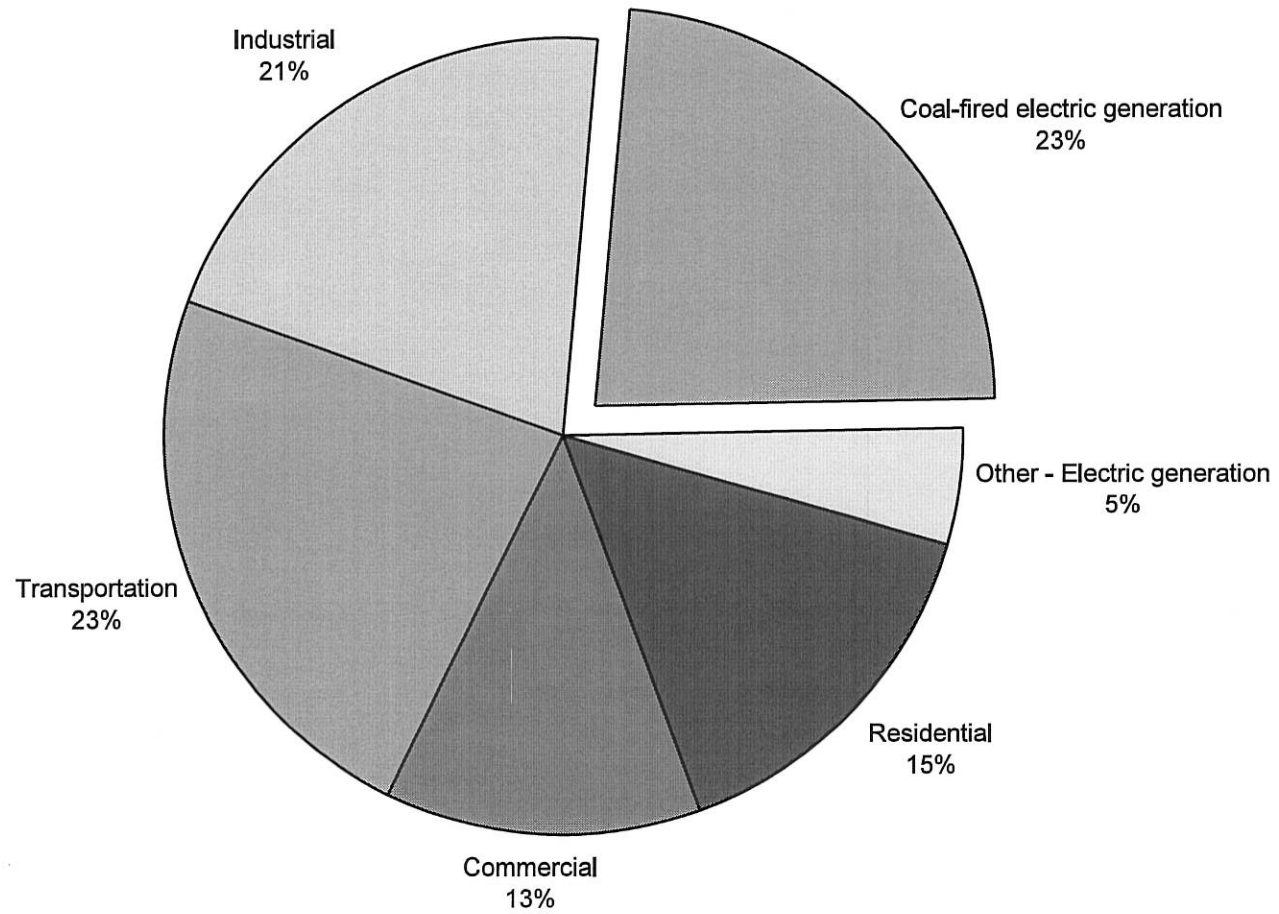
Bruce Snead

810 Pierre St.

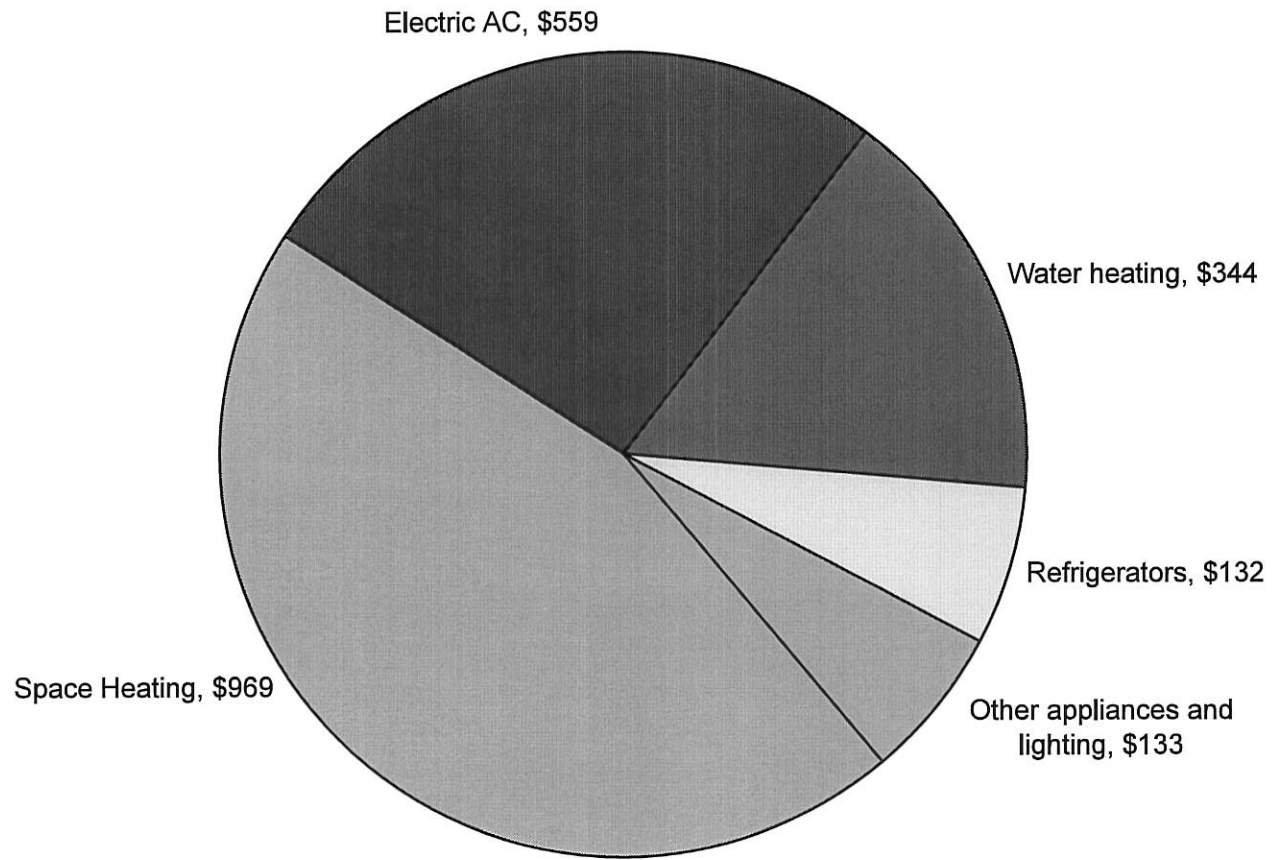
Manhattan, KS 66502

785-537-7260 Home 785-532-4992 Work email bsnead@ksu.edu

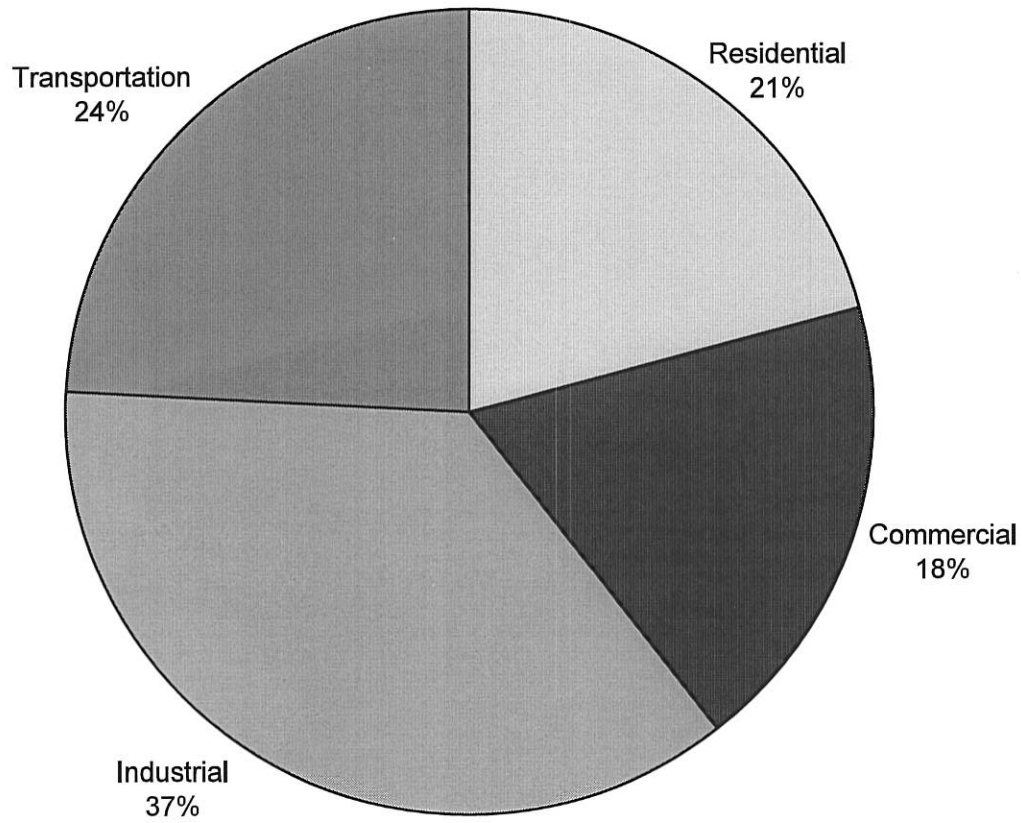
U.S. CO₂ Emissions from Coal-fired Electric Generation, 2003



Kansas Average Annual Household Energy Expenditures



Kansas Direct Energy Consumption by Sector, 2002



Agriculture sector consumption is negligible and not separated out in these data.

**Testimony of Paul Snider
Before the Senate Utilities Committee
In Support of Senate Bill 128
January 31, 2007**

Kansas City Power & Light supports the Kansas Energy Council's efforts to promote energy efficiency and conservation in Kansas.

KCP&L has spent the last several years strongly advocating the promotion of energy efficiency, as evidenced by its Comprehensive Energy Plan that includes a variety of affordability, energy efficiency and demand response programs. Since approval of KCP&L's Comprehensive Energy Plan by the Kansas Corporation Commission in 2005, energy efficiency has received an increased level of attention and national focus.

Senate Bill 128 will allow the creation of an advisory group to work with the Kansas Energy Office and the Kansas Corporation Commission to implement standards for energy efficiency education efforts. An important part of the legislation is the flexibility it affords utilities to tailor education efforts to its own customers.

To improve the bill, we have the following suggestions:

- 1 Page 2, lines 17-18: delete "which shall be defined as a percentage of energy consumption." Measuring benefits in this way is very challenging.
- 2 Page 2, line 38: Change to require the Kansas Energy Office and/or the KCC to deliver the report to the Legislature (not individual utilities).
- 3 Page 3, lines 6-8: Ensure utilities receive cost recovery, including implementation, planning, design, promotion and evaluation costs.

KCP&L will be happy to work with the industry and the Kansas Energy Council to develop agreed upon amendments regarding these suggestions.

Kansas City Power & Light looks forward to sharing our positive experiences with the newly formed advisory group and other stakeholders. Changing behavior takes time and consistent education and the sooner you get started, the better. That's why KCP&L supports the passage of SB 128.

###

Paul Snider – KCP&L

Senate Utilities Committee
January 31, 2007
Attachment 4-1

**SENATE UTILITIES COMMITTEE
PAUL JOHNSON – KANSAS CATHOLIC CONFERENCE
PROPONENT FOR SB 128 – JANUARY 31, 2007**

Thank you for this opportunity to testify in support of Senate Bill 128. My name is Paul Johnson and I am testifying for the Kansas Catholic Conference. This bill provides a good first step in identifying the most cost-effective energy conservation practices and identifying the homes that are in greatest need of energy improvements. Catholic Charity offices all across Kansas are inundated with request for energy assistance but the Charity offices can respond to a very small number of the requests. Often times, the same clients are requesting energy assistance and families are moving repeatedly to find affordable housing. 40% of Kansas' renters are cost-burdened in paying over 30% of their income for housing and utility costs.

The Conference would request two improvements to SB 128:

- The energy conservation education advisory group should be expanded to include a representative from the Department of Social and Rehabilitation Services Low Income Home Energy Assistance program (LIHEAP). LIHEAP serves over 40,000 households with special energy assistance needs. A strategy could be developed to target these homes of greatest need by coordinating with the Weatherization Assistance Program and utility-based conservation programs.
- The advisory group should report annually back to the Senate and House Utilities Committee on their progress. Such a report should build off of Bruce Snead's Energy Efficiency and Conservation in the Public, Residential, Commercial and Industrial Sectors report and prioritize the most cost effective energy practices for Kansas. This report should also include estimates on the energy efficiency potential for various energy investments. For example, Kansas has 1 million housing units with half of them constructed prior to 1960. How many of these housing units are adequately insulated (with special attention paid to rental units)? Given the summer peaking electric load we have in Kansas, what is the efficiency of existing central air and room air conditioners? Kansas needs to develop a real world snap shot of the potential of energy efficiency and coordinate this analysis with the Kansas Corporation Commission's deliberations on utility-based energy conservation programs.

The Kansas Catholic Conference and the Catholic Charity directors look forward to working with the Advisory committee and sharing data to target and assist the families that have the greatest home energy needs.

Senate Utilities Committee
January 31, 2007
Attachment 5-1



kansasmunicipal**utilities**

Submitted Testimony Provided the

Senate Utilities Committee

January 31, 2007

Colin Hansen

Executive Director

Kansas Municipal Utilities

Senate Bill 128 -

Energy Conservation Information & Education

On behalf of Kansas Municipal Utilities (KMU) and Kansas Electric Cooperatives, Inc. (KEC), I wish to express our support for Senate Bill 128, legislation to enhance the energy conservation knowledge and education of utility customers in the state. The bill would include rural electric cooperatives and municipal electric and gas utilities in a statewide effort to promote energy conservation education, an initiative both of our organizations and their members have long supported.

Over the past several years, both organizations have been involved in meetings and discussions at the Kansas Energy Council regarding methods to improve energy efficiency and conservation information that our member utility customers might receive. We have been, and continue to be, supportive of the Council's efforts in this area.

As consumer-owned utilities, the goal of our member utilities and cooperatives is to provide least cost power to customers in a safe, reliable and environmentally friendly manner. Along that line, it is in the best interest of our systems to have informed groups of customers. This legislation addresses that objective.

Representing locally-controlled municipal utilities and rural electric cooperatives, KMU and KEC appreciate the opportunity to participate in a statewide energy education initiative. We are particularly grateful that the legislation attempts to understand and recognize the jurisdictional issues and concerns of our collective memberships. For municipal utilities and cooperatives, emphasis is always focused on the local control and jurisdiction that is in place in city council chambers and cooperative board rooms in rural communities across the state.

KMU and KEC support this process and are interested in continuing to pursue options by which we might encourage our member-owners, customers and citizens to be more energy efficient and conservation-minded. We support Senate Bill 128.

Senate Utilities Committee
January 31, 2007
Attachment 6-1

**Testimony of
Mark Schreiber
Director Government Affairs
Westar Energy
On Senate Bill 128
January 31, 2007**

Good morning Chairman Emler and members of the committee, my name is Mark Schreiber. I am the Director Government Affairs for Westar Energy.

Senate Bill 128 establishes an advisory group for the purpose of developing consistent, statewide energy efficiency and conservation information. Westar Energy supports this bill.

Every utility has encouraged its customers to use energy efficiently. This bill enhances that effort by developing uniform standards, requirements and guidelines for energy education. Although this advisory group will set the standards, utilities may still exceed those standards in order to reach certain customer segments, such as commercial and industrial users. Westar Energy formed an internal energy efficiency task force to evaluate our current energy efficiency and conservation activities and develop new ones. By coordinating a statewide effort, customers will be receiving a consistent message wherever they live and as they move within the state.

Westar Energy would like to offer two suggestions for the bill. The first is on page 2, lines 38 – 41. We would suggest having the utilities provide input to the Kansas energy office's report to the legislature rather than having each utility offer a report to the legislature. Our second suggestion is on page 3, lines 6 – 8. We would suggest replacing the language in these lines with "The state corporation commission shall assure cost recovery of these programs by the regulated utilities." If the regulated utilities are being required to follow the standards established by the state corporation commission's energy office, these utilities should be assured cost recovery.

Westar Energy supports SB 128 and would appreciate the committee's consideration of our suggested language. Thank you for the opportunity to address the committee this morning.

*Senate Utilities Committee
January 31, 2007
Attachment 7-1*

**Testimony for the Senate Utilities Committee
January 31, 2007
Supporting S. B. 128**

Chairperson Emler and Honorable Members of the Committee:

My name is Tom Thompson and I represent the Kansas Chapter of the Sierra Club. I am writing to support S.B. 128.

S.B. 128 provides for energy conservation information to be provided to consumers and the establishment of an energy conservation advisory group.

Wanting to conserve energy and knowing how are not the same. Many individuals and businesses would like to be more energy efficient but do not know where to start. Financing, energy audits, available tax incentives, energy saving products and energy saving practices need to be made available and encouraged.

As a retired teacher I believe it is important to have qualified individuals create programs to provide information on best practices, programs that have the best chance of working and programs that work is important. The energy conservation advisory group described in the bill could help assure that public information programs reach the public effectively with proven ways to be efficient.

As a consumer, I recently bought an Energy Star refrigerator. To do this was a bigger chore than I expected. At several stores, salespeople either did not know what Energy Star was or thought that because there was a yellow label in the refrigerator indicating energy efficiency that it was an Energy Star appliance. In most cases they were not. With effective education the public will be better able to spend their energy dollars wisely.

If people conserve, there will be less demand for generated energy. This would result in a decreased need to build electric generation capacity, less pollution, and a healthier environment in which to live.

Because S.B. 128 promotes Energy Efficiency and Conservation the Sierra Club hopes this committee will pass it out favorably.

Thank you for this opportunity and your time.

Sincerely

Tom Thompson
Sierra Club

Senate Utilities Committee
January 31, 2007
Attachment 8-1

Citizens' Utility Ratepayer Board

Board Members:

Gene Merry, Chair
A.W. Dirks, Vice-Chair
Carol I. Faucher, Member
Laura L. McClure, Member
Douglas R. Brown, Member



State of Kansas

Kathleen Sebelius, Governor

David Springe, Consumer Counsel
1500 S.W. Arrowhead Road
Topeka, Kansas 66604-4027
Phone: (785) 271-3200
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SENATE UTILITIES COMMITTEE S.B. 128

Testimony on Behalf of the Citizens' Utility Ratepayer Board
By David Springe, Consumer Counsel
January 31, 2007

Chairman Emler and members of the committee:

Thank you for this opportunity to offer testimony on S.B. 128. The Citizens' Utility Ratepayer Board supports this bill for the following reasons:

SB 128 is a Kansas Energy Council recommendation aimed at creating statewide standards for use in energy education and energy conservation promotion. An "energy conservation education advisory group" under the direction of the Kansas energy office is created for the purpose of developing the education standards and guidelines envisioned by the bill. The bill requires the Kansas Corporation Commission to require all public utilities to deliver programs consistent with the standards developed.

CURB convened a special board meeting on September 25, 2006 to review our position and policy with regard to energy conservation and efficiency programs provided by jurisdictional utilities. At the meeting the Board indicated that it believes additional resources and additional effort should be directed towards energy conservation activities. Part of this policy is an acknowledgement that, while not every program will necessarily reduce every consumer's rate or reduce every consumer's use, the programs may still have value.

The energy education and conservation promotion program envisioned by this bill is an example of such program. Providing some standardization in material presented across jurisdictional boundaries and across targeted groups will benefit Kansas consumers. CURB also hopes that this process will help reduce costs to utility consumers by reducing the inefficiencies associated with each utility creating, staffing and promoting its own materials outside of a standard setting process.

CURB does have a few minor drafting issues for the committee to consider. CURB does not believe that any of these proposed edits change the intent of what the energy council hopes to achieve with this recommendation.

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- P.1 line 15. Delete “develop and administer a program” and change “requiring” to “require.”
- P.1 line 20. Consider changing “shall” to “may”. Or make the sentence in the nature of “shall develop and may administer” to allow flexibility to municipals and coops.
- P. 2 line17. Consider changing “shall” to “may”. While performance measures and goals are important to measuring the effectiveness of the program, quantifying the effectiveness of an education program as a “percentage of energy consumption” may be impossible. Using “may” gives more leeway to the advisory group to recommend other performance measures.
- P.3 line 5. Delete “for sale to consumers on a fee for service basis.” CURB supports fee for service conservation programs. However, including this language specifically in this section and reading the statute as a whole, it can be argued that the statute *requires* every program beyond the education programs addressed in the bill to be on a fee for service basis. CURB does not think this restriction is intended.
- General observation: Perhaps the program standards information on P. 2, lines 4-10 should be combined with the utility program standards information on P.2, lines 29-37.

Thank you for your consideration of these comments on SB 128.



League of Kansas Municipalities

300 SW 8th Avenue
Topeka, Kansas 66603-3912
Phone: (785) 354-9565
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To: Senate Utilities Committee
From: Kimberly Winn, Director of Policy Development & Communications
Date: January 31, 2007
Re: SB 128

On behalf of the League of Kansas Municipalities and our 576 member cities, thank you for the opportunity to offer our comments regarding SB 128. At the outset, it is important to note that we are not opposed to the concepts in this legislation, and in fact, we support the establishment of an energy conservation education advisory group. However, we have some concerns about the specific language in the bill that we would like to bring to your attention.

In Section 1(a), SB 128 indicates that the Kansas Energy Office will “administer” energy education and conservation promotion programs for municipal electric utilities (MEU’s). We are unclear whether this language means that the Energy Office will actually do the education and conservation programs for the MEU’s, or if they will set the standards that must be followed, leaving actual implementation up to the local utility. If the Energy Office plans to implement such programs at no cost to the MEU’s, then the bill is not an unfunded mandate, and we would have no opposition to it.

Our second concern is in Section 1(e) of the bill. This is the portion of the bill which mandates the education programs. As written, SB 128 mandates that MEU’s comply with these requirements. But, if the Kansas Energy Office is going to implement the program for MEU’s, then why would there be a mandate for MEU’s to comply? We believe this is an internal conflict within the bill and we would request that you consider removing municipal electric utilities from that portion of the bill.

Finally, we have the same concern with Section 1(f). Again, this is a mandate that MEU’s provide an annual report to the Legislature. Again, if the Kansas Energy Office is implementing the program for MEU’s, then this mandate is misplaced and we would request that you consider removing municipal electric utilities from that portion of the bill to resolve the conflict there as well.

In conclusion, our concerns about this legislation really are ones of clarification only. As I mentioned at the outset, we are support of the concept of this legislation and we stand ready to do what we can to help in the effort. I would be happy to stand for questions at the appropriate time.

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ENERGY STAR Qualified Homes Codes & Standards Information

Insulation Requirements for the National Builder Option Package

The National Builder Option Package requires that the insulation levels of a home meet or exceed Sections N1102.1 and N1102.2 of the 2004 IRC. For example, compliance may be determined by meeting the prescriptive insulation requirements listed by component below. Compliance may also be determined using U-factor alternatives or a total UA alternative as defined in Section N1102.1.2 and Section N1102.1.3. In all cases, insulation shall be inspected to Grade I installation as defined in the RESNET Standards by a RESNET-certified rater. Note that the fenestration requirements of the 2004 IRC do not apply to the fenestration requirements of the National Builder Option Package.

Climate Zone	Ceiling R-Value	Wood Frame Wall R-Value	Floor R-Value	Basement Wall R-Value	Slab R-Value & Depth	Crawl Space R-Value
1	30	13	13	0	0	0
2	30	13	13	0	0	0
3	30	13	19	0	0	5/13
4 except Marine	38	13	19	10/13	10, 2 ft.	10/13
5 and Marine 4	38	19 or 13+5	30	10/13	10, 2 ft.	10/13
6	49	19 or 13+5	30	10/13	10, 4 ft.	10/13
7 and 8	49	21	30	10/13	10, 4 ft.	10/13

Reference: 2004 International Supplement to the International Codes. Copyright 2004. Falls Church, Virginia: International Code Council, Inc. Reproduced with permission. All rights reserved. (Excerpted from 2004 IRC Table N1102.1)

Best Practices for Sizing Air Conditioners and Heat Pumps

Best practices for sizing air conditioners and heat pumps include:

- Sizing to the manufacturers' performance data;
- Sizing the equipment for the total and latent load capacities;
- Determining the auxiliary heat balance point when sizing heat pumps; and
- Considering both the cooling and heating loads in different climates when sizing heat pumps.

ENERGY STAR Products – Average Energy Savings & Key Product Criteria

Product	Average Energy Savings	Key Product Criteria
Air Conditioner	25%	SEER ≥ 14 ; EER ≥ 11.5
Heat Pump	20%	SEER ≥ 14 ; EER ≥ 11.5; HSPF ≥ 8.2
Furnace	15%	AFUE ≥ 90% (About 15% more efficient than the minimum federal efficiency standards)
Dish Washers	25%	Energy Factor ≥ 0.58: At least 25% more energy efficient than minimum Federal government standards
Clothes Washers	50%	Minimum Modified Energy Factor (MEF) of 1.42
Refrigerator	15%	At least 15% more energy efficient than the minimum Federal government standard (NAECA)



ENERGY STAR Qualified Homes Codes & Standards Information

Product	Average Energy Savings	Key Product Criteria
Windows	ENERGY STAR Home Windows for IRC Climate Zones If IRC Climate Zone is not 2 or 4, then refer to the ENERGY STAR Window Climate Zones below	IRC Climate Zone 4: U-Factor \leq 0.40; SHGC \leq 0.45 IRC Climate Zone 2: U-Factor \leq 0.55; SHGC \leq 0.35; or U-Factor \leq 0.56; SHGC \leq 0.33 U-Factor \leq 0.57; SHGC \leq 0.32 U-Factor \leq 0.58; SHGC \leq 0.31 U-Factor \leq 0.59; SHGC \leq 0.30 U-Factor \leq 0.60; SHGC \leq 0.29 U-Factor \leq 0.61; SHGC \leq 0.28 U-Factor \leq 0.62; SHGC \leq 0.27 U-Factor \leq 0.63; SHGC \leq 0.26 U-Factor \leq 0.64; SHGC \leq 0.25
	Savings vary by climate region (as defined by the ENERGY STAR windows program) and home characteristics See web-site for correct selection of ENERGY STAR windows for building site	Northern Climate Zone: U-Factor \leq 0.35; SHGC \leq Any North/Central Climate Zone: U-Factor \leq 0.40; SHGC \leq 0.55 South/Central Climate Zone: U-Factor \leq 0.40; SHGC \leq 0.40; or U-Factor \leq 0.41; SHGC \leq 0.36 U-Factor \leq 0.42; SHGC \leq 0.31 U-Factor \leq 0.43; SHGC \leq 0.24 Southern Climate Zone: U-Factor \leq 0.65; SHGC \leq 0.40; or U-Factor \leq 0.66; SHGC \leq 0.39 U-Factor \leq 0.67; SHGC \leq 0.39 U-Factor \leq 0.68; SHGC \leq 0.38 U-Factor \leq 0.69; SHGC \leq 0.37 U-Factor \leq 0.70; SHGC \leq 0.37 U-Factor \leq 0.71; SHGC \leq 0.36 U-Factor \leq 0.72; SHGC \leq 0.35 U-Factor \leq 0.73; SHGC \leq 0.35 U-Factor \leq 0.74; SHGC \leq 0.34 U-Factor \leq 0.75; SHGC \leq 0.33 http://www.energystar.gov/index.cfm?c=windows_doors.pr_crit_windows
Thermostat	Savings depend on homeowner use	Shipped with a default energy saving program that is capable of maintaining two separate programs and four temperature settings or more for each day
Ventilating Fans	65%	Range hoods (up to 500 cfm): maximum allowable sound level of 2.0 sones; minimum efficacy level of 2.8 cfm/Watt Bathroom fans (10 to 80 cfm): maximum allowable sound level of 2.0 sones; minimum efficacy level of 1.4 cfm/Watt; minimum rated airflow at 0.25 static w.g. 60% of 0.1 static w.g. airflow Bathroom fans (90 to 130 cfm): maximum allowable sound level of 2.0 sones; minimum efficacy level of 2.8 cfm/Watt; minimum rated airflow at 0.25 w.g. 70% of 0.1 static w.g. airflow Bathroom fans (140 to 500 cfm): maximum allowable sound level of 3.0 sones; minimum efficacy level of 2.8 cfm/Watt; minimum rated airflow at 0.25 w.g. 70% of 0.1 static w.g. airflow Light sources must use pin-based fluorescent technology Warranty provided must be a minimum of 1 year
Lighting	66%	http://www.energystar.gov/index.cfm?c=lighting.pr_lighting
Ceiling Fans	Savings depend on homeowner use	http://www.energystar.gov/index.cfm?c=ceiling_fans.pr_ceiling_fans

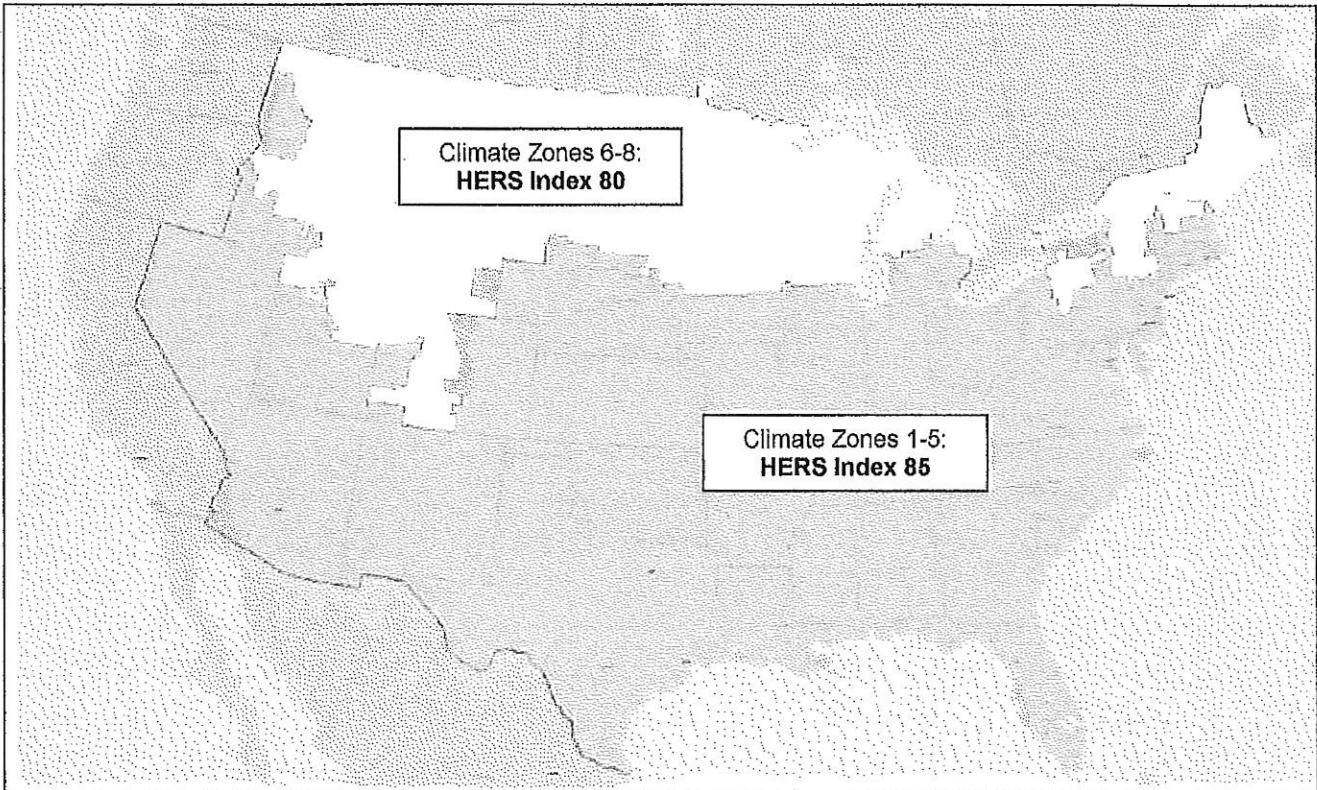


ENERGY STAR Qualified Homes National Performance Path Requirements

ENERGY STAR Performance Requirements:

To qualify as ENERGY STAR, a home must meet the minimum requirements specified below, be verified and field-tested in accordance with the RESNET Standards by a RESNET-accredited Provider, and meet all applicable codes.

Maximum HERS Index Required to Earn the ENERGY STAR¹



Note: Due to the unique nature of some state codes and/or climates, EPA has agreed to allow regionally-developed definitions of ENERGY STAR in California; Hawaii, and the Pacific Northwest to continue to define program requirements. The States of Montana and Idaho may use either the requirements of the national program or the regionally-developed program in the Pacific Northwest.

ENERGY STAR Mandatory Requirements:

Envelope ^{2,3,4}	Completed Thermal Bypass Inspection Checklist
Ductwork ^{5,6}	Leakage ≤ 6 cfm to outdoors / 100 sq. ft.
ENERGY STAR Products ^{13,14}	<p>Include at least one ENERGY STAR qualified product category:</p> <ul style="list-style-type: none"> ▪ Heating or cooling equipment ⁷; <u>OR</u> ▪ Windows ⁸; <u>OR</u> ▪ Five or more ENERGY STAR qualified light fixtures ^{9,10}, appliances ¹¹, ceiling fans equipped with lighting fixtures, and/or ventilation fans ¹²
ENERGY STAR Scoring Exceptions	<ul style="list-style-type: none"> ▪ On-site power generation may not be used to decrease the HERS Index to qualify for ENERGY STAR. ▪ A maximum of 20% of all screw-in light bulb sockets in the home may use compact fluorescent lamps (CFLs) to decrease the HERS Index for ENERGY STAR compliance. CFLs used for this purpose must be ENERGY STAR qualified.

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ENERGY STAR Qualified Homes National Performance Path Notes

1. The appropriate climate zone for each building site shall be determined by the 2004 International Residential Code (IRC), Table N1101.2. The HERS Index must be calculated in accordance with the RESNET Mortgage Industry National Home Energy Rating Standards.
2. The Thermal Bypass Inspection Checklist must be completed for homes to earn the ENERGY STAR label. The Checklist requires visual inspection of framing areas where air barriers are commonly missed and inspection of insulation to ensure proper alignment with air barriers, thus serving as an extra check that the air and thermal barriers are continuous and complete.
3. Envelope leakage must be determined by a RESNET-certified rater using a RESNET-approved testing protocol.
4. To ensure consistent exchange of indoor air, whole-house mechanical ventilation is recommended, but not required.
5. Ducts must be sealed and tested to be ≤ 6 cfm to outdoors / 100 sq. ft. of conditioned floor area, as determined and documented by a RESNET-certified rater using a RESNET-approved testing protocol. If total duct leakage is ≤ 6 cfm to outdoors / 100 sq.ft. of conditioned floor area, then leakage to outdoors does not need to be tested. Duct leakage testing can be waived if all ducts and air handling equipment are located in conditioned space (i.e., within the home's air and thermal barriers) AND the envelope leakage has been tested to be ≤ 3 ACH50 OR ≤ 0.25 CFM 50 per sq. ft. of the building envelope. Note that mechanical ventilation will be required in this situation.
6. EPA recommends, but does not require, locating ducts within conditioned space (i.e., inside the air and thermal barriers), and using a minimum of R-4 insulation for ducts inside conditioned space to prevent condensation.
7. All cooling equipment, regardless of whether it is used to satisfy the ENERGY STAR products requirement, must be sized according to the latest editions of ACCA Manuals J and S, ASHRAE 2001 Handbook of Fundamentals, or an equivalent computation procedure. Maximum oversizing limit for air conditioners and heat pumps is 15% (with the exception of heat pumps in Climate Zones 5 - 8, where the maximum oversizing limit is 25%). This can be accomplished either by the rater performing the calculations or reviewing documentation provided by the professional contractor or engineer who calculated the sizing (e.g., HVAC contractor). The following operating conditions shall be used in the sizing calculations and verified where reviewed by the rater:
Outdoor temperatures shall be the 99.0% design temperatures as published in the ASHRAE Handbook of Fundamentals for the home's location or most representative city for which design temperature data are available. Note that a higher outdoor air design temperature may be used if it represents prevailing local practice by the HVAC industry and reflects extreme climate conditions that can be documented with recorded weather data; Indoor temperatures shall be 75° F for cooling; Infiltration rate shall be selected as "tight", or the equivalent term.
In specifying equipment, the next available size may be used. In addition, indoor and outdoor coils shall be matched in accordance with ARI standards.
8. Where windows are used to meet the ENERGY STAR qualified product requirement, they shall be ENERGY STAR qualified or meet all specifications for ENERGY STAR qualified windows. Additional information can be found at www.energystar.gov/windows.
9. For the purposes of meeting the ENERGY STAR requirement, qualified lighting fixtures in the following locations cannot be counted: storage rooms (e.g., closets, pantries, sheds), or garages.
10. Efficient lighting fixtures represent a significant opportunity for persistent energy savings and a meaningful way to differentiate ENERGY STAR qualified homes from those meeting minimum code requirements. In 2008, EPA intends to propose and solicit industry comments on adding the ENERGY STAR Advanced Lighting Package (ALP) as an additional requirement for ENERGY STAR qualified homes in 2009. To learn more about the ALP, refer to www.energystar.gov/homes.
11. Eligible appliances include ENERGY STAR qualified refrigerators, dish washers, and washing machines.
12. ENERGY STAR qualified ventilation fans include range hood, bathroom, and inline fans.
13. Further efficiency and savings can be achieved by installing ENERGY STAR qualified products, in addition to those required (e.g., additional lighting, appliances, etc.). For more information, visit www.energystar.gov.
14. In homes with heat pumps that have programmable thermostats, the thermostat must have "Adaptive Recovery" technology to prevent the excessive use of electric back-up heating.



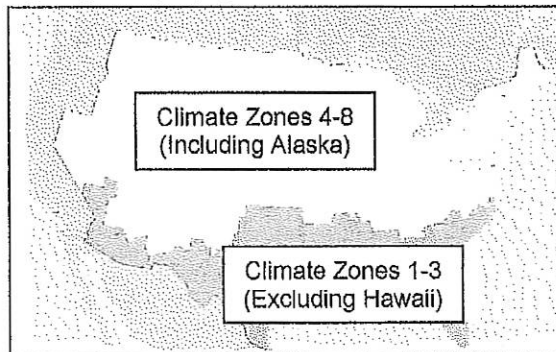
ENERGY STAR Qualified Homes National Builder Option Package

The requirements for the ENERGY STAR Builder Option Package (BOP) are specified in the table below.

To qualify as ENERGY STAR using this BOP, a home must meet the requirements specified, be verified and field-tested in accordance with the HERS Standards by a RESNET-accredited Provider, and meet all applicable codes.

	Hot Climates ¹ (2004 IRC Climate Zones 1,2,3)	Mixed and Cold Climates ¹ (2004 IRC Climate Zones 4,5,6,7,8)
Cooling Equipment (Where Provided)	Right-Sized ² : <ul style="list-style-type: none"> ENERGY STAR qualified A/C (14 SEER / 11.5 EER); <u>OR</u> ENERGY STAR qualified heat pump³ (14 SEER / 11.5 EER / 8.2 HSPF) 	Right-Sized ² : <ul style="list-style-type: none"> 13 SEER A/C; <u>OR</u> ENERGY STAR qualified heat pump³ (14 SEER / 11.5 EER / 8.5 HSPF)
Heating Equipment	<ul style="list-style-type: none"> 80 AFUE gas furnace; <u>OR</u> ENERGY STAR qualified heat pump^{2,3} (14 SEER / 11.5 EER / 8.2 HSPF); <u>OR</u> 80 AFUE boiler; <u>OR</u> 80 AFUE oil furnace 	<ul style="list-style-type: none"> ENERGY STAR qualified gas furnace (90 AFUE); <u>OR</u> ENERGY STAR qualified heat pump^{2,3} (See Note 3 for specifications); <u>OR</u> ENERGY STAR qualified boiler (85 AFUE); <u>OR</u> ENERGY STAR qualified oil furnace (85 AFUE)
Thermostat³	ENERGY STAR qualified thermostat (except for zones with radiant heat)	
Ductwork	Leakage ⁴ : ≤ 4 cfm to outdoors / 100 sq. ft.; <u>AND</u> R-6 min. insulation on ducts in unconditioned spaces ⁵	
Envelope	<ul style="list-style-type: none"> Infiltration^{6,7} (ACH50): 7 in CZ's 1-2 6 in CZ's 3-4 5 in CZ's 5-7 4 in CZ 8; <u>AND</u> Insulation levels that meet or exceed the 2004 IRC⁸; <u>AND</u> Completed Thermal Bypass Inspection Checklist⁹ 	
Windows	ENERGY STAR qualified windows or better (additional requirements for CZ2 and CZ4) ^{10, 11, 12}	
Water Heater¹³	Gas (EF): 40 Gal = 0.61 60 Gal = 0.57 80 Gal = 0.53 Electric (EF): 40 Gal = 0.93 50 Gal = 0.92 80 Gal = 0.89 Oil or Gas ¹⁴ : Integrated with space heating boiler	
Lighting and Appliances^{15,16}	Five or more ENERGY STAR qualified appliances, light fixtures, ceiling fans equipped with lighting fixtures, and/or ventilation fans	

Note: Due to the unique nature of some state codes and/or climates, EPA has agreed to allow regionally-developed definitions of ENERGY STAR in California, Hawaii, and the Pacific Northwest to continue to define program requirements. The States of Montana and Idaho may use either the requirements of the national program or the regionally-developed program in the Pacific Northwest.



Map is for illustrative purposes only and is based on figure N1101.2 from the 2004 International Residential Code (IRC).

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ENERGY STAR Qualified Homes National Builder Option Package Notes

- The appropriate climate zone shall be determined by the 2004 International Residential Code (IRC), Figure N1101.2.
- Cooling equipment shall be sized according to the latest editions of ACCA Manuals J and S, ASHRAE 2001 Handbook of Fundamentals, or an equivalent procedure. Maximum oversizing limit for air conditioners and heat pumps is 15% (with the exception of heat pumps in Climate Zones 5 - 8, where the maximum oversizing limit is 25%). The following operating conditions shall be used in the sizing calculations and verified where reviewed by the rater:
Outdoor temperatures shall be the 99.0% and 1.0% design temperatures as published in the ASHRAE Handbook of Fundamentals for the home's location or most representative city for which design temperature data are available; indoor temperatures shall be 75 F for cooling and 70 F for heating; infiltration rate shall be selected as "light", or the equivalent term.
In specifying equipment, the next available size may be used. In addition, indoor and outdoor coils shall be matched in accordance with ARI standards.
- Homes with heat pumps in Climate Zones 4 and 5 must have an HSPF ≥ 8.5 , which exceeds the ENERGY STAR minimum of 8.2 HSPF. Homes with heat pumps in Climate Zones 6, 7, and 8 cannot be qualified using this BOP, but can earn the label using the ENERGY STAR Performance Path requirements. In homes with heat pumps that have programmable thermostats, the thermostat must have "Adaptive Recovery" technology to prevent the excessive use of electric back-up heating.
- Ducts must be sealed and tested to be ≤ 4 cfm to outdoors / 100 sq. ft. of conditioned floor area, as determined and documented by a RESNET-certified rater using a RESNET-approved or equivalent ASTM-approved testing protocol. Duct leakage testing can be waived if all ducts and air handling equipment are located in conditioned space (i.e., within the home's air and thermal barriers) AND the envelope leakage has been tested to be ≤ 3 ACH50 OR ≤ 0.25 CFM 50 per sq. ft. of the building envelope.
- EPA recommends, but does not require, locating ducts within the home's conditioned space (i.e., inside the air and thermal barriers), and using a minimum of R-4 insulation for ducts inside the conditioned space to prevent condensation.
- Envelope leakage must be determined by a RESNET-certified rater using a RESNET-approved testing protocol.
- To ensure consistent exchange of indoor air, whole-house mechanical ventilation is recommended, but not required.
- Insulation levels of a home must meet or exceed Sections N1102.1 and N1102.2 of the 2004 IRC. These sections allow for compliance to be determined by meeting prescriptive insulation requirements, by using U-factor alternatives, or by using a total UA alternative. In all cases, insulation shall be inspected to Grade I installation as defined in the RESNET Standards by a RESNET-certified rater. Note that the fenestration requirements of the 2004 IRC do not apply to the fenestration requirements of the National Builder Option Package. For more information, refer to the "Codes and Standards Information" document.
- The Thermal Bypass Inspection Checklist must be completed for homes to earn the ENERGY STAR label. The Checklist requires visual inspection of framing areas where air barriers are commonly missed and inspection of insulation to ensure proper alignment with air barriers, thus serving as an extra check that the air and thermal barriers are continuous and complete.
- All windows and skylights must be ENERGY STAR qualified or meet all specifications for ENERGY STAR qualified windows. Windows in Climate Zones 2 and 4 must exceed ENERGY STAR specifications (CZ 2: U-value ≤ 0.55 and SHGC ≤ 0.35 ; CZ 4: U-value ≤ 0.40 and SHGC ≤ 0.45). Visit www.energystar.gov/windows for more information on ENERGY STAR qualified windows.
- All decorative glass and skylight window area counts toward the total window area to above-grade conditioned floor area (WFA) ratio. For homes with a WFA ratio $> 18\%$, the following additional requirements apply:
 - In IRC Climate Zones 1, 2, and 3, an improved window SHGC is required, and is determined by:
Required SHGC = $[0.18 / \text{WFA}] \times [\text{ENERGY STAR SHGC}]$
Where the ENERGY STAR SHGC is the minimum required SHGC of the climate-appropriate window specified in this BOP.
 - In IRC Climate Zones 4, 5, 6, 7, and 8, an improved window U-Value is required, and is determined by:
Required U-Value = $[0.18 / \text{WFA}] \times [\text{ENERGY STAR U-Value}]$
Where the ENERGY STAR U-Value is the minimum required U-Value of the climate-appropriate window specified in this BOP.
- Up to 0.75% WFA may be used for decorative glass that does not meet ENERGY STAR requirements. For example, a home with total above-grade conditioned floor area of 2,000 sq. ft. may have up to 15 sq. ft. (0.75% of 2,000) of decorative glass.
- To determine domestic hot water (DHW) EF requirements for additional tank sizes, use the following equations:
Gas DHW EF $\geq 0.69 - (0.002 \times \text{Tank Gallon Capacity})$; Electric DHW EF $\geq 0.97 - (0.001 \times \text{Tank Gallon Capacity})$.
- In homes with gas or oil hydronic space heating, water heating systems must have an efficiency ≥ 0.78 EF. This may be met through the use of an instantaneous water heating system or an indirect storage system with a boiler that has a system efficiency ≥ 85 AFUE. Homes with tankless coil hot water heating systems cannot be qualified using this BOP, but can earn the label using the ENERGY STAR Performance Path requirements.
- Any combination of ENERGY STAR qualified products listed may be installed to meet this requirement. ENERGY STAR qualified ventilation fans include range hood, bathroom, and inline fans. ENERGY STAR qualified lighting fixtures installed in the following locations shall not be counted: storage rooms (e.g., closets, pantries, sheds), or garages. Eligible appliances include ENERGY STAR qualified refrigerators, dish washers, and washing machines. Further efficiency and savings can be achieved by installing ENERGY STAR qualified products, in addition to those required (e.g., additional lighting, appliances, etc.).
- Efficient lighting fixtures represent a significant opportunity for persistent energy savings and a meaningful way to differentiate ENERGY STAR qualified homes from those meeting minimum code requirements. In 2008, EPA intends to propose and solicit industry comments on adding the ENERGY STAR Advanced Lighting Package (ALP) as an additional requirement for ENERGY STAR qualified homes in 2009. To learn more about the ALP, refer to www.energystar.gov/homes.



ENERGY STAR Qualified Homes Builder Option Package Notes

2004/2006 IECC Climate Zone¹ – 4

ENERGY STAR Window Zone¹⁰ – All

The requirements for the ENERGY STAR Builder Option Package (BOP) are specified in the table below.

To qualify as ENERGY STAR using this BOP, a home must meet the requirements specified, be verified and field-tested in accordance with the HERS Standards by a RESNET-accredited Provider, and meet all applicable codes.

Cooling Equipment (Where Provided)	Right-sized ² ≥13 SEER/ 11.5 EER ENERGY STAR qualified A/C; <u>OR</u> Right-sized ² ≥13 SEER/ 11.5 EER/ 8.5 HSPF ENERGY STAR qualified heat pump ³																				
Heating Equipment	≥90 AFUE ENERGY STAR qualified gas furnace; <u>OR</u> ≥13 SEER/ 11.5 EER/ 8.5 HSPF ENERGY STAR qualified heat pump ^{2,3} ; <u>OR</u> ≥90 AFUE ENERGY STAR qualified boiler; <u>OR</u> ≥85 AFUE ENERGY STAR qualified oil furnace																				
Thermostat ³	ENERGY STAR qualified thermostat (except for zones with mass radiant heat)																				
Ductwork	Leakage ⁴ : ≤ 4 cfm to outdoors / 100 sq. ft.; <u>AND</u> Insulation ⁵ : ≥ R-6 insulation on ducts in unconditioned spaces																				
Envelope	≤ 6 ACH50 Infiltration ^{6,7}																				
	<table border="0"> <tr> <td>≤ Reference UA</td> <td>UA Alternative Approach ⁸; <u>OR</u></td> </tr> <tr> <td>≥ 38 R-Value</td> <td>Celling Insulation ⁸; <u>AND (if applicable)</u></td> </tr> <tr> <td>≥ 30 R-Value</td> <td>Cathedral Ceiling Insulation ⁸; <u>AND (if applicable)</u></td> </tr> <tr> <td>≥ 13 R-Value</td> <td>Wood Frame Wall Insulation ⁸; <u>AND (if applicable)</u></td> </tr> <tr> <td>≥ 19 R-Value</td> <td>Floor Over Unconditioned Space Insulation ⁸; <u>AND (if applicable)</u></td> </tr> <tr> <td>≥ 10 R-Value</td> <td>Crawlspace Wall Insulation Continuous ⁸; <u>OR (if applicable)</u></td> </tr> <tr> <td>≥ 13 R-Value</td> <td>Crawlspace Wall Insulation Framed ⁸; <u>AND (if applicable)</u></td> </tr> <tr> <td>≥ 10 R-Value</td> <td>Basement Wall Insulation Continuous ⁸; <u>OR (if applicable)</u></td> </tr> <tr> <td>≥ 13 R-Value</td> <td>Basement Wall Insulation Framed ⁸; <u>AND (if applicable)</u></td> </tr> <tr> <td>≥ 10 R-Value</td> <td>Slab Insulation at 2 feet Depth ⁸; <u>AND</u></td> </tr> </table>	≤ Reference UA	UA Alternative Approach ⁸ ; <u>OR</u>	≥ 38 R-Value	Celling Insulation ⁸ ; <u>AND (if applicable)</u>	≥ 30 R-Value	Cathedral Ceiling Insulation ⁸ ; <u>AND (if applicable)</u>	≥ 13 R-Value	Wood Frame Wall Insulation ⁸ ; <u>AND (if applicable)</u>	≥ 19 R-Value	Floor Over Unconditioned Space Insulation ⁸ ; <u>AND (if applicable)</u>	≥ 10 R-Value	Crawlspace Wall Insulation Continuous ⁸ ; <u>OR (if applicable)</u>	≥ 13 R-Value	Crawlspace Wall Insulation Framed ⁸ ; <u>AND (if applicable)</u>	≥ 10 R-Value	Basement Wall Insulation Continuous ⁸ ; <u>OR (if applicable)</u>	≥ 13 R-Value	Basement Wall Insulation Framed ⁸ ; <u>AND (if applicable)</u>	≥ 10 R-Value	Slab Insulation at 2 feet Depth ⁸ ; <u>AND</u>
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	Completed Thermal Bypass Inspection Checklist ⁹																				
Windows ^{10,11,12}	≤ 0.40 U-Value ≤ 0.45 SHGC																				
Water Heater ¹³	Gas (EF): 40 Gal = 0.61 60 Gal = 0.57 80 Gal = 0.53 Electric (EF): 40 Gal = 0.93 50 Gal = 0.92 80 Gal = 0.89 Oil or Gas ¹⁴ : Integrated with space heating boiler																				
Lighting and Appliances ^{15,16}	Five or more ENERGY STAR qualified appliances, light fixtures, ceiling fans equipped with lighting fixtures, and/or ventilation fans																				



ENERGY STAR Qualified Homes Builder Option Package Notes

2004/2006 IECC Climate Zone¹ - 4

ENERGY STAR Window Zone¹⁰ - All

1. The appropriate climate zone shall be determined by the 2004 International Residential Code (IRC), Figure N1101.2.
2. Cooling equipment shall be sized according to the latest editions of ACCA Manuals J and S, ASHRAE 2001 Handbook of Fundamentals, or an equivalent procedure. Maximum oversizing limit for air conditioners and heat pumps is 15% (with the exception of heat pumps in Climate Zones 5 - 8, where the maximum oversizing limit is 25%). The following operating conditions shall be used in the sizing calculations and verified where reviewed by the rater:
Outdoor temperatures shall be the 99.0% design temperatures as published in the ASHRAE Handbook of Fundamentals for the home's location or most representative city for which design temperature data are available. Note that a higher outdoor air design temperature may be used if it represents prevailing local practice by the HVAC industry and reflects extreme climate conditions that can be documented with recorded weather data; indoor temperatures shall be 75 F for cooling; infiltration rate shall be selected as "tight", or the equivalent term.
In specifying equipment, the next available size may be used. In addition, indoor and outdoor coils shall be matched in accordance with ARI standards.
3. Homes with heat pumps in Climate Zones 4 and 5 must have an HSPF ≥ 8.5 , which exceeds the ENERGY STAR minimum of 8.2 HSPF. Homes with heat pumps in Climate Zones 6, 7, and 8 cannot be qualified using this BOP, but can earn the label using the ENERGY STAR Performance Path requirements. In homes with heat pumps that have programmable thermostats, the thermostat must have "Adaptive Recovery" technology to prevent the excessive use of electric back-up heating.
4. Ducts must be sealed and tested to be ≤ 4 cfm to outdoors / 100 sq. ft. of conditioned floor area, as determined and documented by a RESNET-certified rater using a RESNET-approved testing protocol. If *total* duct leakage is ≤ 4 cfm to outdoors / 100 sq. ft. of conditioned floor area, then leakage to outdoors does not need to be tested. Duct leakage testing can be waived if all ducts and air handling equipment are located in conditioned space (i.e., within the home's air and thermal barriers) AND the envelope leakage has been tested to be ≤ 3 ACH50 OR ≤ 0.25 CFM 50 per sq. ft. of the building envelope. Note that mechanical ventilation will be required in this situation.
5. EPA recommends, but does not require, locating ducts within conditioned space (i.e., inside the air and thermal barriers), and using a minimum of R-4 insulation for ducts inside conditioned space to prevent condensation.
6. Envelope leakage must be determined by a RESNET-certified rater using a RESNET-approved testing protocol.
7. To ensure consistent exchange of indoor air, whole-house mechanical ventilation is recommended, but not required.
8. Insulation levels of a home must meet or exceed Sections N1102.1 and N1102.2 of the 2004 IRC. These sections allow for compliance to be determined by meeting prescriptive insulation requirements, by using U-factor alternatives, or by using a total UA alternative. These sections also provide guidance and exceptions that may be used. However, note that the U-factor for steel-frame envelope assemblies addressed in Section N1102.2.4 shall be calculated using the ASHRAE zone method, or a method providing equivalent results, and not a series-parallel path calculation method as is stated in the code. Additionally, Section N1102.2.2, which allows for the reduction of ceiling insulation in space constrained roof/ceiling assemblies, shall be limited to 500 sq. ft. or 20% of ceiling area, whichever is less. In all cases, insulation shall be inspected to Grade I installation as defined in the RESNET Standards by a RESNET-certified rater. Note that the fenestration requirements of the 2004 IRC do not apply to the fenestration requirements of the National Builder Option Package. Therefore, if UA calculations are performed, they must use the IRC requirements (with the exception of fenestration) plus the fenestration requirements contained in the national BOP. For more information, refer to the "Codes and Standards Information" document.
9. The Thermal Bypass Inspection Checklist must be completed for homes to earn the ENERGY STAR label. The Checklist requires visual inspection of framing areas where air barriers are commonly missed and inspection of insulation to ensure proper alignment with air barriers, thus serving as an extra check that the air and thermal barriers are continuous and complete.
10. All windows and skylights must be ENERGY STAR qualified or meet all specifications for ENERGY STAR qualified windows. Windows in Climate Zones 2 and 4 must exceed ENERGY STAR specifications (CZ 2: U-value ≤ 0.55 and SHGC ≤ 0.35 ; CZ 4: U-value ≤ 0.40 and SHGC ≤ 0.45). Visit www.energystar.gov/windows for more information on ENERGY STAR qualified windows.

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ENERGY STAR Qualified Homes Builder Option Package Notes

2004/2006 IECC Climate Zone¹ – 4

ENERGY STAR Window Zone¹⁰ – All

11. All decorative glass and skylight window area counts toward the total window area to above-grade conditioned floor area (WFA) ratio. For homes with a WFA ratio >18%, the following additional requirements apply:
 - a. In IRC Climate Zones 1, 2, and 3, an improved window SHGC is required, and is determined by:
Required SHGC = $[0.18 / \text{WFA}] \times [\text{ENERGY STAR SHGC}]$
Where the ENERGY STAR SHGC is the minimum required SHGC of the climate-appropriate window specified in this BOP.
 - b. In IRC Climate Zones 4, 5, 6, 7, and 8, an improved window U-Value is required, and is determined by:
Required U-Value = $[0.18 / \text{WFA}] \times [\text{ENERGY STAR U-Value}]$
Where the ENERGY STAR U-Value is the minimum required U-Value of the climate-appropriate window specified in this BOP.
12. Up to 0.75% WFA may be used for decorative glass that does not meet ENERGY STAR requirements. For example, a home with total above-grade conditioned floor area of 2,000 sq. ft. may have up to 15 sq. ft. (0.75% of 2,000) of decorative glass.
13. To determine domestic hot water (DHW) EF requirements for additional tank sizes, use the following equations:
Gas DHW EF $\geq 0.69 - (0.002 \times \text{Tank Gallon Capacity})$; Electric DHW EF $\geq 0.97 - (0.001 \times \text{Tank Gallon Capacity})$.
14. In homes with gas or oil hydronic space heating, water heating systems must have an efficiency ≥ 0.78 EF. This may be met through the use of an instantaneous water heating system or an indirect storage system with a boiler that has a system efficiency ≥ 85 AFUE. Homes with tankless coil hot water heating systems cannot be qualified using this BOP, but can earn the label using the ENERGY STAR Performance Path requirements.
15. Any combination of ENERGY STAR qualified products listed may be installed to meet this requirement. ENERGY STAR qualified ventilation fans include range hood, bathroom, and inline fans. ENERGY STAR qualified lighting fixtures installed in the following locations shall not be counted: storage rooms (e.g., closets, pantries, sheds), or garages. Eligible appliances include ENERGY STAR qualified refrigerators, dish washers, and washing machines. Further efficiency and savings can be achieved by installing ENERGY STAR qualified products, in addition to those required (e.g., additional lighting, appliances, etc.).
16. Efficient lighting fixtures represent a significant opportunity for persistent energy savings and a meaningful way to differentiate ENERGY STAR qualified homes from those meeting minimum code requirements. In 2008, EPA intends to propose and solicit industry comments on adding the ENERGY STAR Advanced Lighting Package (ALP) as an additional requirement for ENERGY STAR qualified homes in 2009. To learn more about the ALP, refer to www.energystar.gov/homes.



ENERGY STAR Qualified Homes Builder Option Package Notes

2004/2006 IECC Climate Zone¹ – 5

ENERGY STAR Window Zone¹⁰ – Northern

The requirements for the ENERGY STAR Builder Option Package (BOP) are specified in the table below.

To qualify as ENERGY STAR using this BOP, a home must meet the requirements specified, be verified and field-tested in accordance with the HERS Standards by a RESNET-accredited Provider, and meet all applicable codes.

Cooling Equipment (Where Provided)	Right-sized ² ≥13 SEER/ 11.5 EER ENERGY STAR qualified A/C; <u>OR</u> Right-sized ² ≥13 SEER/ 11.5 EER/ 8.5 HSPF ENERGY STAR qualified heat pump ³																						
Heating Equipment	≥90 AFUE ENERGY STAR qualified gas furnace; <u>OR</u> ≥13 SEER/ 11.5 EER/ 8.5 HSPF ENERGY STAR qualified heat pump ^{2,3} ; <u>OR</u> ≥90 AFUE ENERGY STAR qualified boiler; <u>OR</u> ≥85 AFUE ENERGY STAR qualified oil furnace																						
Thermostat³	ENERGY STAR qualified thermostat (except for zones with mass radiant heat)																						
Ductwork	Leakage ⁴ : ≤ 4 cfm to outdoors / 100 sq. ft.; <u>AND</u> Insulation ⁵ : ≥ R-6 insulation on ducts in unconditioned spaces																						
Envelope	≤ 5 ACH50 Infiltration ^{6,7}																						
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Water Heater¹³	Gas (EF): 40 Gal = 0.61 60 Gal = 0.57 80 Gal = 0.53 Electric (EF): 40 Gal = 0.93 50 Gal = 0.92 80 Gal = 0.89 Oil or Gas ¹⁴ : Integrated with space heating boiler																						
Lighting and Appliances^{15,16}	Five or more ENERGY STAR qualified appliances, light fixtures, ceiling fans equipped with lighting fixtures, and/or ventilation fans																						

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ENERGY STAR Qualified Homes Builder Option Package Notes

2004/2006 IECC Climate Zone¹ – 5

ENERGY STAR Window Zone¹⁰ – Northern

1. The appropriate climate zone shall be determined by the 2004 International Residential Code (IRC), Figure N1101.2.
2. Cooling equipment shall be sized according to the latest editions of ACCA Manuals J and S, ASHRAE 2001 Handbook of Fundamentals, or an equivalent procedure. Maximum oversizing limit for air conditioners and heat pumps is 15% (with the exception of heat pumps in Climate Zones 5 - 8, where the maximum oversizing limit is 25%). The following operating conditions shall be used in the sizing calculations and verified where reviewed by the rater:
Outdoor temperatures shall be the 99.0% design temperatures as published in the ASHRAE Handbook of Fundamentals for the home's location or most representative city for which design temperature data are available. Note that a higher outdoor air design temperature may be used if it represents prevailing local practice by the HVAC industry and reflects extreme climate conditions that can be documented with recorded weather data; Indoor temperatures shall be 75 F for cooling; Infiltration rate shall be selected as "tight", or the equivalent term.
In specifying equipment, the next available size may be used. In addition, indoor and outdoor coils shall be matched in accordance with ARI standards.
3. Homes with heat pumps in Climate Zones 4 and 5 must have an HSPF ≥ 8.5 , which exceeds the ENERGY STAR minimum of 8.2 HSPF. Homes with heat pumps in Climate Zones 6, 7, and 8 cannot be qualified using this BOP, but can earn the label using the ENERGY STAR Performance Path requirements. In homes with heat pumps that have programmable thermostats, the thermostat must have "Adaptive Recovery" technology to prevent the excessive use of electric back-up heating.
4. Ducts must be sealed and tested to be ≤ 4 cfm to outdoors / 100 sq. ft. of conditioned floor area, as determined and documented by a RESNET-certified rater using a RESNET-approved testing protocol. If *total* duct leakage is ≤ 4 cfm to outdoors / 100 sq. ft. of conditioned floor area, then leakage to outdoors does not need to be tested. Duct leakage testing can be waived if all ducts and air handling equipment are located in conditioned space (i.e., within the home's air and thermal barriers) AND the envelope leakage has been tested to be ≤ 3 ACH50 OR ≤ 0.25 CFM 50 per sq. ft. of the building envelope. Note that mechanical ventilation will be required in this situation.
5. EPA recommends, but does not require, locating ducts within conditioned space (i.e., inside the air and thermal barriers), and using a minimum of R-4 insulation for ducts inside conditioned space to prevent condensation.
6. Envelope leakage must be determined by a RESNET-certified rater using a RESNET-approved testing protocol.
7. To ensure consistent exchange of indoor air, whole-house mechanical ventilation is recommended, but not required.
8. Insulation levels of a home must meet or exceed Sections N1102.1 and N1102.2 of the 2004 IRC. These sections allow for compliance to be determined by meeting prescriptive insulation requirements, by using U-factor alternatives, or by using a total UA alternative. These sections also provide guidance and exceptions that may be used. However, note that the U-factor for steel-frame envelope assemblies addressed in Section N1102.2.4 shall be calculated using the ASHRAE zone method, or a method providing equivalent results, and not a series-parallel path calculation method as is stated in the code. Additionally, Section N1102.2.2, which allows for the reduction of ceiling insulation in space constrained roof/ceiling assemblies, shall be limited to 500 sq. ft. or 20% of ceiling area, whichever is less. In all cases, insulation shall be inspected to Grade I installation as defined in the RESNET Standards by a RESNET-certified rater. Note that the fenestration requirements of the 2004 IRC do not apply to the fenestration requirements of the National Builder Option Package. Therefore, if UA calculations are performed, they must use the IRC requirements (with the exception of fenestration) plus the fenestration requirements contained in the national BOP. For more information, refer to the "Codes and Standards Information" document.
9. The Thermal Bypass Inspection Checklist must be completed for homes to earn the ENERGY STAR label. The Checklist requires visual inspection of framing areas where air barriers are commonly missed and inspection of insulation to ensure proper alignment with air barriers, thus serving as an extra check that the air and thermal barriers are continuous and complete.
10. All windows and skylights must be ENERGY STAR qualified or meet all specifications for ENERGY STAR qualified windows. Windows in Climate Zones 2 and 4 must exceed ENERGY STAR specifications (CZ 2: U-value ≤ 0.55 and SHGC ≤ 0.35 ; CZ 4: U-value ≤ 0.40 and SHGC ≤ 0.45). Visit www.energystar.gov/windows for more information on ENERGY STAR qualified windows.

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ENERGY STAR Qualified Homes Builder Option Package Notes

2004/2006 IECC Climate Zone¹ – 5

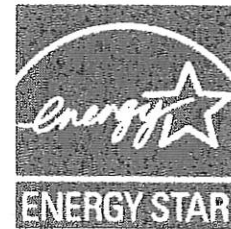
ENERGY STAR Window Zone¹⁰ – Northern

11. All decorative glass and skylight window area counts toward the total window area to above-grade conditioned floor area (WFA) ratio. For homes with a WFA ratio >18%, the following additional requirements apply:
 - a. In IRC Climate Zones 1, 2, and 3, an improved window SHGC is required, and is determined by:
Required SHGC = $[0.18 / \text{WFA}] \times [\text{ENERGY STAR SHGC}]$
Where the ENERGY STAR SHGC is the minimum required SHGC of the climate-appropriate window specified in this BOP.
 - b. In IRC Climate Zones 4, 5, 6, 7, and 8, an improved window U-Value is required, and is determined by:
Required U-Value = $[0.18 / \text{WFA}] \times [\text{ENERGY STAR U-Value}]$
Where the ENERGY STAR U-Value is the minimum required U-Value of the climate-appropriate window specified in this BOP.
12. Up to 0.75% WFA may be used for decorative glass that does not meet ENERGY STAR requirements. For example, a home with total above-grade conditioned floor area of 2,000 sq. ft. may have up to 15 sq. ft. (0.75% of 2,000) of decorative glass.
13. To determine domestic hot water (DHW) EF requirements for additional tank sizes, use the following equations:
Gas DHW EF $\geq 0.69 - (0.002 \times \text{Tank Gallon Capacity})$; Electric DHW EF $\geq 0.97 - (0.001 \times \text{Tank Gallon Capacity})$.
14. In homes with gas or oil hydronic space heating, water heating systems must have an efficiency ≥ 0.78 EF. This may be met through the use of an instantaneous water heating system or an indirect storage system with a boiler that has a system efficiency ≥ 85 AFUE. Homes with tankless coil hot water heating systems cannot be qualified using this BOP, but can earn the label using the ENERGY STAR Performance Path requirements.
15. Any combination of ENERGY STAR qualified products listed may be installed to meet this requirement. ENERGY STAR qualified ventilation fans include range hood, bathroom, and inline fans. ENERGY STAR qualified lighting fixtures installed in the following locations shall not be counted: storage rooms (e.g., closets, pantries, sheds), or garages. Eligible appliances include ENERGY STAR qualified refrigerators, dish washers, and washing machines. Further efficiency and savings can be achieved by installing ENERGY STAR qualified products, in addition to those required (e.g., additional lighting, appliances, etc.).
16. Efficient lighting fixtures represent a significant opportunity for persistent energy savings and a meaningful way to differentiate ENERGY STAR qualified homes from those meeting minimum code requirements. In 2008, EPA intends to propose and solicit industry comments on adding the ENERGY STAR Advanced Lighting Package (ALP) as an additional requirement for ENERGY STAR qualified homes in 2009. To learn more about the ALP, refer to www.energystar.gov/homes.

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Builder Option Packages for Kansas

Find Your County and Click on the Corresponding Climate Zone



County	BOPs by Climate Zone	County	BOPs by Climate Zone
Allen	4	Linn	4
Anderson	4	Logan	5
Atchison	4	Lyon	4
Barber	4	Marion	4
Barton	4	Marshall	4
Bourbon	4	Mcpherson	4
Brown	4	Meade	4
Butler	4	Miami	4
Chase	4	Mitchell	5
Chautauqua	4	Montgomery	4
Cherokee	4	Morris	4
Cheyenne	5	Morton	4
Clark	4	Nemaha	4
Clay	4	Neosho	4
Cloud	5	Ness	5
Coffey	4	Norton	5
Comanche	4	Osage	4
Cowley	4	Osborne	5
Crawford	4	Ottawa	4
Decatur	5	Pawnee	4
Dickinson	4	Phillips	5
Doniphan	4	Pottawatomie	4
Douglas	4	Pratt	4
Edwards	4	Rawlins	5
Elk	4	Reno	4
Ellis	5	Republic	5
Ellsworth	4	Rice	4
Finney	4	Riley	4
Ford	4	Rooks	5
Franklin	4	Rush	4
Geary	4	Russell	4
Gove	5	Saline	4
Graham	5	Scott	5
Grant	4	Sedgwick	4
Gray	4	Seward	4
Greeley	5	Shawnee	4

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Greenwood	4	Sheridan	5
Hamilton	5	Sherman	5
Harper	4	Smith	5
Harvey	4	Stafford	4
Haskell	4	Stanton	4
Hodgeman	4	Stevens	4
Jackson	4	Sumner	4
Jefferson	4	Thomas	5
Jewell	5	Trego	5
Johnson	4	Wabaunsee	4
Kearny	4	Wallace	5
Kingman	4	Washington	4
Kiowa	4	Wichita	5
Labette	4	Wilson	4
Lane	5	Woodson	4
Leavenworth	4	Wyandotte	4
Lincoln	4		

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ENERGY STAR Qualified Homes Thermal Bypass Inspection Checklist

The Thermal Bypass Inspection Checklist must be completed for homes to earn the ENERGY STAR label. The Checklist requires visual inspection of framing areas where air barriers are commonly missed and inspection of insulation to ensure proper alignment with air barriers, thus serving as an extra check that the air and thermal barriers are continuous and complete. State, local, and regional codes, as well as regional ENERGY STAR program requirements, supersede the items specified in this Checklist.

Guidance on Completing the Thermal Bypass Inspection Checklist:

1. Accredited HERS Providers and certified home energy raters shall use their experience and discretion in verifying that each Inspection Checklist item is installed per the inspection guidelines (e.g., identifying minor defects that the Provider or rater deems acceptable versus identifying major defects that undermine the intent of the Checklist item).
2. Alternative methods of meeting the Checklist requirements may be used in completing the Checklist, if the Provider deems them to be equivalent, or more stringent, than the Inspection Checklist guidelines.
3. In the event an item on the Checklist cannot be verified by the rater, the home cannot be qualified as ENERGY STAR, unless the builder assumes responsibility for verifying that the item has met the requirements of the Checklist. This option is available at the discretion of the Provider or rater but may not be used to verify more than six (6) items on the Inspection Checklist. This responsibility will be formally acknowledged by the builder signing-off on the Checklist for the item(s) that they verified. The column titled "N/A" should be used when the checklist item is not present in the home or when local code requirements take precedent.
4. The Checklist may be completed for a batch of homes using a RESNET-approved sampling protocol when qualifying homes as ENERGY STAR. For example, if the approved sampling protocol requires rating one in seven homes, then the Checklist will be completed for the one home which was rated.
5. In the event that a Provider or rater finds an item that is inconsistent with the Checklist Inspection guidelines, the home cannot be qualified as ENERGY STAR until the item is corrected in a manner that meets the ENERGY STAR requirements. If correction of the item is not possible, the home cannot earn the ENERGY STAR label.
6. The Provider or rater is required to keep a hard copy record of the completed and signed Checklist. The signature of a builder employee is also required if the builder verified compliance with any item on the Checklist.
7. For purposes of this Checklist, an air barrier is defined as any solid material that blocks air flow between a conditioned space and an unconditioned space, including necessary sealing to block excessive air flow at edges and seams. Additional information on proper air sealing of thermal bypasses can be found on the Building America Web site (www.eere.energy.gov/buildings/building_america) and in the EEBA Builder's Guides (www.eeba.org). These references include guidance on identifying and sealing air barriers, as well as details on many of the items included in the Checklist.

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ENERGY STAR Qualified Homes Thermal Bypass Inspection Checklist

Home Address: _____		City: _____		State: _____	
Thermal Bypass	Inspection Guidelines	Corrections Needed	Builder Verified	Rater Verified	N/A
1. Overall Air Barrier and Thermal Barrier Alignment	Requirements: Insulation shall be installed in full contact with sealed interior and exterior air barrier except for alternate to interior air barrier under item no. 2 (<i>Walls Adjoining Exterior Walls or Unconditioned Spaces</i>)				
	All Climate Zones:				
	1.1 Overall Alignment Throughout Home	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	1.2 Garage Band Joist Air Barrier (at bays adjoining conditioned space)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	1.3 Attic Eave Baffles Where Vents/Leakage Exist	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Only at Climate Zones 4 and Higher:				
	1.4 Slab-edge Insulation (A maximum of 25% of the slab edge may be uninsulated in Climate Zones 4 and 5.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Best Practices Encouraged, Not Req'd.:				
1.5 Air Barrier At All Band Joists (Climate Zones 4 and higher)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.6 Minimize Thermal Bridging (e.g., OVE framing, SIPs, ICFs)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2. Walls Adjoining Exterior Walls or Unconditioned Spaces	Requirements:				
	<ul style="list-style-type: none"> • Fully insulated wall aligned with air barrier at both interior and exterior, OR • Alternate for Climate Zones 1 thru 3, sealed exterior air barrier aligned with RESNET Grade 1 insulation fully supported • Continuous top and bottom plates or sealed blocking 				
	2.1 Wall Behind Shower/Tub	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2.2 Wall Behind Fireplace	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2.3 Insulated Attic Slopes/Walls	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2.4 Attic Knee Walls	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2.5 Skylight Shaft Walls	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2.6 Wall Adjoining Porch Roof	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2.7 Staircase Walls	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.8 Double Walls	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3. Floors between Conditioned and Exterior Spaces	Requirements:				
	<ul style="list-style-type: none"> • Air barrier is installed at any exposed insulation edges • Insulation is installed to maintain permanent contact w/ sub-floor above • Optional until July 1, 2008, insulation is installed to maintain permanent contact with air barrier below 				
	3.1 Insulated Floor Above Garage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.2 Cantilevered Floor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4. Shafts	Requirements: Openings to unconditioned space are fully sealed with solid blocking or flashing and any remaining gaps are sealed with caulk or foam (provide fire-rated collars and caulking where required)				
	4.1 Duct Shaft	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	4.2 Piping Shaft/Penetrations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	4.3 Flue Shaft	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Attic/ Ceiling Interface	Requirements:				
	<ul style="list-style-type: none"> • All attic penetrations and dropped ceilings include a full interior air barrier aligned with insulation with any gaps fully sealed with caulk, foam or tape • Movable insulation fits snugly in opening and air barrier is fully gasketed 				
	5.1 Attic Access Panel (fully gasketed and insulated)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	5.2 Attic Drop-down Stair (fully gasketed and insulated)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	5.3 Dropped Ceiling/Soffit (full air barrier aligned with insulation)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	5.4 Recessed Lighting Fixtures (ICAT labeled and sealed to drywall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.5 Whole-house Fan (insulated cover gasketed to the opening)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6. Common Walls Between Dwelling Units	Requirements: Gap btwn drywall shaft wall (common wall) and structural framing btwn units is sealed at all exterior boundary conditions				
	6.1 Common Wall Between Dwelling Units	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rater Inspection Date: _____		Builder Inspection Date: _____			
Home Energy Rating Provider: _____		Builder Company Name: _____			
Home Energy Rater Company Name: _____		Builder Division Name: _____			
Home Energy Rater Signature: _____		Builder Employee Signature: _____			

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