

Approved: 03/21/08

Date

MINUTES OF THE SELECT COMMITTEE ON ENERGY & ENVIRONMENT FOR THE FUTURE

The meeting was called to order by Chairman Don Myers at 1:30 PM on March 18, 2008 in Room 784 of the Docking State Office Building.

All members were present except:

Representative Jason Watkins.

Committee staff present:

Mike Corrigan, Revisor of Statutes Office

Melissa Doeblin, Revisor of Statutes Office

Raney Gilliland, Kansas Legislative Research Department

Mary K. Galligan, Kansas Legislative Research Department

Ryan Hoffman, Kansas Legislative Research Department

Barbara Lewerenz, Committee Assistant

Conferees appearing before the committee:

Tom Thompson, Kansas Chapter of the Sierra Club

Others attending:

Chairman Myers stated that due to regulatory uncertainty, potential carbon cost and the risk of investment on the part of utilities and potential difficulty in obtaining financing, there was a general opinion from the representatives of the utility companies that they really didn't want **HB-2949 - Kansas energy plan act**, to be put into statute. Therefore, **HCR-5038, State energy plan**, which is almost identical to **HB-2949** was developed. Chairman Myers explained that a technical balloon amendment (Attachment 1) to **HCR-5038** was needed to be approved prior to holding the hearing. The amendment strikes "43,584 gigawatt hours" from page 2, line 36 and adds "approximately 6,700 megawatts." It also strikes the word "additional" in line 37 and strikes "59,000 gigawatt hours" from lines 38 and 39 replacing it with terminology explaining the need for additional base-load capacity in terms of megawatts. The balloon strikes line 12 on page 3 and adds wind generation at 2 % to be included in the 2006 approximate fuel mix for electric generation in the state. Lines 14 through 17 are stricken and replaced by a statement prefacing the approximate fuel mixes of dispatchable electric generation for the future.

Moved by Representative Olson, seconded by Representative Rardin for adoption of the Technical Balloon Amendment of **HCR-5038**. Motion Carried.

Chairman Myers opened the hearing on **HCR-5038, State energy plan**.

Chairman Myers recognized Tom Thompson, Kansas Chapter of the Sierra Club, who testified in opposition to **HCR-5038** (Attachment 2). Mr. Thompson stated that his testimony was the same as his previous testimony for **HB-2949**. The Sierra Club hopes the state of Kansas will continue to pursue a viable energy plan that considers sustainability, pollution potential, including carbon dioxide and other greenhouse gases, future carbon fees, waste disposal issues, life-time costs, and the impact on health and energy independence. It also desires that the general public be given ample opportunity for input.

Being no further testimony, Chairman Myers requested the committee's permission to work the resolution. Chairman Myers said he met with Senator Emler and the Senator had agreed to run **HCR- 5038** on the Senate side.

CONTINUATION SHEET

MINUTES OF THE Select Committee on Energy & Environment for the Future at 1:30 PM on March 18, 2008 in Room 784 of the Docking State Office Building.

Representative Flora presented an amendment to **HCR-5038** - Balloon No. 1 (Attachment 3). The amendment adds the word “electric” before the word energy throughout the resolution. On page 1, line 11 the phrase, “and the lives of all Kansans” is added following the word “economy.” On page 2, line 29, following the year 2009, the phrase, “and each ensuing year thereafter,” is added. On page 2, line 32, following the word particular, the phrase, “and other advancements in the science of base-load generation” is added.

Moved by Representative Flora, seconded by Representative Olson to adopt Balloon No. 1 of HCR-5038.. Motion Carried.

Representative Rardin presented an amendment to **HCR-5038** - Balloon No. 2 (Attachment 4). Due to the complexity of this amendment the resolution was divided into sections known as Parts A, B, C, D and E and motions were made separately for each section.

**Part A:** On page 1, line 33, the sentence, “Base load generation includes coal fired steam, nuclear and hydro-power generation,” would be stricken. On page 1, lines 40 and 41, the sentence, “Intermediate load generation includes gas fired combined cycle generation” would be stricken.

Moved by Representative Rardin, seconded by Representative Flora to strike the sentence on page 1, lines 33 and 34 beginning with the word “Base-load” and the sentence on page 1, lines 40 and 41 beginning with the word, “Intermediate”. Motion Failed

**Part B:** . On page 1, line 37, the balloon would add “Dispatchable electric generation capacity means the amount of generation capacity that a utility can expect from a generating unit any time the unit is 100 % available,” following the word “year.”

Moved by Representative Rardin, seconded by Representative Flora to add the sentence in the balloon beginning with the word, “Dispatchable “ following the word year on page 1, line 37. Motion Carried

**Part C:** On page 2, lines 7 and 8, the definition, “Peak load generation includes combustion turbine, internal combustion engine and gas fired steam generation” would be stricken. On page 2, lines 16 and 17 the words, “including, but not limited to, nuclear power generation and domestic fossil fuel reserves” would be stricken.

Moved by representative Rardin, seconded by Representative Flora to strike the definition on page 2 lines 7 and 8 following the word “costs” and to also strike the words on page 2, lines 16 and 17 following the word “supplies.” from the resolution. Motion Failed

**Part D:** On page 2, line 15, following the word “of,” the balloon adds “safe and cost-effective.” The balloon included changes on page 2, lines 22, 23 and 24 to clarify that some aging electric generation capacity will need to be replaced within the next 20 years and that promotion of applicable and appropriate market driven solutions be promoted as well as polices encouraging consumer and corporate energy efficiency toward an end of reducing state energy needs and load growth.

Moved by representative Rardin, seconded by Representative Flora to amend the resolution by adding the verbage in the balloons on page 2, lines 15, 22, 23 and 24. Motion Carried.

**Part E:** On page 3, line 16, the words, “the following” are stricken and replaced with “suitably determined.” Lines 18, 19 and 20 are stricken. This deletes the approximate percentages of base-load electric generation projected for the future.

Moved by Representative Rardin, seconded by Representative Flora to amend the resolution by adding the verbage in the balloon on page 3, line 16 and to strike lines 18, 19 and 20 on page 3. Motion Carried

CONTINUATION SHEET

MINUTES OF THE Select Committee on Energy & Environment for the Future at 1:30 PM on March 18, 2008 in Room 784 of the Docking State Office Building.

Moved by Representative Olson, seconded by Representative Flora to approve HCR 5038 as amended. Motion Carried

Moved by Representative Olson, seconded by Representative Faust-Goudeau to approved the Minutes of March 11 and March 12. Motion Carried.

Chairman Myers furnished articles entitled, *Nuclear Energy: A Key Tool in Reducing Greenhouse Gas Emissions* and *S & P on Renewable Portfolio Standards, US Utilities*. (Attachment 5)

Chairman Myers announced that there will be no further meetings of the Select Committee on Energy & Environment for the Future. He thanked the committee and staff for their work in producing a resolution that helps define the future energy needs of the state and informs the public of a serious situation that will take time to resolve.

Meeting adjourned at 2:25 p.m.

# House Concurrent Resolution No. 5038

Technical Balloon

By Representative Myers

3-14

9 A CONCURRENT RESOLUTION establishing a Kansas energy plan.

10 WHEREAS, Energy plays a vital role in the Kansas economy; and

11 WHEREAS, Kansas needs an energy plan for the state to develop a  
12 balanced energy approach, a plan which allows for continued develop-  
13 ment of all energy sources but is not driven by special interests or energy  
14 crises; and

15 WHEREAS, According to data published by the Energy Information  
16 Administration, the state's total supply of electricity is nearly equal to the  
17 state's usage; and

18 WHEREAS, The State Corporation Commission reports in testimony  
19 on February 20, 2008, that due to the aging of much of the base power  
20 supply generation, it will be necessary to replace much of that generation  
21 within the next 20 years; and

22 WHEREAS, A state energy plan should provide a framework for fu-  
23 ture legislative action to move the state toward electric energy afforda-  
24 bility, sustainability and independence: Now, therefore,

25 *Be it resolved by the House of Representatives of the State of Kansas,*  
26 *the Senate concurring therein:* That the Legislature hereby establish the  
27 Kansas energy plan; and

28 *Be it further resolved:* That the following terms have the meanings  
29 provided below for purposes of the Kansas energy plan:

30 (a) "Base-load generation" means dispatchable electric generation  
31 which is expected to be operated at a capacity factor greater than 45%,  
32 based on variable fuel costs. Base-load generation includes coal-fired  
33 steam, nuclear and hydropower generation.

34 (b) "Capacity factor" means the amount of energy produced by a  
35 generator in a year divided by the product of the nameplate capacity  
36 rating of the generator times the number of hours in a year.

37 (c) "Intermediate-load generation" means dispatchable electric gen-  
38 eration which is expected to be operated at a capacity factor between 30%  
39 and 45%, based on variable fuel costs. Intermediate-load generation in-  
40 cludes gas-fired combined cycle generation.

41 (d) "Intermittent-load generation" means electric generation which  
42 has very low variable fuel costs and which cannot be dispatched because  
43

House Select Committee on Energy  
& Environment for the Future  
3/18/08  
Attachment 1

2-1

1 the output is controlled by the natural variability of the energy resource.

2 Intermittent-load generation includes wind and solar energy generation.

3 (e) "Nameplate capacity" means the rating in megawatts of an electric  
4 generator at 100% design conditions.

5 (f) "Peak-load generation" means dispatchable electric generation  
6 which is expected to be operated at a capacity factor less than 30%, based  
7 on variable fuel costs. Peak-load generation includes combustion turbine,  
8 internal combustion engine and gas-fired steam generation; and

9 *Be it further resolved:* That the Legislature adopt the following pol-  
10 icies as the foundation of the state energy plan:

11 (a) Encouragement of continued development of alternative and re-  
12 newable energy;

13 (b) enactment of legislation implementing policies which will in-  
14 crease the electric transmission infrastructure of the state;

15 (c) repeal of laws and public policies that restrict development of  
16 domestic energy supplies, including, but not limited to, nuclear power  
17 generation and domestic fossil fuel reserves;

18 (d) support for the southwest power pool and the Kansas electric  
19 transmission authority in acquiring adequate transmission for electric  
20 generation needs of the state;

21 (e) recognition that the age of the current electric generation capacity  
22 will require ~~it~~ to be replaced within the next 20 years; and

much of

23 (f) promotion of market driven solutions to electric generation needs  
24 of the state; and

25 *Be it further resolved:* That the State Corporation Commission be  
26 requested to submit annually a written report to the senate committee  
27 on utilities and the house committee on energy and utilities, or their  
28 successors, on or before the beginning of the regular session of the Leg-  
29 islature beginning in 2009 on recommendations for legislative changes  
30 needed to facilitate the state energy plan, the development of clean burn-  
31 ing coal technology and the progress of nuclear power generation in the  
32 country and state in particular; and

33 *Be it further resolved:* That the Legislature adopt the following for  
34 purposes of planning for future growth in demand for electricity:

35 (a) For the year 2006, capacity available in this state from base-load  
36 generation was ~~43,584 gigawatt hours,~~

approximately 6,700 megawatts

37 (b) The total ~~additional~~ base-load generation capacity that will be  
38 needed in this state by the year 2028 is projected to be ~~50,000 gigawatt~~  
39 ~~hours,~~

approximately 7,600 megawatts. This means additional base-load generation capacity of approximately 900 megawatts will be needed, in addition to base-load capacity necessary to replace any of the current aging base-load generation fleet

40 (c) The projected increase in demand for electricity over the next 20  
41 years will require the phase in of the following increases in electric gen-  
42 eration ~~capacity~~ in this state:

43 (1) For the years 2007 through 2015, based on a historical annual

- 1. growth rate of 1.3% per year, 4,416 gigawatt hours.
- 2 (2) Based on a projected annual growth rate of 1.6%:
- 3 (A) For the years 2016 through 2020, 4,000 gigawatt hours.
- 4 (B) For the years 2021 through 2025, 4,500 gigawatt hours.
- 5 (C) For the years 2026 through 2028, 2,500 gigawatt hours.
- 6 (d) The state, in accordance with the policies expressed in section 3,
- 7 and amendments thereto, shall take such actions as necessary to encour-
- 8 age the development of electric generation capacity in this state to meet
- 9 increases in demand for electricity over the next 20 years; and

10 *Be it further resolved:* That the Legislature adopt the following for  
 11 purposes of planning for future fuel needs for electric generation:

12 (a) ~~The present fuel mix for base load generation in this state is,~~ coal,

In 2006, the approximate fuel mix for electric generation in this state was

13 73%; nuclear, 21%; ~~and~~ natural gas, 4%.

; and wind, 2%

14 (b) ~~The state, in accordance with the policies expressed in section 3,~~  
 15 ~~and amendments thereto, shall take such actions as necessary to encour-~~  
 16 ~~age the following fuel mixes to be the source of base load electric gen-~~  
 17 ~~eration in this state:~~

In accordance with the policies expressed in section 3, and amendments thereto, and in addition to any electric generation provided by intermittent-load generation, the state shall take such actions as necessary to encourage future fuel mixes of dispatchable electric generation in this state in approximately the following percentages:

- 18 (1) By the year 2020, coal, 70%; nuclear, 25%; and natural gas, 5%.
- 19 (2) By the year 2025, coal, 65%; nuclear, 30%; and natural gas, 5%.
- 20 (3) By the year 2028, coal, 60%; nuclear, 35%; and natural gas, 5%.



**Testimony before the House Select Committee on Energy and Environment for the Future**  
**March 18, 2008**  
**Opposing HCR 5038**

Chairperson Myers and Honorable Members of the Committee:

My name is Tom Thompson and I represent the Kansas Chapter of the Sierra Club. I have come today to speak in opposition to HCR 5038.

The Sierra Club is in opposition to 5038 but appreciates the Committees attempt to start work on a Kansas Energy Plan. Kansas needs a far-reaching, comprehensive plan that works to meet the energy needs of Kansans in a reliable, sustainable and environmentally appropriate fashion. This bill primarily deals with what it calls baseload. It also presents many unanswered questions.

The Sierra Club is concerned that this resolution primarily deals with baseload, particularly with proportion of nuclear power being increased to meet baseload needs. This is being done without first considering the effects of an aggressive conservation and efficiency program to decrease the need for additional baseload. The Kansas Energy Council has hired Summit Blue from Boulder, Colorado to study the energy efficiency potential for Kansas. They are to report to the commission at their June 10<sup>th</sup> meeting. Conservation needs to be part of any program dealing with future baseload.

The Sierra Club is also concerned that this resolution, though it encourages development of renewable sources of energy, does not allow for new advancements in renewable technology that might be used in meeting baseload needs. The targets in the bill need some allowances for these technologies so that they might be included should they become available.

It is also of concern that in the fuel mix cited on page 3 line 8 includes wind at 2% in the balloon. The Sierra Club applauds the inclusion of wind in Section 5. Then the bill does not consider it part of the fuel mix in coming years apparently because it is not considered to be what is called dispatchable. From that point in the bill, development of wind does not appear to be encouraged because it is not dispatchable.

The Sierra Club hopes that the state of Kansas continues its pursuit of a viable energy plan. To develop a plan that considers sustainability, pollution potential including carbon dioxide and other greenhouse gases, future carbon fees, waste disposal issues, life-time costs, impact on health and energy independence. It also hopes that the general public is given ample opportunity for input.

The Sierra Club recommends that HCR 5038 not be passed favorably.

Thank you for this opportunity and your time.

Sincerely

Tom Thompson  
Sierra Club

House Select Committee on Energy  
& Environment for the Future  
3/18/08  
Attachment # 2

# House Concurrent Resolution No. 5038

By Representative Myers

3-14

Balloon 1

Select House Committee on Energy + Environment for the Future  
3/18/08  
Attachment 3

9 A CONCURRENT RESOLUTION establishing a Kansas energy plan.

electric

10 WHEREAS, Energy plays a vital role in the Kansas economy; and

and the lives of all Kansans

11 WHEREAS, Kansas needs an energy plan for the state to develop a  
12 balanced energy approach, a plan which allows for continued develop-  
13 ment of all energy sources but is not driven by special interests or energy  
14 crises; and

15 WHEREAS, According to data published by the Energy Information  
16 Administration, the state's total supply of electricity is nearly equal to the  
17 state's usage; and

18 WHEREAS, The State Corporation Commission reports in testimony  
19 on February 20, 2008, that due to the aging of much of the base power  
20 supply generation, it will be necessary to replace much of that generation  
21 within the next 20 years; and

22 WHEREAS, A state energy plan should provide a framework for fu-  
23 ture legislative action to move the state toward electric energy affor-  
24 dability, sustainability and independence: Now, therefore,

25 *Be it resolved by the House of Representatives of the State of Kansas,*  
26 *the Senate concurring therein:* That the Legislature hereby establish the  
27 Kansas energy plan; and

electric

28 *Be it further resolved:* That the following terms have the meanings  
29 provided below for purposes of the Kansas energy plan:

30 (a) "Base-load generation" means dispatchable electric generation  
31 which is expected to be operated at a capacity factor greater than 45%,  
32 based on variable fuel costs. Base-load generation includes coal-fired  
33 steam, nuclear and hydropower generation.

34 (b) "Capacity factor" means the amount of energy produced by a  
35 generator in a year divided by the product of the nameplate capacity  
36 rating of the generator times the number of hours in a year.

37 (c) "Intermediate-load generation" means dispatchable electric gen-  
38 eration which is expected to be operated at a capacity factor between 30%  
39 and 45%, based on variable fuel costs. Intermediate-load generation in-  
40 cludes gas-fired combined cycle generation.

41 (d) "Intermittent-load generation" means electric generation which  
42 has very low variable fuel costs and which cannot be dispatched because  
43



3-2

1 the output is controlled by the natural variability of the energy resource.  
2 Intermittent-load generation includes wind and solar energy generation.

3 (e) "Nameplate capacity" means the rating in megawatts of an electric  
4 generator at 100% design conditions.

5 (f) "Peak-load generation" means dispatchable electric generation  
6 which is expected to be operated at a capacity factor less than 30%, based  
7 on variable fuel costs. Peak-load generation includes combustion turbine,  
8 internal combustion engine and gas-fired steam generation; and

9 *Be it further resolved:* That the Legislature adopt the following pol-  
10 icies as the foundation of the state energy plan: electric

11 (a) Encouragement of continued development of alternative and re-  
12 newable energy;

13 (b) enactment of legislation implementing policies which will in-  
14 crease the electric transmission infrastructure of the state;

15 (c) repeal of laws and public policies that restrict development of  
16 domestic energy supplies, including, but not limited to, nuclear power  
17 generation and domestic fossil fuel reserves;

18 (d) support for the southwest power pool and the Kansas electric  
19 transmission authority in acquiring adequate transmission for electric  
20 generation needs of the state;

21 (e) recognition that the age of the current electric generation capacity  
22 will require it to be replaced within the next 20 years; and

23 (f) promotion of market driven solutions to electric generation needs  
24 of the state; and

25 *Be it further resolved:* That the State Corporation Commission be  
26 requested to submit annually a written report to the senate committee  
27 on utilities and the house committee on energy and utilities, or their  
28 successors, on or before the beginning of the regular session of the Leg-  
29 islature beginning in 2009, , and each ensuing year thereafter,

30 on recommendations for legislative changes electric  
31 needed to facilitate the state energy plan, the development of clean burn-  
32 ing coal technology, and the progress of nuclear power generation in the ,

33 country and state in particular; and and other advancements in the science of base-load generation

34 *Be it further resolved:* That the Legislature adopt the following for  
35 purposes of planning for future growth in demand for electricity:

36 (a) For the year 2006, capacity available in this state from base-load  
37 generation was 43,584 gigawatt hours.

38 (b) The total additional base-load generation capacity that will be  
39 needed in this state by the year 2028 is projected to be 59,000 gigawatt  
40 hours.

41 (c) The projected increase in demand for electricity over the next 20  
42 years will require the phase in of the following increases in electric gen-  
43 eration capacity in this state:

(1) For the years 2007 through 2015, based on a historical annual

1 growth rate of 1.3% per year, 4,416 gigawatt hours.

2 (2) Based on a projected annual growth rate of 1.6%:

3 (A) For the years 2016 through 2020, 4,000 gigawatt hours.

4 (B) For the years 2021 through 2025, 4,500 gigawatt hours.

5 (C) For the years 2026 through 2028, 2,500 gigawatt hours.

6 (d) The state, in accordance with the policies expressed in section 3,  
7 and amendments thereto, shall take such actions as necessary to encour-  
8 age the development of electric generation capacity in this state to meet  
9 increases in demand for electricity over the next 20 years; and

10 *Be it further resolved:* That the Legislature adopt the following for  
11 purposes of planning for future fuel needs for electric generation:

12 (a) The present fuel mix for base-load generation in this state is coal,  
13 73%; nuclear, 21%; and natural gas, 4%.

14 (b) The state, in accordance with the policies expressed in section 3,  
15 and amendments thereto, shall take such actions as necessary to encour-  
16 age the following fuel mixes to be the source of base-load electric gen-  
17 eration in this state:

18 (1) By the year 2020, coal, 70%; nuclear, 25%; and natural gas, 5%.

19 (2) By the year 2025, coal, 65%; nuclear, 30%; and natural gas, 5%.

20 (3) By the year 2028, coal, 60%; nuclear, 35%; and natural gas, 5%.

3-2

# House Concurrent Resolution No. 5038

By Representative Myers

3-14

9 A CONCURRENT RESOLUTION establishing a Kansas energy plan.

11 WHEREAS, Energy plays a vital role in the Kansas economy; and

12 WHEREAS, Kansas needs an energy plan for the state to develop a  
13 balanced energy approach, a plan which allows for continued develop-  
14 ment of all energy sources but is not driven by special interests or energy  
15 crises; and

16 WHEREAS, According to data published by the Energy Information  
17 Administration, the state's total supply of electricity is nearly equal to the  
18 state's usage; and

19 WHEREAS, The State Corporation Commission reports in testimony  
20 on February 20, 2008, that due to the aging of much of the base power  
21 supply generation, it will be necessary to replace much of that generation  
22 within the next 20 years; and

23 WHEREAS, A state energy plan should provide a framework for fu-  
24 ture legislative action to move the state toward electric energy afforda-  
25 bility, sustainability and independence: Now, therefore,

26 *Be it resolved by the House of Representatives of the State of Kansas,*  
27 *the Senate concurring therein:* That the Legislature hereby establish the  
28 Kansas energy plan; and

29 *Be it further resolved:* That the following terms have the meanings  
30 provided below for purposes of the Kansas energy plan:

31 (a) "Base-load generation" means dispatchable electric generation  
32 which is expected to be operated at a capacity factor greater than 45%,  
33 based on variable fuel costs. ~~Base-load generation includes coal-fired  
34 steam, nuclear and hydropower generation.~~

35 (b) "Capacity factor" means the amount of energy produced by a  
36 generator in a year divided by the product of the nameplate capacity  
37 rating of the generator times the number of hours in a year.

38 (c) "Intermediate-load generation" means dispatchable electric gen- (d)  
39 eration which is expected to be operated at a capacity factor between 30%  
40 and 45%, based on variable fuel costs. ~~Intermediate-load generation in-  
41 cludes gas-fired combined cycle generation.~~

42 (d) "Intermittent-load generation" means electric generation which (e)  
43 has very low variable fuel costs and which cannot be dispatched because

(c) "Dispatchable electric generation capacity" means the amount of generation capacity that a utility can expect from a generating unit anytime the unit is 100% available.

House Select Committee on Energy  
& Environment for the Future  
3/18/08  
Attachment 4

1 the output is controlled by the natural variability of the energy resource.  
Intermittent-load generation includes wind and solar energy generation.

3 (e) <sup>^</sup>“Nameplate capacity” means the rating in megawatts of an electric (f)  
4 generator at 100% design conditions.

5 (f) <sup>^</sup>“Peak-load generation” means dispatchable electric generation (g)  
6 which is expected to be operated at a capacity factor less than 30%, based  
7 on variable fuel costs. ~~Peak-load generation includes combustion turbine,  
8 internal combustion engine and gas-fired steam generation; and~~

9 *Be it further resolved:* That the Legislature adopt the following pol-  
10 icies as the foundation of the state energy plan:

11 (a) Encouragement of continued development of alternative and re-  
12 newable energy;

13 (b) enactment of legislation implementing policies which will in-  
14 crease the electric transmission infrastructure of the state;

15 (c) repeal of laws and public policies that restrict development of <sup>^</sup> safe and cost-effective  
16 domestic energy supplies, ~~including, but not limited to, nuclear power  
17 generation and domestic fossil fuel reserves;~~

18 (d) support for the southwest power pool and the Kansas electric  
19 transmission authority in acquiring adequate transmission for electric  
20 generation needs of the state; <sup>^</sup> some of

21 (e) recognition that the age of the current electric generation capacity  
22 will require <sup>^</sup> it to be replaced within the next 20 years; and <sup>^</sup> applicable and appropriate

23 (f) promotion of <sup>^</sup> market driven solutions to electric generation needs  
24 of the state; and <sup>^</sup> (g) promotion of policies encouraging consumer and corporate energy efficiency,  
25 including such policies as are applicable to companies in the business of power  
26 generation, transmission and distribution toward an ~~and~~ of reducing state energy  
27 needs and state load growth; and <sup>^</sup> end

28 *Be it further resolved:* That the State Corporation Commission be  
29 requested to submit annually a written report to the senate committee  
30 on utilities and the house committee on energy and utilities, or their  
31 successors, on or before the beginning of the regular session of the Leg-  
32 islature beginning in 2009 on recommendations for legislative changes  
33 needed to facilitate the state energy plan, the development of clean burn-  
34 ing coal technology and the progress of nuclear power generation in the  
35 country and state in particular; and

36 *Be it further resolved:* That the Legislature adopt the following for  
37 purposes of planning for future growth in demand for electricity:

38 (a) For the year 2006, capacity available in this state from base-load  
39 generation was 43,584 gigawatt hours.

40 (b) The total additional base-load generation capacity that will be  
41 needed in this state by the year 2028 is projected to be 59,000 gigawatt  
42 hours.

43 (c) The projected increase in demand for electricity over the next 20  
44 years will require the phase in of the following increases in electric gen-  
45 eration capacity in this state:

46 (1) For the years 2007 through 2015, based on a historical annual

4-2

- 1 growth rate of 1.3% per year, 4,416 gigawatt hours.
- 2 (2) Based on a projected annual growth rate of 1.6%:
- 3 (A) For the years 2016 through 2020, 4,000 gigawatt hours.
- 4 (B) For the years 2021 through 2025, 4,500 gigawatt hours.
- 5 (C) For the years 2026 through 2028, 2,500 gigawatt hours.
- 6 (d) The state, in accordance with the policies expressed in section 3,
- 7 and amendments thereto, shall take such actions as necessary to encour-
- 8 age the development of electric generation capacity in this state to meet
- 9 increases in demand for electricity over the next 20 years; and
- 10 *Be it further resolved:* That the Legislature adopt the following for
- 11 purposes of planning for future fuel needs for electric generation:
- 12 (a) The present fuel mix for base-load generation in this state is coal,
- 13 73%; nuclear, 21%; and natural gas, 4%.
- 14 (b) The state, in accordance with the policies expressed in section 3,
- 15 and amendments thereto, shall take such actions as necessary to encour-
- 16 age the following fuel mixes to be the source of base-load electric gen-
- 17 eration in this state:
- 18 (1) ~~By the year 2020, coal, 70%; nuclear, 25%; and natural gas, 5%.~~
- 19 (2) ~~By the year 2025, coal, 65%; nuclear, 30%; and natural gas, 5%.~~
- 20 (3) ~~By the year 2028, coal, 60%; nuclear, 35%; and natural gas, 5%.~~

suitably determined

## Nuclear Energy: A Key Tool in Reducing Greenhouse Gas Emissions

October 2007

### Key Points

- Nuclear power plants generate electricity for one in five homes and businesses in the United States without producing or emitting any greenhouse gases, including carbon dioxide. Nuclear power plants generate 73 percent of all carbon-free electricity in America and are an essential mitigation tool for reducing greenhouse gases.

- Nuclear energy accounted for 36 percent of voluntary greenhouse gas reductions (138 million metric tons of carbon dioxide) reported by the electric power sector in 2005, according to the U.S. Energy Information Administration.

- U.S. and international policymakers are increasingly recognizing that nuclear energy has a significant role to play in greenhouse gas emission-reduction policies.

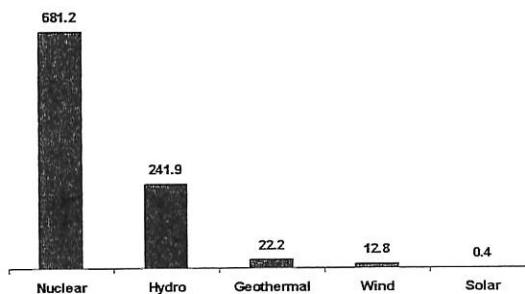
- The nuclear energy industry supports a federal action or legislation that reduces greenhouse gases. Developing effective climate change policy depends on energy sources, such as nuclear, that help prevent greenhouse gas emissions.

- Several analyses show that life-cycle emissions from nuclear energy are comparable to other non-emitting sources of electricity, such as solar, wind and hydropower.

### Nuclear Energy's Vital Role in Reducing Greenhouse Gas Emissions

Carbon dioxide—the greenhouse gas mainly emitted by human activity—is the major focus of policy discussions to reduce emissions. Many scientists believe that carbon dioxide emissions increase the earth's warming effect,

**Carbon Dioxide Prevented by U.S. Electric Power Industry**  
(in million metric tons)



Source: Emissions avoided in 2006 calculated using regional and national fossil-fuel emission rates from the U.S. Environmental Protection Agency and plant generation data from the U.S. Energy Information Administration.

bringing about changes in climate. According to the U.S. Environmental Protection Agency, 85 percent of U.S. greenhouse gas emissions is carbon dioxide.

Nuclear power plants produce large amounts of electricity without emitting carbon dioxide or other greenhouse gases. America's commercial power reactors provide about 19 percent of our electricity—and nearly three-quarters of the nation's clean-air electricity generation.

By using nuclear power instead of fossil fuel-based plants, the U.S. nuclear energy industry prevented 681 million metric tons of carbon dioxide emissions in 2006. For perspective, the volume of greenhouse gas emissions prevented at the nation's 104 nuclear power plants is equivalent to taking 96 percent of all passenger cars off America's roadways.

House Select Committee on Energy  
& Environment for the Future  
3/10/08  
Attachment # 5



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# Nuclear Energy: A Key Tool in Reducing Greenhouse Gas Emissions

Page 2 of 4—October 2007

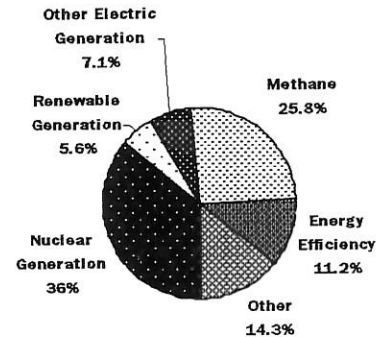
Without nuclear energy in today's portfolio, greenhouse gas emissions would be dramatically higher. In the European Union, a recent study of the region's carbon avoidance shows that an additional 704 million metric tons of carbon dioxide would be emitted if all nuclear power plants in these countries were removed from the electricity grid. Worldwide, nuclear energy prevents the emission of more than 2.6 billion metric tons of carbon dioxide each year.

In 1994, the electric power industry teamed with the U.S. Department of Energy to create "Climate Challenge," a joint government-industry partnership aimed at eliminating greenhouse gas emissions. Building on the success of the partnership, the electric power sector made a new voluntary commitment to reduce greenhouse gas emissions intensity in the United States. In 2003, through a new initiative named Power Partners, the industry pledged to reduce the power sector's greenhouse gas emissions intensity during the 2010-2012 period by the equivalent of 3 percent to 5 percent (measured as greenhouse gas emissions per unit of electricity produced in our sector) below the 2000-2002 base period average.

The electric utility industry is on track to meet its reduction targets, with adjusted power-sector carbon intensity approaching a 3 percent reduction compared to the baseline level. The industry has reached this milestone only three years into the 10-year program.

Voluntary efforts by U.S. industry to reduce greenhouse gases and international emission-reduction efforts, such as the Kyoto Protocol and the Asia-Pacific Partnership, would be hampered significantly if nuclear power production were reduced, and made nearly impossible without nuclear power. For example, achieving a 20 percent renewable portfolio standard in the United States would have no impact on the nation's greenhouse gas emissions if production of electricity at

## Electric Power Greenhouse Gas Reductions by Project Type



Source: U.S. Energy Information Administration

nuclear power plants were simultaneously reduced or eliminated.

## Analyses Reveal Low Life-Cycle Emissions of Nuclear Energy

Critics claim that nuclear power's air emissions are comparable to those of fossil-fuel sources of electricity generation when the "life-cycle" impacts of nuclear power are considered. Although nuclear power plants do not emit greenhouse gases when generating electricity, certain processes used to build and fuel the plants do. This is true for all energy facilities.

However, numerous studies demonstrate that nuclear power's life-cycle emissions are comparable to renewable forms of generation, such as wind and hydropower, and far less than those of coal- or natural gas-fired power plants.

An International Energy Agency (IEA) analysis found that nuclear power's life-cycle emissions range from 2 to 59 grams of carbon dioxide equivalents per kilowatt-hour. Only hydropower's range ranked lower, at 2 to 48 grams of CO<sub>2</sub>-equivalents per kilowatt-hour.

## Nuclear Energy: A Key Tool in Reducing Greenhouse Gas Emissions

Page 3 of 4—October 2007

Nuclear energy's life-cycle greenhouse gas emissions are lower than wind (7 to 124 grams of CO<sub>2</sub>-equivalents) and solar photovoltaic (13 to 731 grams of CO<sub>2</sub>-equivalents), according to IEA. The life-cycle emissions from natural gas-fired plants ranged from 389 to 511 grams of CO<sub>2</sub>-equivalents per kilowatt-hour.

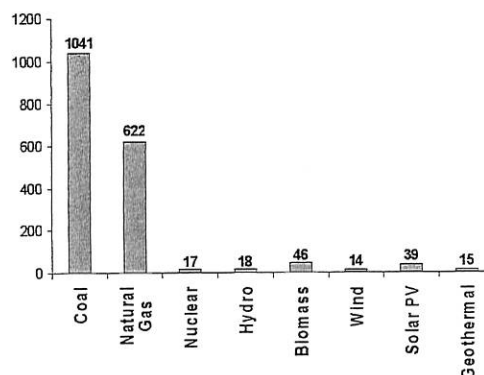
### Policymakers Recognize Nuclear Power's Climate Benefits

Climate change increasingly is important to U.S. and international policymakers considering energy supply and greenhouse gas mitigation. Given that concern and the need for baseload electricity production, policymakers and energy industry leaders are evaluating an expanded role for nuclear power.

U.S. policymakers are now weighing different legislative and other approaches for reducing greenhouse gas emissions. While most experts predict that real climate change policy may take several years to finalize, the nuclear energy industry is working to gain greater recognition for nuclear energy's clean-air attributes. In an October policy paper, the industry detailed the principle underlying its position on climate change. These include:

- The industry supports federal action or legislation to reduce greenhouse gas emissions.
- Nuclear energy is a vital source of electricity that can meet the nation's growing energy needs with a secure, domestic energy supply that also protects air quality.
- A credible program to reduce greenhouse gas emissions will require a portfolio of technologies and approaches. Nuclear energy is an indispensable part of that portfolio.
- Achieving a significant expansion of nuclear power in the United States requires sustained federal and state government policies relating to nuclear energy.

**Comparison of Life-Cycle Emissions**  
(in tons of carbon dioxide-equivalent per gigawatt-hour)



Source: University of Wisconsin-Madison

Carbon mitigation strategies from Princeton University, Columbia University's Earth Institute, Harvard University and the Pew Center on Global Climate Change, as well as energy studies by the governments of Finland and the United Kingdom, have reached a similar conclusion: A clear path toward meeting the global challenge of reducing greenhouse gases relies in part on an expanded portfolio of low-emission sources of electricity, including nuclear power.

The Intergovernmental Panel on Climate Change issued a report in May 2007 concluding that lowering emissions would require greater emphasis on renewables and nuclear energy. In August, the United Nations Framework Convention on Climate Change released a study calling for an additional investment of \$25 billion in nuclear energy by 2030.

A 2006 report by the Progressive Policy Institute said that expanding nuclear power should be part of a plan to help avert a dangerous long-term energy crisis and address air-quality issues. The institute's "Progressive Energy Platform" said that nuclear energy "holds a great potential to be an integral part of the diversified energy portfolio for America."

## Nuclear Energy: A Key Tool in Reducing Greenhouse Gas Emissions

Page 4 of 4—October 2007

Nuclear energy also is part of the strategy for combating climate change in an energy security plan released by the Center for American Progress, a progressive think tank. The center recommends that the United States establish a “renewable portfolio standard” mandating that 10 percent to 25 percent of electricity be produced from renewable resources and nuclear energy by 2025.

Ten northeastern and Mid-Atlantic States have formed the first regional cap-and-trade program for carbon dioxide, known as the Regional Greenhouse Gas Initiative. The program treats all clean-air sources of electricity, such as nuclear power and renewables, equally in the greenhouse gas reduction framework. Nuclear plants generate about one-third of the region’s electricity.

Six western states formed a similar initiative. In addition, California passed legislation in 2006 to reduce carbon dioxide emissions by about 25 percent by 2020. In January 2007, Gov. Arnold Schwarzenegger asked state regulators to require oil refiners and gasoline sellers to cut by 10 percent the emission of greenhouse gases from their production facilities. Under this approach, electricity from nuclear plants to power plug-in hybrid vehicles could play a significant role in the state’s future transportation sector.

Globally, more than 400 reactors generate 17 percent of all electricity. Construction is under way on 29 reactors, and many countries have announced plans to build more than 200 reactors in the next 30 years.

*This policy brief also is available at [www.nei.org](http://www.nei.org), where it is updated periodically.*

### On Nuclear Energy’s Environmental Benefits

“A more diverse mix of voices are taking a positive second look at nuclear energy—environmentalists, scientists, the media, prominent Republicans and Democrats, and progressive think tanks. They are all coming to a similar conclusion: If we are to meet the growing electricity needs in this country and also address global climate change, nuclear energy has a crucial role to play.”

—Patrick Moore  
Co-founder, Greenpeace  
Co-chair, Clean and Safe Energy Coalition  
Kiplinger’s Business Resource Center  
September 2007

“Even some environmental groups have come to realize that a new generation of safer nuclear plants is the best option for addressing the nation’s mounting energy needs. ... Nuclear units emit no greenhouse gases from plant operations, which makes nuclear a compellingly green alternative to coal, oil and natural gas.”

—USA Today  
Editorial  
May 16, 2007

“[The United States should] provide opportunities for nuclear power to play a continuing role in a future low-carbon electricity sector. ... Because nuclear power is one of the few options for no-carbon electricity production, efforts should be made to preserve this option.”

—Pew Center on Global Climate Change  
Recommendation in “Agenda for  
Climate Action”  
February 2006

“I firmly believe that nuclear power is a key technology for addressing climate change. As we develop strategies to reduce greenhouse gas emissions, we simply cannot ignore this emission-free technology.”

—Sen. John McCain (R-Ariz.)  
Clean Cities Congress and Exposition  
May 8, 2006

utility owner in Connecticut. National Grid and NStar own utilities in Massachusetts.

Edison International and Sempra Energy are the largest utility owners in California by market value.

**Web link:** <http://www.telegram.com/article/20080312/NEWS/80>

Reuters UK

## **S&P on renewable portfolio standards, US utilities**

Mon Mar 10, 2008 9:36pm GMT

(The following statement was released by the ratings agency Standard and Poor)

March 10 - The rapid growth of renewable portfolio standards (RPS) has become one of the most significant developments in the electric utility sector since electric restructuring began nearly a decade ago, according to a report published today by Standard & Poor's Ratings Services titled "The Race For The Green: How Renewable Portfolio Standards Could Affect U.S. Utility Credit Quality." RPS are laws or regulatory commission directives that require utilities to acquire a certain percentage of their power supply from renewable sources such as wind or solar. According to the Lawrence Berkeley Laboratories, a U.S. Dept. of Energy (DoE) facility, RPS now applies to roughly 40% of U.S. electric load.

RPS is moving utilities and other load serving entities squarely away from least-cost procurement and toward acquiring often above-market renewable generation in unprecedented quantities. At the same time, consumers have yet to fully experience the cost and retail rate impacts of this shift. The standards are in their infancy, and, in many states, interim targets will not become meaningful for several years (except in California, where utilities are lagging behind short-term goals). As a result, the feasibility and cost ramifications, while imminent, have not yet arrived in most RPS states.

"We are concerned that the costs of RPS compliance have often not been quantified and that absorbing the full costs of RPS in retail rates could have credit implications for some companies," said Standard & Poor's credit analyst Anne Selting.

In addition, not all utilities will be able to achieve RPS requirements on the schedule required, which could lead to penalties for utilities and create an impression that power companies are not receptive to green policy goals.

(New York Ratings Team)

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