The Clean Power Plan and Beyond:
Impacts on Energy Bills of Businesses in California

City skylines have long been a symbol of innovation and prosperity. What you can't see is that these same buildings are some of the largest energy consumers in California and are therefore responsible for significant amounts of the state's carbon pollution.

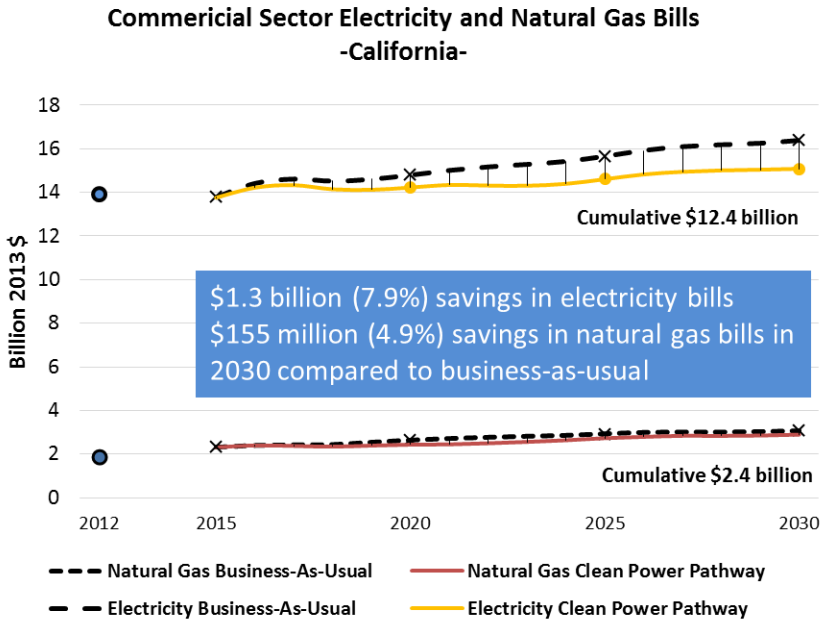
In August 2015, President Obama and the U.S. Environmental Protection Agency released the final Clean Power Plan, regulating carbon pollution from existing power plants for the first time. Since then, many cities have released Climate Action Plans, setting targets for carbon emissions. The success of these two initiatives are mutually dependent. EPA's Clean Power Plan requires strong local action, and the Climate Action Plans of cities, in turn, need national policies to ensure affordable, reliable, low-carbon electricity.

Georgia Tech has modeled low-cost pathways for compliance with the Clean Power Plan that accelerate the transition from coal plants to cleaner fuels such as natural gas. By emphasizing energy efficiency and renewable policies, these pathways temper the growth of new gas infrastructure. An analysis of the effects of such clean power pathways has just been released, describing their impacts on the energy bills and carbon pollution.

These results illustrate how commercial building owners and occupants can benefit from more efficient and more affordable air conditioning, lighting, electronics and other equipment, and from improved building shells as well as rooftop solar systems.

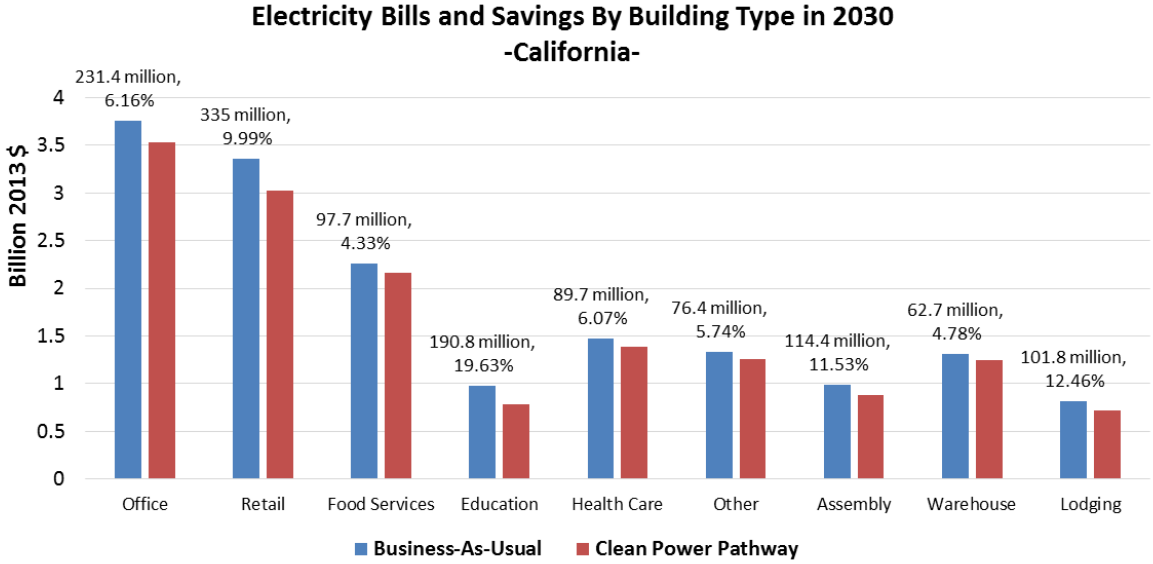
The Georgia Tech analysis found that:

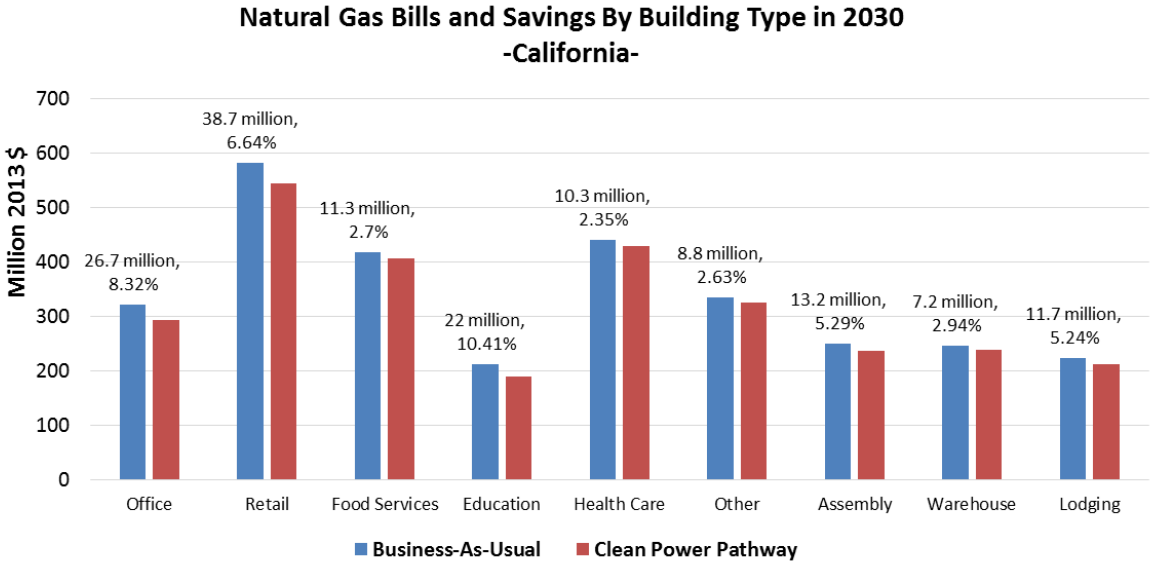
- Commercial building owners and occupants in California could realize an average annual electricity savings of **$1.3 billion** (7.9%) in 2030, compared to the business-as-usual case, if the state were to adopt the Clean Power Plan pathway described above. (See figure at right.)
- In addition, commercial owners and occupants would reduce their natural gas bills by an average of **$150 million** (4.9%) in 2030.



- Under business-as-usual (without new regulations), the electricity bills of commercial building owners and occupants in California would rise by about **18.9%** over the next 15 years.
- If California's leaders adopt the least-cost clean power pathway, California's commercial electricity bills would increase very little, if at all, while its CO_2 emissions would be cut significantly.
- Energy bill savings are expected to be greatest for **retail** and **office** buildings. In California it is estimated that these building space owners would cut their electricity costs by **$335** million and **$231 million** respectively in 2030.

- Occupants and owners of other building type ranging from **education** to **food** and **lodging** would also save significantly on their energy bills. (See figure below.)





(The numbers above the bars represent the potential savings in $2013 dollars, calculated as the difference between projected business-as-usual bills and Clean Power Pathway bills.)

The natural gas savings result primarily from a shift to electric heating and cooling systems in commercial buildings, triggered by the accelerated deployment of innovative air source heat pumps. With a focus on energy efficiency, these novel systems will replace the less efficient units that are commonly used on the rooftops of office buildings, schools, restaurants and big-box stores, tackling one of the most rapidly growing energy uses in the United States – air conditioning. Other policies include stricter building codes and strengthened equipment standards. These would produce a significant reduction in energy bills and carbon emissions.

Analysis based on Marilyn Brown, Alexander Smith, and Gyungwon Kim, 2016. *The Clean Power Plan and Beyond,* Georgia Institute of Technology, School of Public Policy Working Paper #89 (June).

The Clean Power Plan and Beyond:
Impacts on Energy Bills of Businesses in Colorado

City skylines have long been a symbol of innovation and prosperity. What you can't see is that these same buildings are some of the largest energy consumers in Colorado and are therefore responsible for significant amounts of the state's carbon pollution.

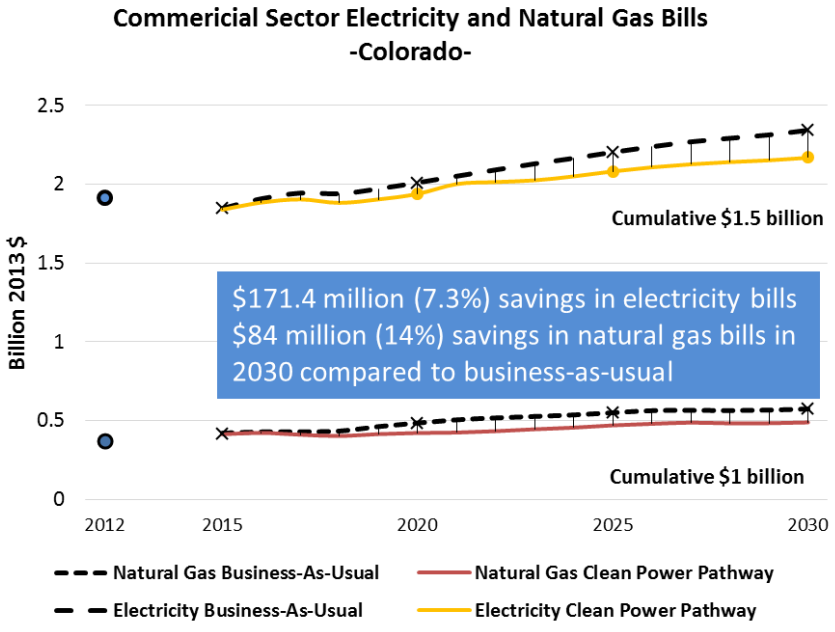
In August 2015, President Obama and the U.S. Environmental Protection Agency released the final Clean Power Plan, regulating carbon pollution from existing power plants for the first time. Since then, many cities have released Climate Action Plans, setting targets for carbon emissions. The success of these two initiatives are mutually dependent. EPA's Clean Power Plan requires strong local action, and the Climate Action Plans of cities, in turn, need national policies to ensure affordable, reliable, low-carbon electricity.

Georgia Tech has modeled low-cost pathways for compliance with the Clean Power Plan that accelerate the transition from coal plants to cleaner fuels such as natural gas. By emphasizing energy efficiency and renewable policies, these pathways temper the growth of new gas infrastructure. An analysis of the effects of such clean power pathways has just been released, describing their impacts on the energy bills and carbon pollution.

These results illustrate how commercial building owners and occupants can benefit from more efficient and more affordable air conditioning, lighting, electronics and other equipment, and from improved building shells as well as rooftop solar systems.

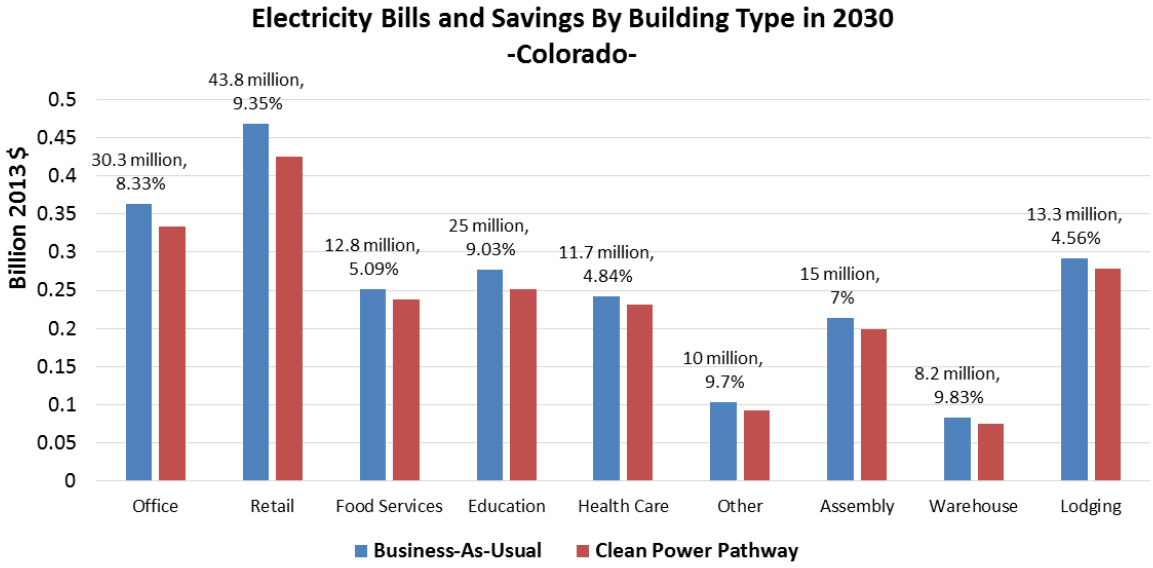
The Georgia Tech analysis found that:

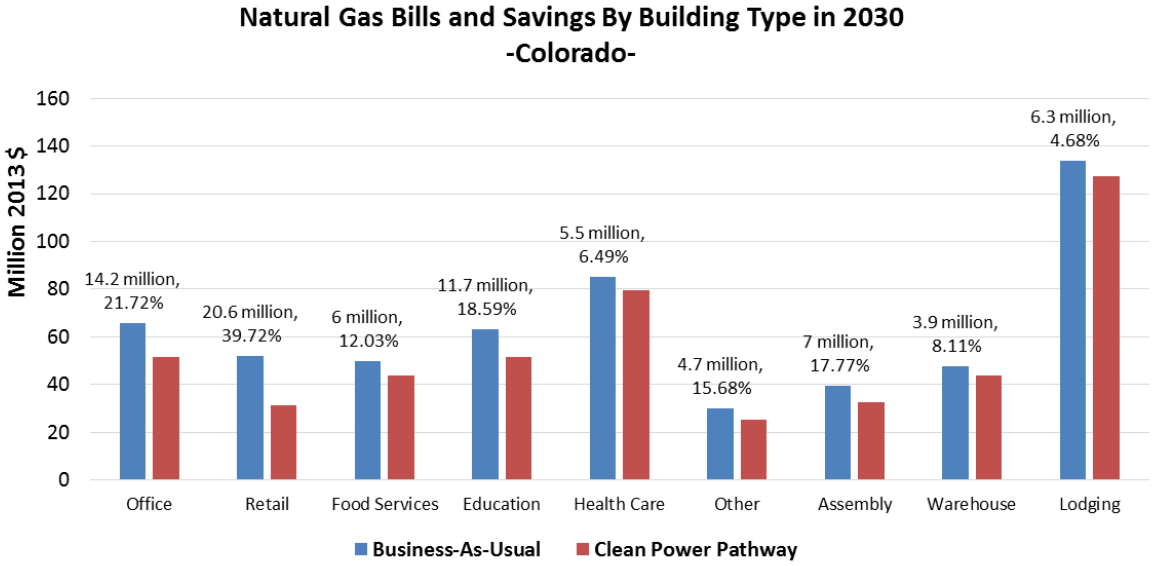
- Commercial building owners and occupants in Colorado could realize an average annual electricity savings of **$171.4 million** (7.3%) in 2030, compared to the business-as-usual case, if the state were to adopt the Clean Power Plan pathway described above. (See figure at right.)
- In addition, commercial owners and occupants would reduce their natural gas bills by an average of **$84 million** (14%) in 2030.



- Under business-as-usual (without new regulations), the electricity bills of commercial building owners and occupants in Colorado would rise by about **26.7%** over the next 15 years.
- If Colorado's leaders adopt the least-cost clean power pathway, Colorado's commercial electricity bills would increase very little, if at all, while its CO_2 emissions would be cut significantly.
- Energy bill savings are expected to be greatest for **retail** and **office** buildings. In Colorado it is estimated that these building space owners would cut their electricity costs by **$44** million and **$30 million** respectively in 2030.

- Occupants and owners of other building type ranging from **education** to **food** and **lodging** would also save significantly on their energy bills. (See figure below.)





(The numbers above the bars represent the potential savings in $2013 dollars, calculated as the difference between projected business-as-usual bills and Clean Power Pathway bills.)

The natural gas savings result primarily from a shift to electric heating and cooling systems in commercial buildings, triggered by the accelerated deployment of innovative air source heat pumps. With a focus on energy efficiency, these novel systems will replace the less efficient units that are commonly used on the rooftops of office buildings, schools, restaurants and big-box stores, tackling one of the most rapidly growing energy uses in the United States – air conditioning. Other policies include stricter building codes and strengthened equipment standards. These would produce a significant reduction in energy bills and carbon emissions.

Analysis based on Marilyn Brown, Alexander Smith, and Gyungwon Kim, 2016. *The Clean Power Plan and Beyond,* Georgia Institute of Technology, School of Public Policy Working Paper #89 (June).

The Clean Power Plan and Beyond:
Impacts on Energy Bills of Businesses in Florida

City skylines have long been a symbol of innovation and prosperity. What you can't see is that these same buildings are some of the largest energy consumers in Florida and are therefore responsible for significant amounts of the state's carbon pollution.

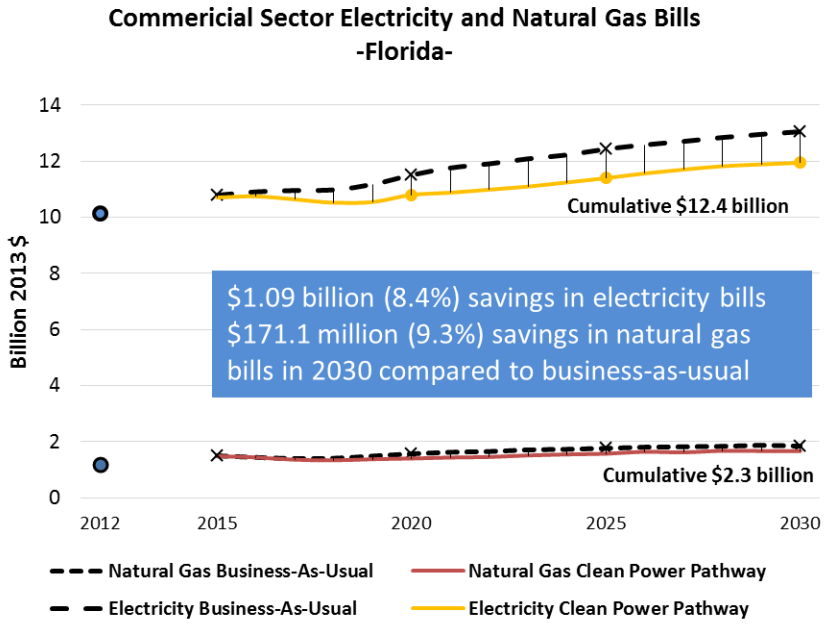
In August 2015, President Obama and the U.S. Environmental Protection Agency released the final Clean Power Plan, regulating carbon pollution from existing power plants for the first time. Since then, many cities have released Climate Action Plans, setting targets for carbon emissions. The success of these two initiatives are mutually dependent. EPA's Clean Power Plan requires strong local action, and the Climate Action Plans of cities, in turn, need national policies to ensure affordable, reliable, low-carbon electricity.

Georgia Tech has modeled low-cost pathways for compliance with the Clean Power Plan that accelerate the transition from coal plants to cleaner fuels such as natural gas. By emphasizing energy efficiency and renewable policies, these pathways temper the growth of new gas infrastructure. An analysis of the effects of such clean power pathways has just been released, describing their impacts on the energy bills and carbon pollution.

These results illustrate how commercial building owners and occupants can benefit from more efficient and more affordable air conditioning, lighting, electronics and other equipment, and from improved building shells as well as rooftop solar systems.

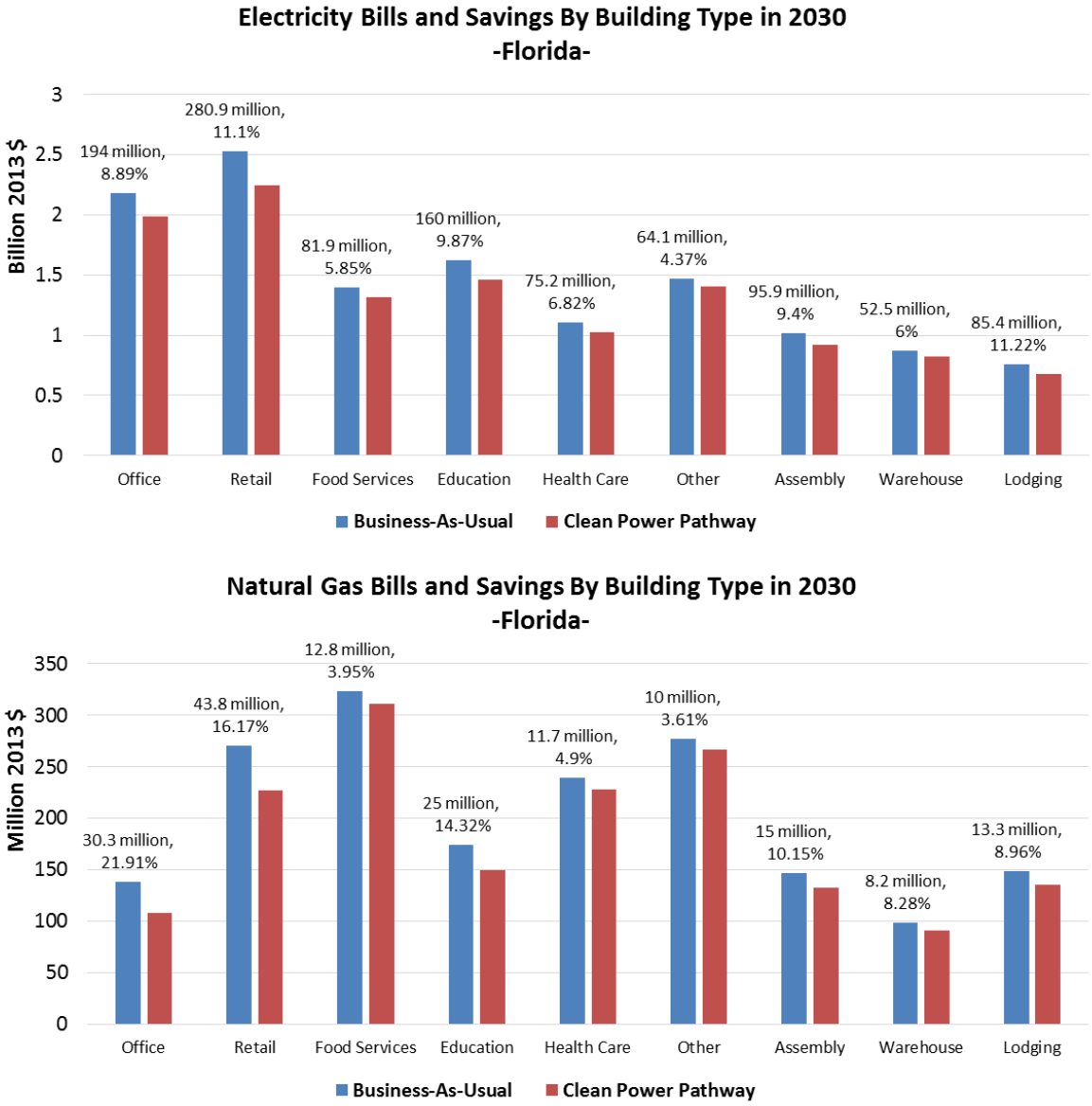
The Georgia Tech analysis found that:

- Commercial building owners and occupants in Florida could realize an average annual electricity savings of **$1.09 billion** (8.4%) in 2030, compared to the business-as-usual case, if the state were to adopt the Clean Power Plan pathway described above. (See figure at right.)
- In addition, commercial owners and occupants would reduce their natural gas bills by an average of **$171.1 million** (9.3%) in 2030.



- Under business-as-usual (without new regulations), the electricity bills of commercial building owners and occupants in Florida would rise by about **20.7%** over the next 15 years.
- If Florida's leaders adopt the least-cost clean power pathway, Florida's commercial electricity bills would increase very little, if at all, while its CO_2 emissions would be cut significantly.
- Energy bill savings are expected to be greatest for **retail** and **office** buildings. In Florida it is estimated that these building space owners would cut their electricity costs by **$281** million and **$194 million** respectively in 2030.

- Occupants and owners of other building type ranging from **education** to **food** and **lodging** would also save significantly on their energy bills. (See figure below.)



(The numbers above the bars represent the potential savings in $2013 dollars, calculated as the difference between projected business-as-usual bills and Clean Power Pathway bills.)

The natural gas savings result primarily from a shift to electric heating and cooling systems in commercial buildings, triggered by the accelerated deployment of innovative air source heat pumps. With a focus on energy efficiency, these novel systems will replace the less efficient units that are commonly used on the rooftops of office buildings, schools, restaurants and big-box stores, tackling one of the most rapidly growing energy uses in the United States – air conditioning. Other policies include stricter building codes and strengthened equipment standards. These would produce a significant reduction in energy bills and carbon emissions.

Analysis based on Marilyn Brown, Alexander Smith, and Gyungwon Kim, 2016. *The Clean Power Plan and Beyond,* Georgia Institute of Technology, School of Public Policy Working Paper #89 (June).

The Clean Power Plan and Beyond:
Impacts on Energy Bills of Businesses in Georgia

City skylines have long been a symbol of innovation and prosperity. What you can't see is that these same buildings are some of the largest energy consumers in Georgia and are therefore responsible for significant amounts of the state's carbon pollution.

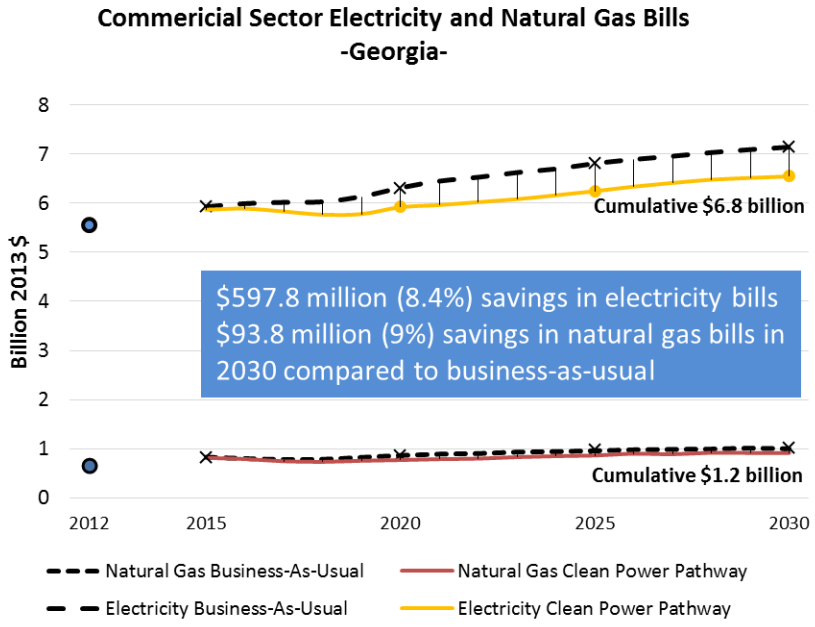
In August 2015, President Obama and the U.S. Environmental Protection Agency released the final Clean Power Plan, regulating carbon pollution from existing power plants for the first time. Since then, many cities have released Climate Action Plans, setting targets for carbon emissions. The success of these two initiatives are mutually dependent. EPA's Clean Power Plan requires strong local action, and the Climate Action Plans of cities, in turn, need national policies to ensure affordable, reliable, low-carbon electricity.

Georgia Tech has modeled low-cost pathways for compliance with the Clean Power Plan that accelerate the transition from coal plants to cleaner fuels such as natural gas. By emphasizing energy efficiency and renewable policies, these pathways temper the growth of new gas infrastructure. An analysis of the effects of such clean power pathways has just been released, describing their impacts on the energy bills and carbon pollution.

These results illustrate how commercial building owners and occupants can benefit from more efficient and more affordable air conditioning, lighting, electronics and other equipment, and from improved building shells as well as rooftop solar systems.

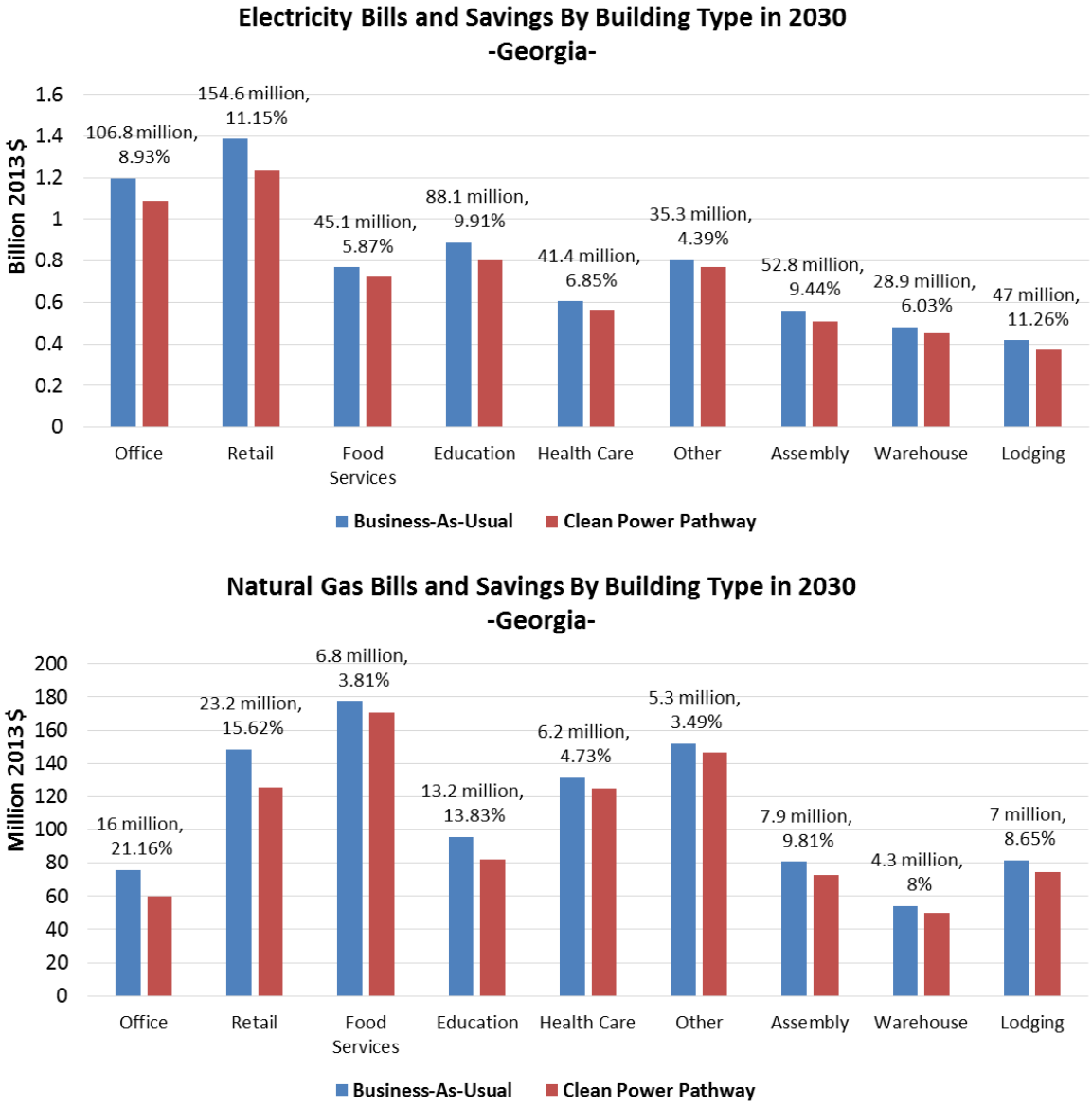
The Georgia Tech analysis found that:

- Commercial building owners and occupants in Georgia could realize an average annual electricity savings of **$598 million** (8.4%) in 2030, compared to the business-as-usual case, if the state were to adopt the Clean Power Plan pathway described above. (See figure at right.)
- In addition, commercial owners and occupants would reduce their natural gas bills by an average of **$93.8 million** (9%) in 2030.



- Under business-as-usual (without new regulations), the electricity bills of commercial building owners and occupants in Georgia would rise by about **20.7%** over the next 15 years.
- If Georgia's leaders adopt the least-cost clean power pathway, Georgia's commercial electricity bills would increase very little, if at all, while its CO_2 emissions would be cut significantly.
- Energy bill savings are expected to be greatest for **retail** and **office** buildings. In Georgia it is estimated that these building space owners would cut their electricity costs by **$155** million and **$107 million** respectively in 2030.

- Occupants and owners of other building type ranging from **education** to **food** and **lodging** would also save significantly on their energy bills. (See figure below.)



(The numbers above the bars represent the potential savings in $2013 dollars, calculated as the difference between projected business-as-usual bills and Clean Power Pathway bills.)

The natural gas savings result primarily from a shift to electric heating and cooling systems in commercial buildings, triggered by the accelerated deployment of innovative air source heat pumps. With a focus on energy efficiency, these novel systems will replace the less efficient units that are commonly used on the rooftops of office buildings, schools, restaurants and big-box stores, tackling one of the most rapidly growing energy uses in the United States – air conditioning. Other policies include stricter building codes and strengthened equipment standards. These would produce a significant reduction in energy bills and carbon emissions.

Analysis based on Marilyn Brown, Alexander Smith, and Gyungwon Kim, 2016. *The Clean Power Plan and Beyond,* Georgia Institute of Technology, School of Public Policy Working Paper #89 (June).

The Clean Power Plan and Beyond:
Impacts on Energy Bills of Businesses in Illinois

City skylines have long been a symbol of innovation and prosperity. What you can't see is that these same buildings are some of the largest energy consumers in Illinois and are therefore responsible for significant amounts of the state's carbon pollution.

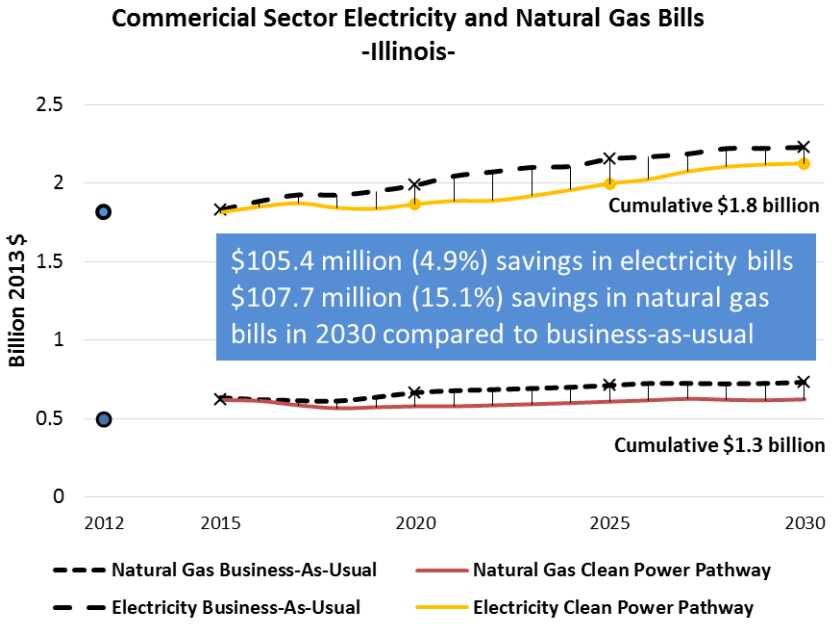
In August 2015, President Obama and the U.S. Environmental Protection Agency released the final Clean Power Plan, regulating carbon pollution from existing power plants for the first time. Since then, many cities have released Climate Action Plans, setting targets for carbon emissions. The success of these two initiatives are mutually dependent. EPA's Clean Power Plan requires strong local action, and the Climate Action Plans of cities, in turn, need national policies to ensure affordable, reliable, low-carbon electricity.

Georgia Tech has modeled low-cost pathways for compliance with the Clean Power Plan that accelerate the transition from coal plants to cleaner fuels such as natural gas. By emphasizing energy efficiency and renewable policies, these pathways temper the growth of new gas infrastructure. An analysis of the effects of such clean power pathways has just been released, describing their impacts on the energy bills and carbon pollution.

These results illustrate how commercial building owners and occupants can benefit from more efficient and more affordable air conditioning, lighting, electronics and other equipment, and from improved building shells as well as rooftop solar systems.

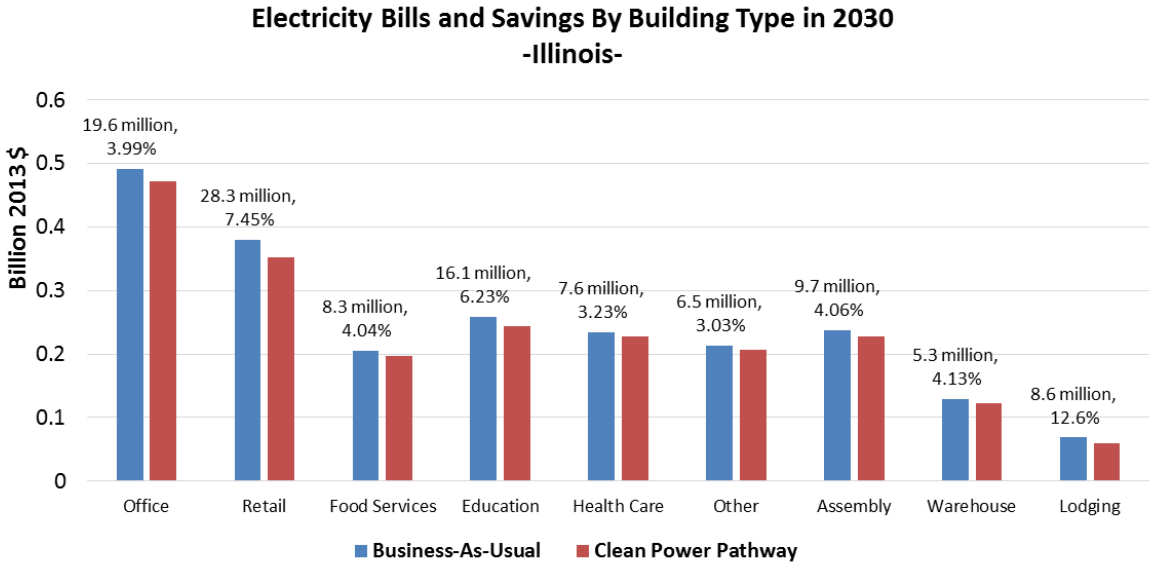
The Georgia Tech analysis found that:

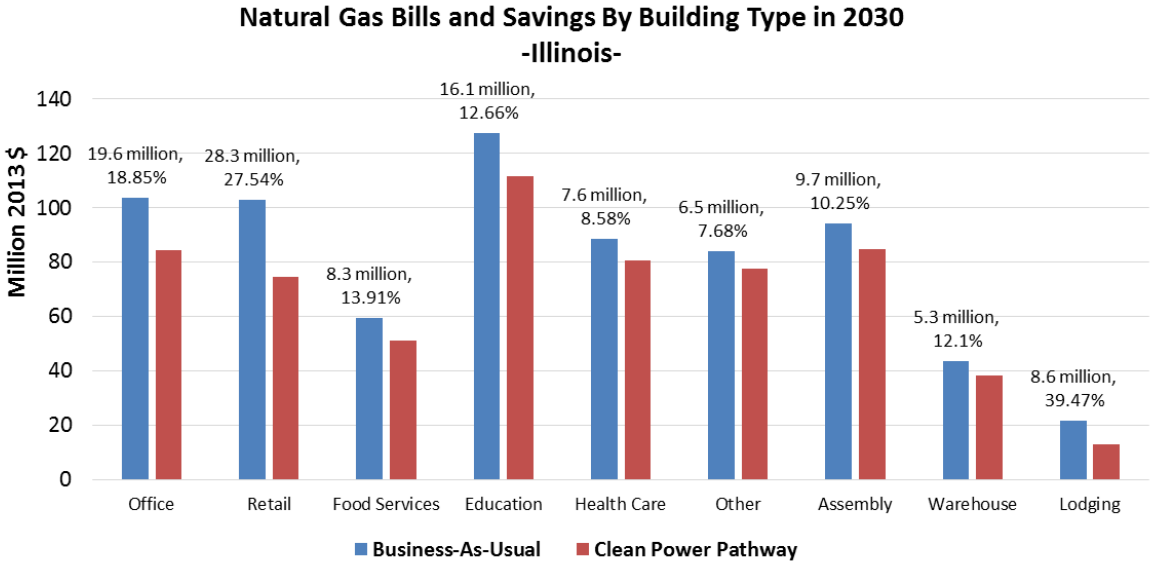
- Commercial building owners and occupants in Illinois could realize an average annual electricity savings of **$105.4 million** (4.9%) in 2030, compared to the business-as-usual case, if the state were to adopt the Clean Power Plan pathway described above. (See figure at right.)
- In addition, commercial owners and occupants would reduce their natural gas bills by an average of **$107.7 million** (15.1%) in 2030.



- Under business-as-usual (without new regulations), the electricity bills of commercial building owners and occupants in Illinois would rise by about **22%** over the next 15 years.
- If Illinois' leaders adopt the least-cost clean power pathway, Illinois' commercial electricity bills would increase very little, if at all, while its CO_2 emissions would be cut significantly.
- Energy bill savings are expected to be greatest for **retail** and **office** buildings. In Illinois it is estimated that these building space owners would cut their electricity costs by **$28.3** million and **$19.6 million** respectively in 2030.

- Occupants and owners of other building type ranging from **education** to **food** and **lodging** would also save significantly on their energy bills. (See figure below.)





(The numbers above the bars represent the potential savings in $2013 dollars, calculated as the difference between projected business-as-usual bills and Clean Power Pathway bills.)

The natural gas savings result primarily from a shift to electric heating and cooling systems in commercial buildings, triggered by the accelerated deployment of innovative air source heat pumps. With a focus on energy efficiency, these novel systems will replace the less efficient units that are commonly used on the rooftops of office buildings, schools, restaurants and big-box stores, tackling one of the most rapidly growing energy uses in the United States – air conditioning. Other policies include stricter building codes and strengthened equipment standards. These would produce a significant reduction in energy bills and carbon emissions.

Analysis based on Marilyn Brown, Alexander Smith, and Gyungwon Kim, 2016. *The Clean Power Plan and Beyond,* Georgia Institute of Technology, School of Public Policy Working Paper #89 (June).

The Clean Power Plan and Beyond:
Impacts on Energy Bills of Businesses in Massachusetts

City skylines have long been a symbol of innovation and prosperity. What you can't see is that these same buildings are some of the largest energy consumers in Massachusetts and are therefore responsible for significant amounts of the state's carbon pollution.

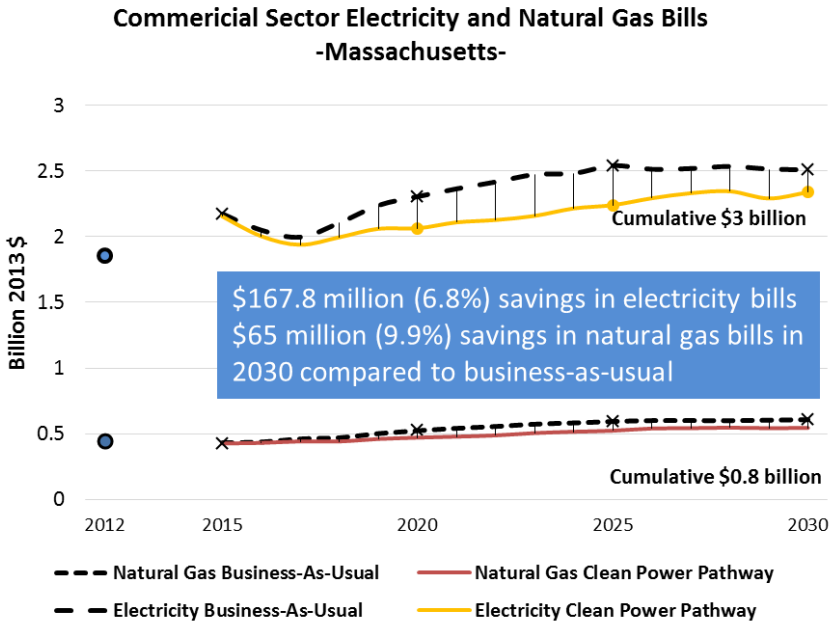
In August 2015, President Obama and the U.S. Environmental Protection Agency released the final Clean Power Plan, regulating carbon pollution from existing power plants for the first time. Since then, many cities have released Climate Action Plans, setting targets for carbon emissions. The success of these two initiatives are mutually dependent. EPA's Clean Power Plan requires strong local action, and the Climate Action Plans of cities, in turn, need national policies to ensure affordable, reliable, low-carbon electricity.

Georgia Tech has modeled low-cost pathways for compliance with the Clean Power Plan that accelerate the transition from coal plants to cleaner fuels such as natural gas. By emphasizing energy efficiency and renewable policies, these pathways temper the growth of new gas infrastructure. An analysis of the effects of such clean power pathways has just been released, describing their impacts on the energy bills and carbon pollution.

These results illustrate how commercial building owners and occupants can benefit from more efficient and more affordable air conditioning, lighting, electronics and other equipment, and from improved building shells as well as rooftop solar systems.

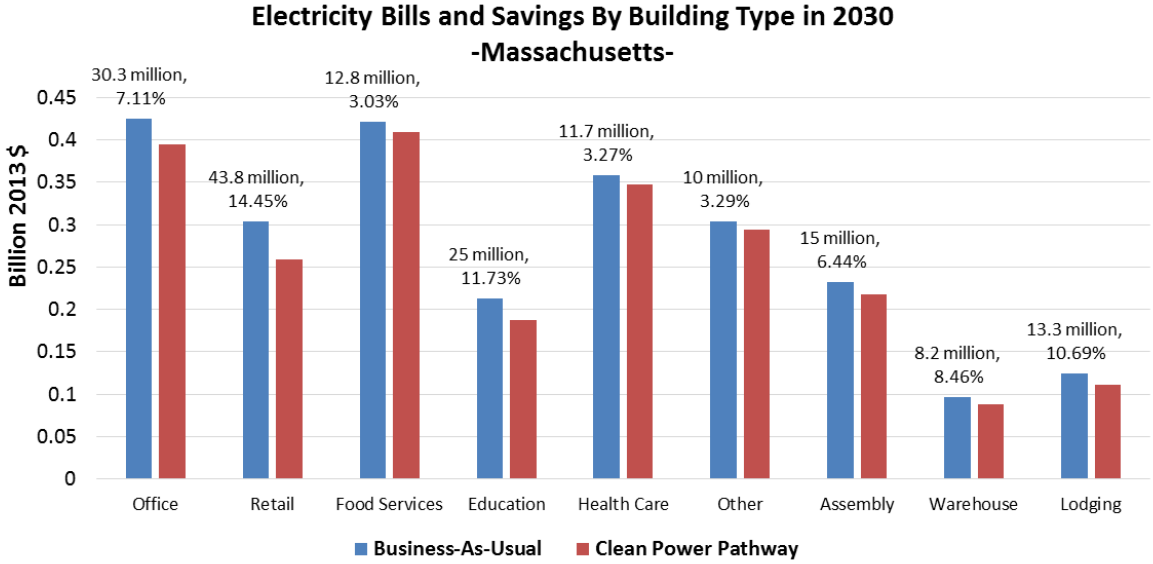
The Georgia Tech analysis found that:

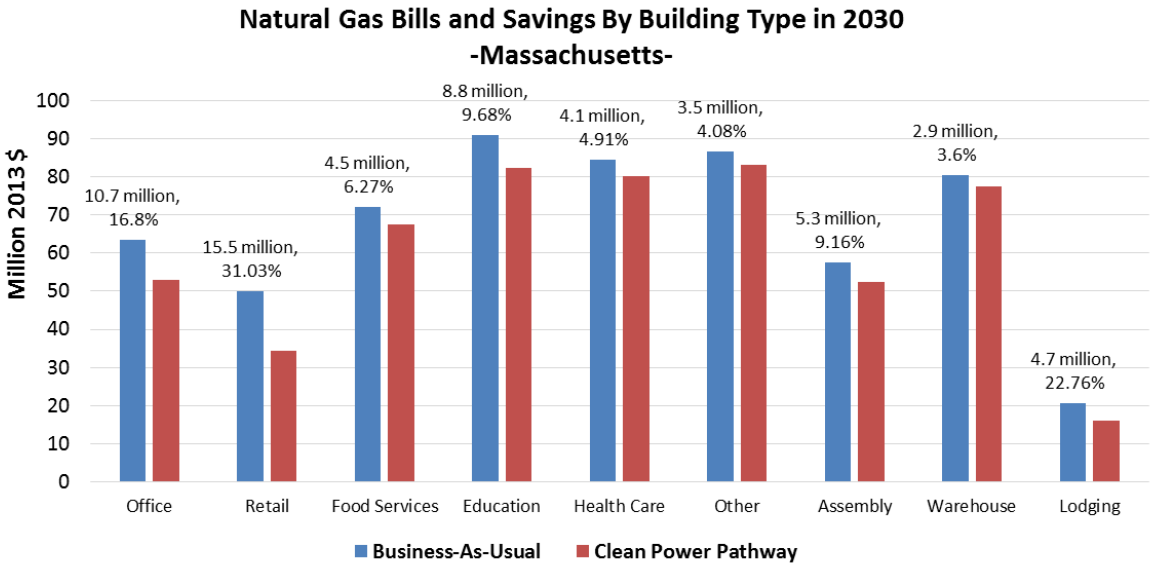
- Commercial building owners and occupants in Massachusetts could realize an average annual electricity savings of **$168 million** (6.8 %) in 2030, compared to the business-as-usual case, if the state were to adopt the Clean Power Plan pathway described above. (See figure at right.)
- In addition, commercial owners and occupants would reduce their natural gas bills by an average of **$65 million** (9.9%) in 2030.



- Under business-as-usual (without new regulations), the electricity bills of commercial building owners and occupants in Massachusetts would rise by about **15.5%** over the next 15 years.
- If Massachusetts' leaders adopt the least-cost clean power pathway, Massachusetts' commercial electricity bills would increase very little, if at all, while its CO_2 emissions would be cut significantly.
- Energy bill savings are expected to be greatest for **retail** and **office** buildings. In Massachusetts it is estimated that these building space owners would cut their electricity costs by **$44** million and **$30 million** respectively in 2030.

- Occupants and owners of other building type ranging from **education** to **food** and **lodging** would also save significantly on their energy bills. (See figure below.)





(The numbers above the bars represent the potential savings in $2013 dollars, calculated as the difference between projected business-as-usual bills and Clean Power Pathway bills.)

The natural gas savings result primarily from a shift to electric heating and cooling systems in commercial buildings, triggered by the accelerated deployment of innovative air source heat pumps. With a focus on energy efficiency, these novel systems will replace the less efficient units that are commonly used on the rooftops of office buildings, schools, restaurants and big-box stores, tackling one of the most rapidly growing energy uses in the United States – air conditioning. Other policies include stricter building codes and strengthened equipment standards. These would produce a significant reduction in energy bills and carbon emissions.

Analysis based on Marilyn Brown, Alexander Smith, and Gyungwon Kim, 2016. *The Clean Power Plan and Beyond,* Georgia Institute of Technology, School of Public Policy Working Paper #89 (June).

The Clean Power Plan and Beyond:
Impacts on Energy Bills of Businesses in Michigan

City skylines have long been a symbol of innovation and prosperity. What you can't see is that these same buildings are some of the largest energy consumers in Michigan and are therefore responsible for significant amounts of the state's carbon pollution.

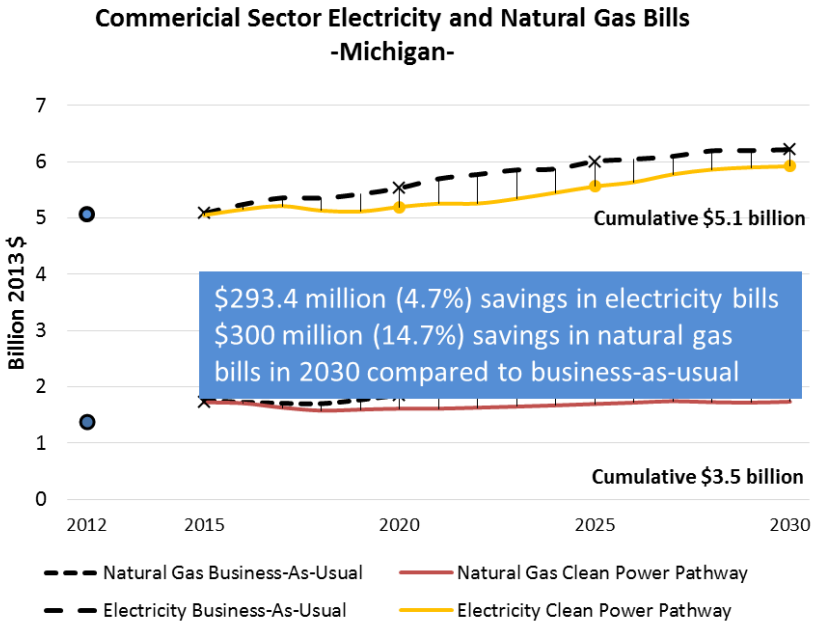
In August 2015, President Obama and the U.S. Environmental Protection Agency released the final Clean Power Plan, regulating carbon pollution from existing power plants for the first time. Since then, many cities have released Climate Action Plans, setting targets for carbon emissions. The success of these two initiatives are mutually dependent. EPA's Clean Power Plan requires strong local action, and the Climate Action Plans of cities, in turn, need national policies to ensure affordable, reliable, low-carbon electricity.

Georgia Tech has modeled low-cost pathways for compliance with the Clean Power Plan that accelerate the transition from coal plants to cleaner fuels such as natural gas. By emphasizing energy efficiency and renewable policies, these pathways temper the growth of new gas infrastructure. An analysis of the effects of such clean power pathways has just been released, describing their impacts on the energy bills and carbon pollution.

These results illustrate how commercial building owners and occupants can benefit from more efficient and more affordable air conditioning, lighting, electronics and other equipment, and from improved building shells as well as rooftop solar systems.

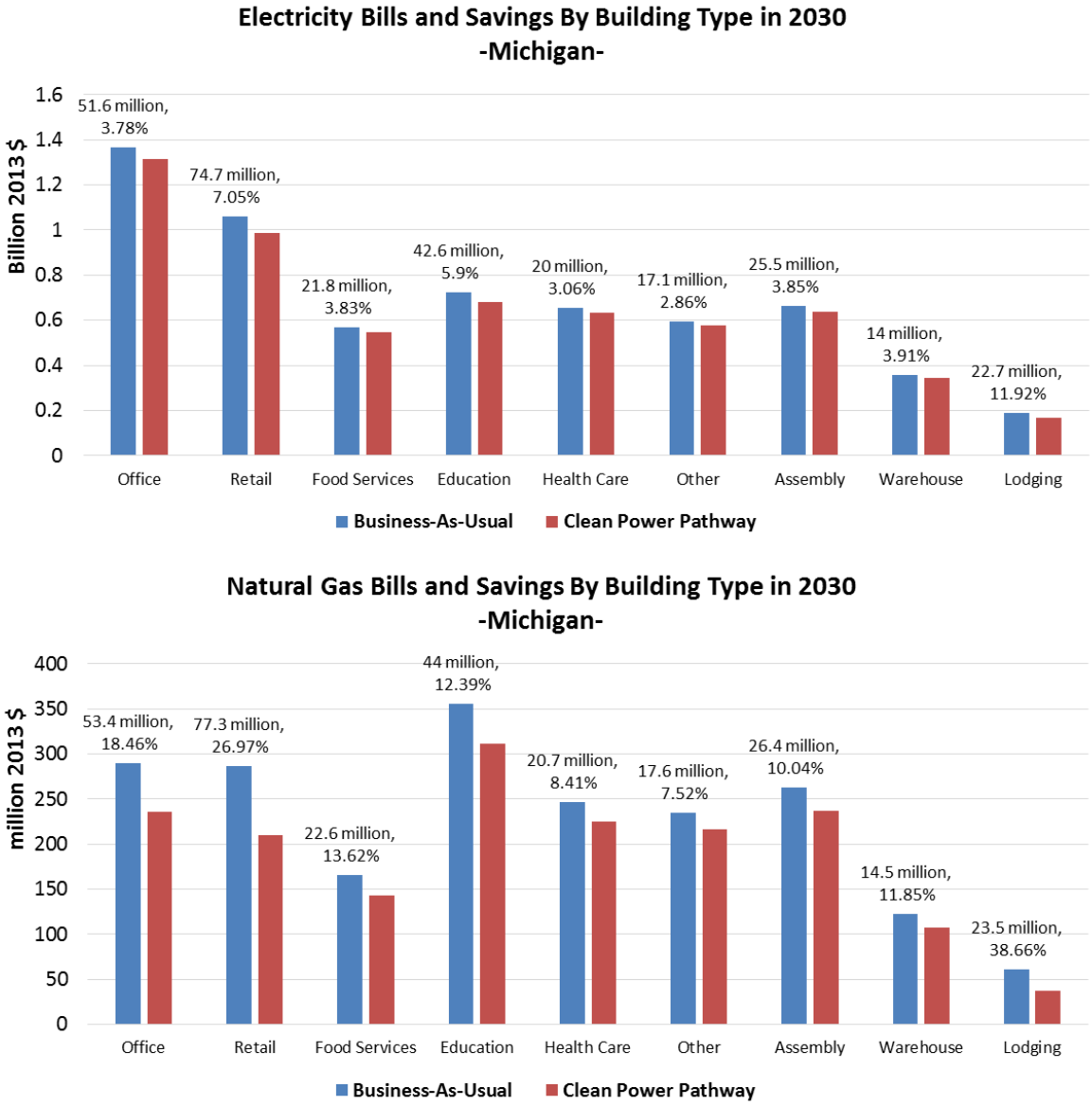
The Georgia Tech analysis found that:

- Commercial building owners and occupants in Michigan could realize an average annual electricity savings of **$293 million** (4.7%) in 2030, compared to the business-as-usual case, if the state were to adopt the Clean Power Plan pathway described above. (See figure at right.)
- In addition, commercial owners and occupants would reduce their natural gas bills by an average of **$300 million** (14.7%) in 2030.



- Under business-as-usual (without new regulations), the electricity bills of commercial building owners and occupants in Michigan would rise by about **22%** over the next 15 years.
- If Michigan's leaders adopt the least-cost clean power pathway, Michigan's commercial electricity bills would increase very little, if at all, while its CO_2 emissions would be cut significantly.
- Energy bill savings are expected to be greatest for **retail** and **office** buildings. In Michigan it is estimated that these building space owners would cut their electricity costs by **$75** million and **$52 million** respectively in 2030.

- Occupants and owners of other building type ranging from **education** to **food** and **lodging** would also save significantly on their energy bills. (See figure below.)



(The numbers above the bars represent the potential savings in $2013 dollars, calculated as the difference between projected business-as-usual bills and Clean Power Pathway bills.)

The natural gas savings result primarily from a shift to electric heating and cooling systems in commercial buildings, triggered by the accelerated deployment of innovative air source heat pumps. With a focus on energy efficiency, these novel systems will replace the less efficient units that are commonly used on the rooftops of office buildings, schools, restaurants and big-box stores, tackling one of the most rapidly growing energy uses in the United States – air conditioning. Other policies include stricter building codes and strengthened equipment standards. These would produce a significant reduction in energy bills and carbon emissions.

Analysis based on Marilyn Brown, Alexander Smith, and Gyungwon Kim, 2016. *The Clean Power Plan and Beyond,* Georgia Institute of Technology, School of Public Policy Working Paper #89 (June).

The Clean Power Plan and Beyond:

Impacts on Energy Bills of Businesses in Missouri

City skylines have long been a symbol of innovation and prosperity. What you can't see is that these same buildings are some of the largest energy consumers in Missouri and are therefore responsible for significant amounts of the state's carbon pollution.

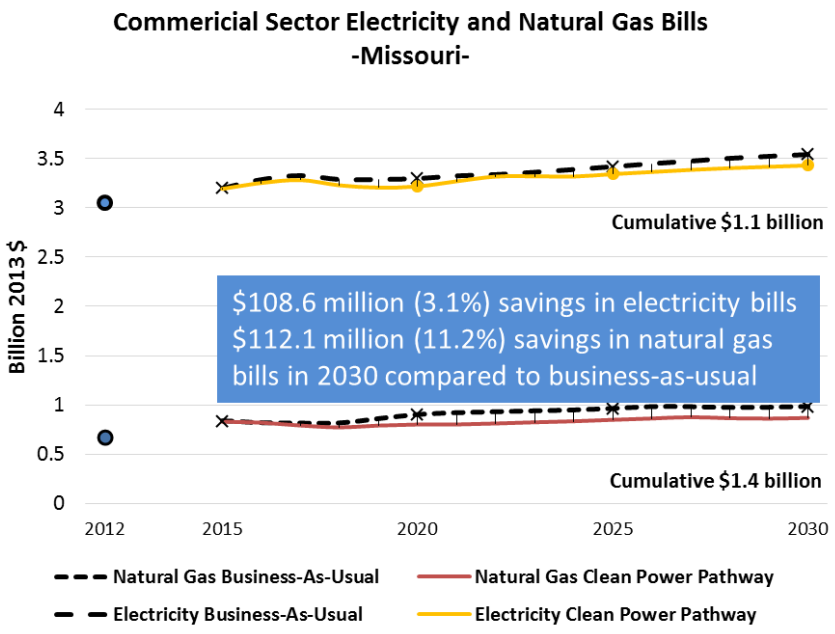
In August 2015, President Obama and the U.S. Environmental Protection Agency released the final Clean Power Plan, regulating carbon pollution from existing power plants for the first time. Since then, many cities have released Climate Action Plans, setting targets for carbon emissions. The success of these two initiatives are mutually dependent. EPA's Clean Power Plan requires strong local action, and the Climate Action Plans of cities, in turn, need national policies to ensure affordable, reliable, low-carbon electricity.

Georgia Tech has modeled low-cost pathways for compliance with the Clean Power Plan that accelerate the transition from coal plants to cleaner fuels such as natural gas. By emphasizing energy efficiency and renewable policies, these pathways temper the growth of new gas infrastructure. An analysis of the effects of such clean power pathways has just been released, describing their impacts on the energy bills and carbon pollution.

These results illustrate how commercial building owners and occupants can benefit from more efficient and more affordable air conditioning, lighting, electronics and other equipment, and from improved building shells as well as rooftop solar systems.

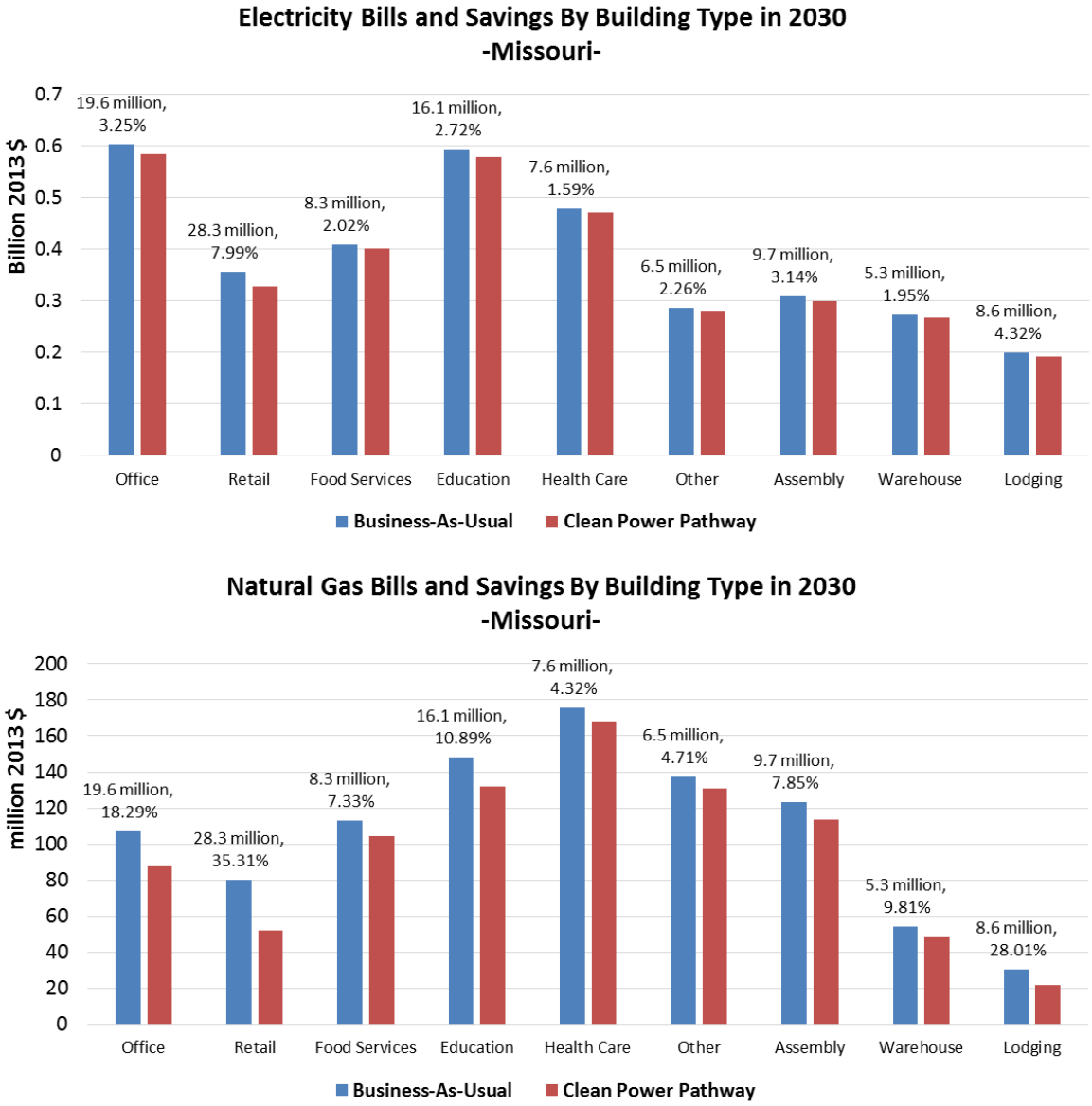
The Georgia Tech analysis found that:

- Commercial building owners and occupants in Missouri could realize an average annual electricity savings of **$109 million** (3.1%) in 2030, compared to the business-as-usual case, if the state were to adopt the Clean Power Plan pathway described above. (See figure at right.)
- In addition, commercial owners and occupants would reduce their natural gas bills by an average of **$112.1 million** (11.2%) in 2030.



- Under business-as-usual (without new regulations), the electricity bills of commercial building owners and occupants in Missouri would rise by about **10.5%** over the next 15 years.
- If Missouri's leaders adopt the least-cost clean power pathway, Missouri's commercial electricity bills would increase very little, if at all, while its CO_2 emissions would be cut significantly.
- Energy bill savings are expected to be greatest for **retail** and **office** buildings. In Missouri it is estimated that these building space owners would cut their electricity costs by **$28** million and **$20 million** respectively in 2030.

- Occupants and owners of other building type ranging from **education** to **food** and **lodging** would also save significantly on their energy bills. (See figure below.)



(The numbers above the bars represent the potential savings in $2013 dollars, calculated as the difference between projected business-as-usual bills and Clean Power Pathway bills.)

The natural gas savings result primarily from a shift to electric heating and cooling systems in commercial buildings, triggered by the accelerated deployment of innovative air source heat pumps. With a focus on energy efficiency, these novel systems will replace the less efficient units that are commonly used on the rooftops of office buildings, schools, restaurants and big-box stores, tackling one of the most rapidly growing energy uses in the United States – air conditioning. Other policies include stricter building codes and strengthened equipment standards. These would produce a significant reduction in energy bills and carbon emissions.

Analysis based on Marilyn Brown, Alexander Smith, and Gyungwon Kim, 2016. *The Clean Power Plan and Beyond,* Georgia Institute of Technology, School of Public Policy Working Paper #89 (June).

The Clean Power Plan and Beyond:
Impacts on Energy Bills of Businesses in New York

City skylines have long been a symbol of innovation and prosperity. What you can't see is that these same buildings are some of the largest energy consumers in New York and are therefore responsible for significant amounts of the state's carbon pollution.

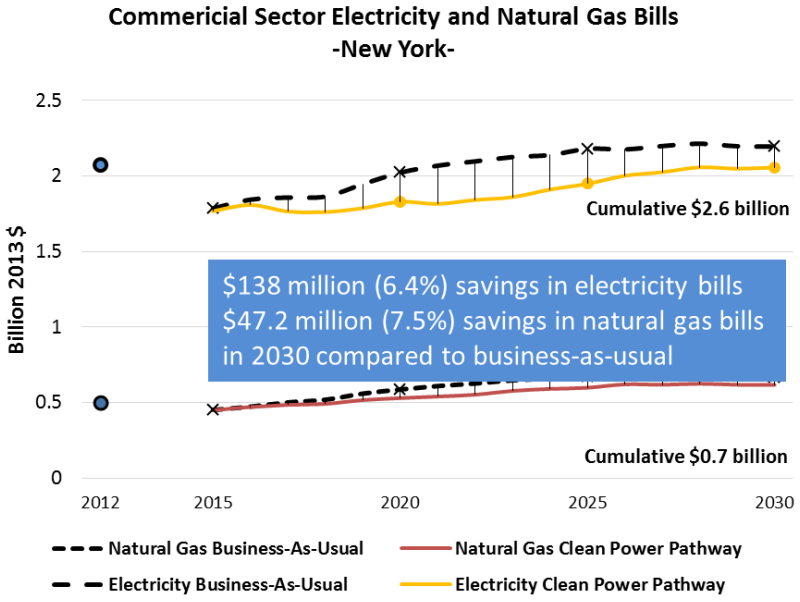
In August 2015, President Obama and the U.S. Environmental Protection Agency released the final Clean Power Plan, regulating carbon pollution from existing power plants for the first time. Since then, many cities have released Climate Action Plans, setting targets for carbon emissions. The success of these two initiatives are mutually dependent. EPA's Clean Power Plan requires strong local action, and the Climate Action Plans of cities, in turn, need national policies to ensure affordable, reliable, low-carbon electricity.

Georgia Tech has modeled low-cost pathways for compliance with the Clean Power Plan that accelerate the transition from coal plants to cleaner fuels such as natural gas. By emphasizing energy efficiency and renewable policies, these pathways temper the growth of new gas infrastructure. An analysis of the effects of such clean power pathways has just been released, describing their impacts on the energy bills and carbon pollution.

These results illustrate how commercial building owners and occupants can benefit from more efficient and more affordable air conditioning, lighting, electronics and other equipment, and from improved building shells as well as rooftop solar systems.

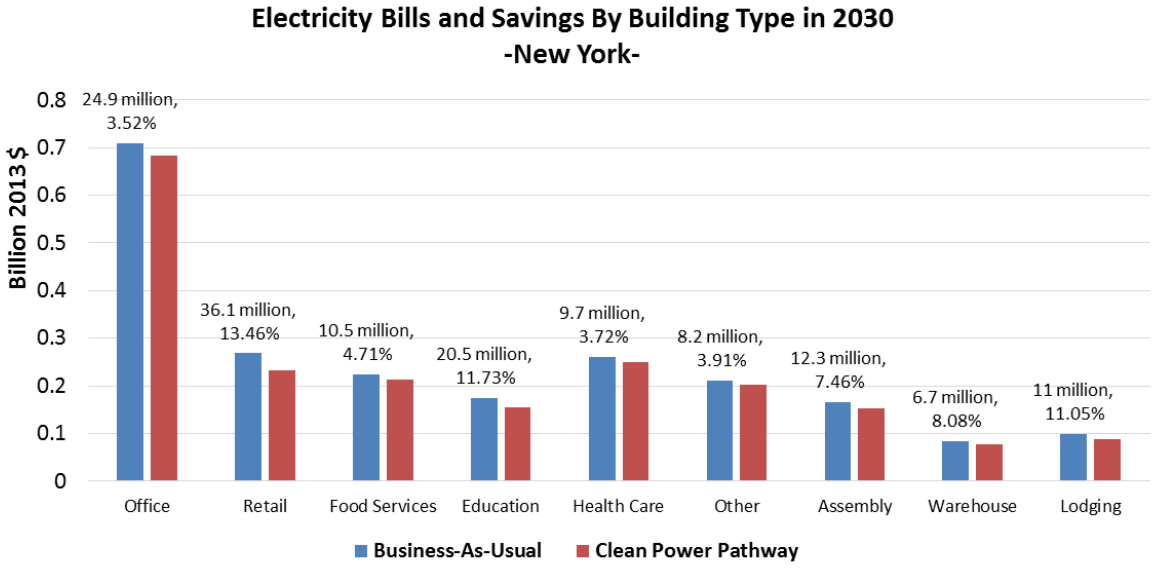
The Georgia Tech analysis found that:

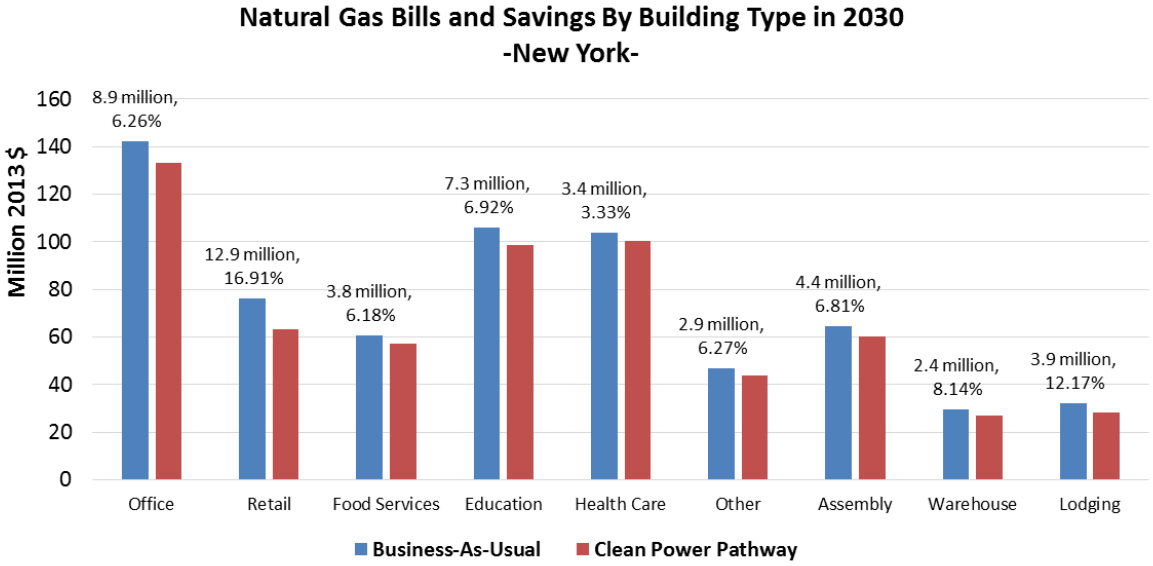
- Commercial building owners and occupants in New York could realize an average annual electricity savings of **$138 million** (6.4%) in 2030, compared to the business-as-usual case, if the state were to adopt the Clean Power Plan pathway described above. (See figure at right.)
- In addition, commercial owners and occupants would reduce their natural gas bills by an average of **$47.2 million** (7.5%) in 2030.



- Under business-as-usual (without new regulations), the electricity bills of commercial building owners and occupants in New York would rise by about **22.7%** over the next 15 years.
- If New York's leaders adopt the least-cost clean power pathway, New York's commercial electricity bills would increase very little, if at all, while its CO_2 emissions would be cut significantly.
- Energy bill savings are expected to be greatest for **retail** and **office** buildings. In New York it is estimated that these building space owners would cut their electricity costs by **$36** million and **$25 million** respectively in 2030.

- Occupants and owners of other building type ranging from **education** to **food** and **lodging** would also save significantly on their energy bills. (See figure below.)





(The numbers above the bars represent the potential savings in $2013 dollars, calculated as the difference between projected business-as-usual bills and Clean Power Pathway bills.)

The natural gas savings result primarily from a shift to electric heating and cooling systems in commercial buildings, triggered by the accelerated deployment of innovative air source heat pumps. With a focus on energy efficiency, these novel systems will replace the less efficient units that are commonly used on the rooftops of office buildings, schools, restaurants and big-box stores, tackling one of the most rapidly growing energy uses in the United States – air conditioning. Other policies include stricter building codes and strengthened equipment standards. These would produce a significant reduction in energy bills and carbon emissions.

Analysis based on Marilyn Brown, Alexander Smith, and Gyungwon Kim, 2016. *The Clean Power Plan and Beyond,* Georgia Institute of Technology, School of Public Policy Working Paper #89 (June).

The Clean Power Plan and Beyond:
Impacts on Energy Bills of Businesses in Pennsylvania

City skylines have long been a symbol of innovation and prosperity. What you can't see is that these same buildings are some of the largest energy consumers in Pennsylvania and are therefore responsible for significant amounts of the state's carbon pollution.

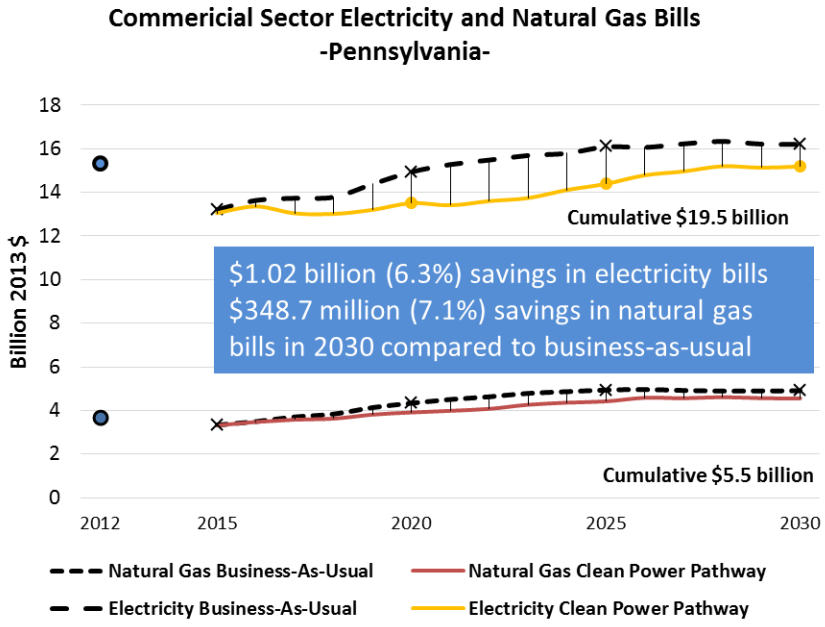
In August 2015, President Obama and the U.S. Environmental Protection Agency released the final Clean Power Plan, regulating carbon pollution from existing power plants for the first time. Since then, many cities have released Climate Action Plans, setting targets for carbon emissions. The success of these two initiatives are mutually dependent. EPA's Clean Power Plan requires strong local action, and the Climate Action Plans of cities, in turn, need national policies to ensure affordable, reliable, low-carbon electricity.

Georgia Tech has modeled low-cost pathways for compliance with the Clean Power Plan that accelerate the transition from coal plants to cleaner fuels such as natural gas. By emphasizing energy efficiency and renewable policies, these pathways temper the growth of new gas infrastructure. An analysis of the effects of such clean power pathways has just been released, describing their impacts on the energy bills and carbon pollution.

These results illustrate how commercial building owners and occupants can benefit from more efficient and more affordable air conditioning, lighting, electronics and other equipment, and from improved building shells as well as rooftop solar systems.

The Georgia Tech analysis found that:

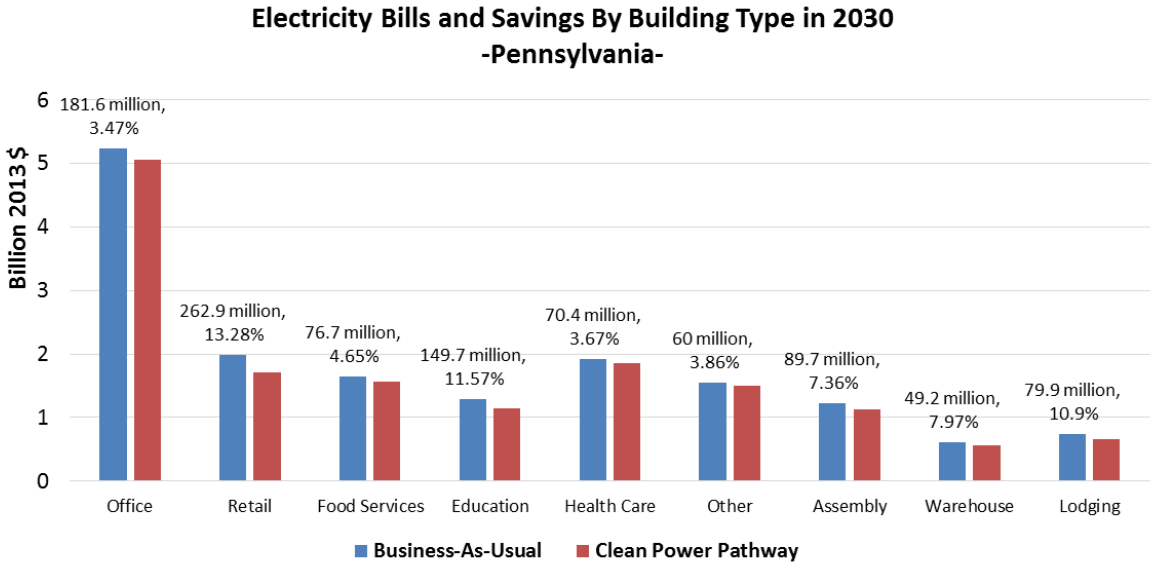
- Commercial building owners and occupants in Pennsylvania could realize an average annual electricity savings of **$1.02 billion** (6.3%) in 2030, compared to the business-as-usual case, if the state were to adopt the Clean Power Plan pathway described above. (See figure at right.)
- In addition, commercial owners and occupants would reduce their natural gas bills by an average of **$348.7 million** (7.1%) in 2030.

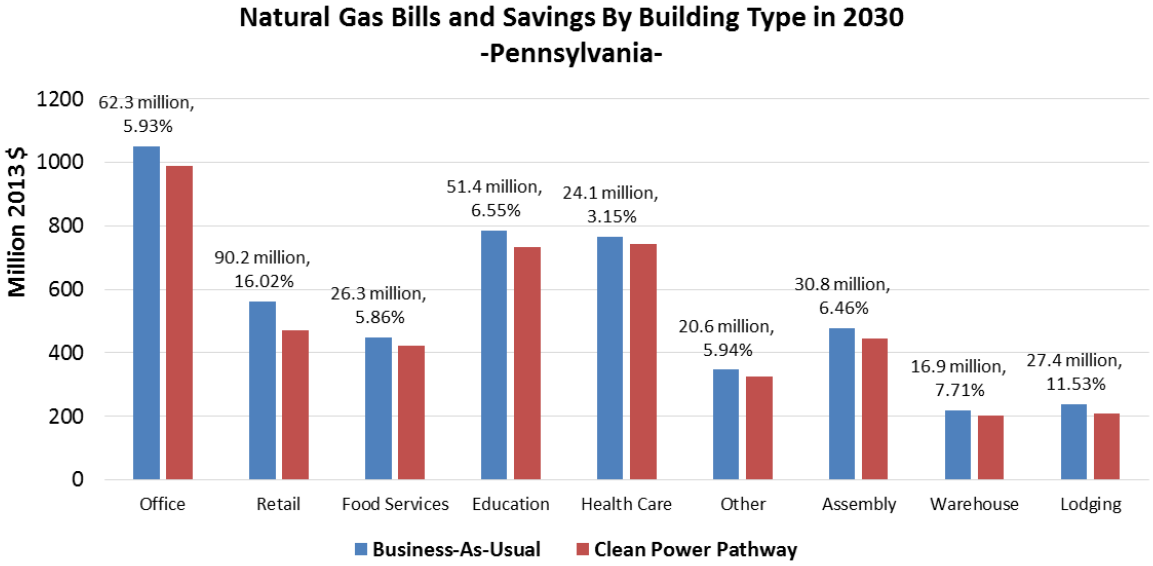


- Under business-as-usual (without new regulations), the electricity bills of commercial building owners and occupants in Pennsylvania would rise by about **22.7%** over the next 15 years.
- If Pennsylvania's leaders adopt the least-cost clean power pathway, Pennsylvania's commercial electricity bills would increase very little, if at all, while its CO_2 emissions would be cut significantly.

- Energy bill savings are expected to be greatest for **retail** and **office** buildings. In Pennsylvania it is estimated that these building space owners would cut their electricity costs by **$263** million and **$182 million** respectively in 2030.

- Occupants and owners of other building type ranging from **education** to **food** and **lodging** would also save significantly on their energy bills. (See figure below.)





(The numbers above the bars represent the potential savings in $2013 dollars, calculated as the difference between projected business-as-usual bills and Clean Power Pathway bills.)

The natural gas savings result primarily from a shift to electric heating and cooling systems in commercial buildings, triggered by the accelerated deployment of innovative air source heat pumps. With a focus on energy efficiency, these novel systems will replace the less efficient units that are commonly used on the rooftops of office buildings, schools, restaurants and big-box stores, tackling one of the most rapidly growing energy uses in the United States – air conditioning. Other policies include stricter building codes and strengthened equipment standards. These would produce a significant reduction in energy bills and carbon emissions.

Analysis based on Marilyn Brown, Alexander Smith, and Gyungwon Kim, 2016. *The Clean Power Plan and Beyond,* Georgia Institute of Technology, School of Public Policy Working Paper #89 (June).

The Clean Power Plan and Beyond:
Impacts on Energy Bills of Businesses in Tennessee

City skylines have long been a symbol of innovation and prosperity. What you can't see is that these same buildings are some of the largest energy consumers in Tennessee and are therefore responsible for significant amounts of the state's carbon pollution.

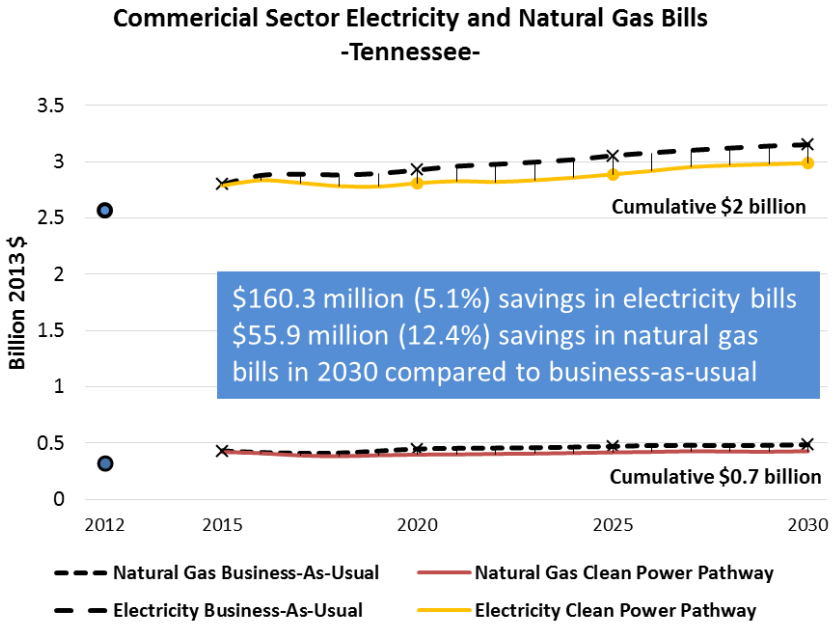
In August 2015, President Obama and the U.S. Environmental Protection Agency released the final Clean Power Plan, regulating carbon pollution from existing power plants for the first time. Since then, many cities have released Climate Action Plans, setting targets for carbon emissions. The success of these two initiatives are mutually dependent. EPA's Clean Power Plan requires strong local action, and the Climate Action Plans of cities, in turn, need national policies to ensure affordable, reliable, low-carbon electricity.

Georgia Tech has modeled low-cost pathways for compliance with the Clean Power Plan that accelerate the transition from coal plants to cleaner fuels such as natural gas. By emphasizing energy efficiency and renewable policies, these pathways temper the growth of new gas infrastructure. An analysis of the effects of such clean power pathways has just been released, describing their impacts on the energy bills and carbon pollution.

These results illustrate how commercial building owners and occupants can benefit from more efficient and more affordable air conditioning, lighting, electronics and other equipment, and from improved building shells as well as rooftop solar systems.

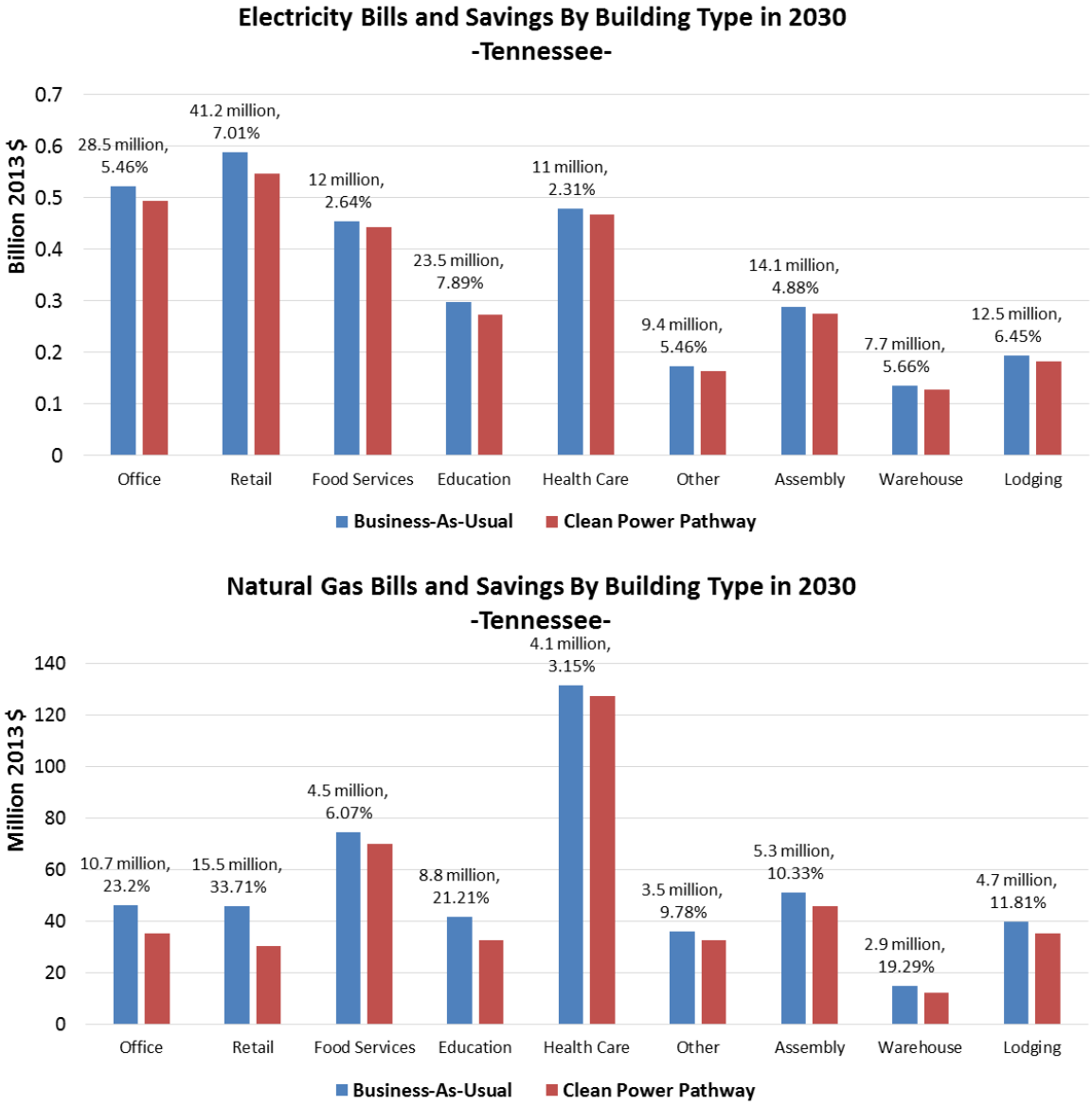
The Georgia Tech analysis found that:

- Commercial building owners and occupants in Tennessee could realize an average annual electricity savings of **$160 million** (5.1%) in 2030, compared to the business-as-usual case, if the state were to adopt the Clean Power Plan pathway described above. (See figure at right.)
- In addition, commercial owners and occupants would reduce their natural gas bills by an average of **$55.9 million** (12.4%) in 2030.



- Under business-as-usual (without new regulations), the electricity bills of commercial building owners and occupants in Tennessee would rise by about **12.2%** over the next 15 years.
- If Tennessee's leaders adopt the least-cost clean power pathway, Tennessee's commercial electricity bills would increase very little, if at all, while its CO_2 emissions would be cut significantly.
- Energy bill savings are expected to be greatest for **retail** and **office** buildings. In Tennessee it is estimated that these building space owners would cut their electricity costs by **$41** million and **$29 million** respectively in 2030.

- Occupants and owners of other building type ranging from **education** to **food** and **lodging** would also save significantly on their energy bills. (See figure below.)



(The numbers above the bars represent the potential savings in $2013 dollars, calculated as the difference between projected business-as-usual bills and Clean Power Pathway bills.)

The natural gas savings result primarily from a shift to electric heating and cooling systems in commercial buildings, triggered by the accelerated deployment of innovative air source heat pumps. With a focus on energy efficiency, these novel systems will replace the less efficient units that are commonly used on the rooftops of office buildings, schools, restaurants and big-box stores, tackling one of the most rapidly growing energy uses in the United States – air conditioning. Other policies include stricter building codes and strengthened equipment standards. These would produce a significant reduction in energy bills and carbon emissions.

Analysis based on Marilyn Brown, Alexander Smith, and Gyungwon Kim, 2016. *The Clean Power Plan and Beyond,* Georgia Institute of Technology, School of Public Policy Working Paper #89 (June).

The Clean Power Plan and Beyond: Impacts on Energy Bills of Businesses in Texas

City skylines have long been a symbol of innovation and prosperity. What you can't see is that these same buildings are some of the largest energy consumers in Texas and are therefore responsible for significant amounts of the state's carbon pollution.

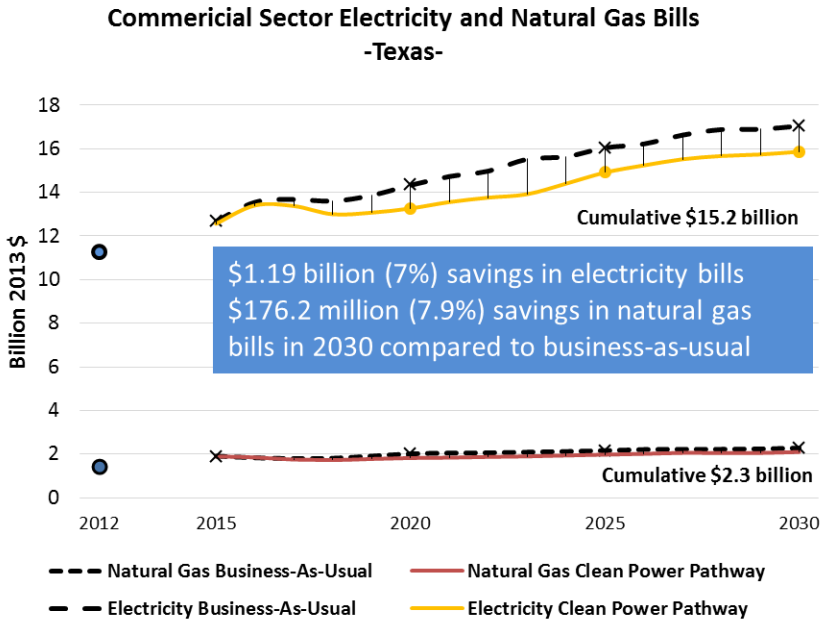
In August 2015, President Obama and the U.S. Environmental Protection Agency released the final Clean Power Plan, regulating carbon pollution from existing power plants for the first time. Since then, many cities have released Climate Action Plans, setting targets for carbon emissions. The success of these two initiatives are mutually dependent. EPA's Clean Power Plan requires strong local action, and the Climate Action Plans of cities, in turn, need national policies to ensure affordable, reliable, low-carbon electricity.

Georgia Tech has modeled low-cost pathways for compliance with the Clean Power Plan that accelerate the transition from coal plants to cleaner fuels such as natural gas. By emphasizing energy efficiency and renewable policies, these pathways temper the growth of new gas infrastructure. An analysis of the effects of such clean power pathways has just been released, describing their impacts on the energy bills and carbon pollution.

These results illustrate how commercial building owners and occupants can benefit from more efficient and more affordable air conditioning, lighting, electronics and other equipment, and from improved building shells as well as rooftop solar systems.

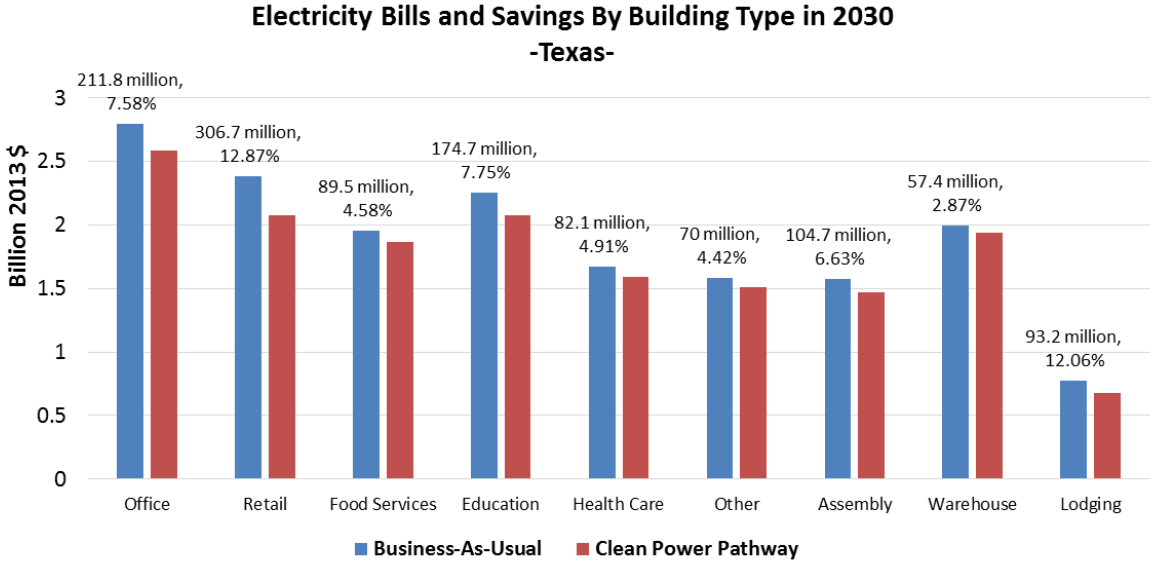
The Georgia Tech analysis found that:

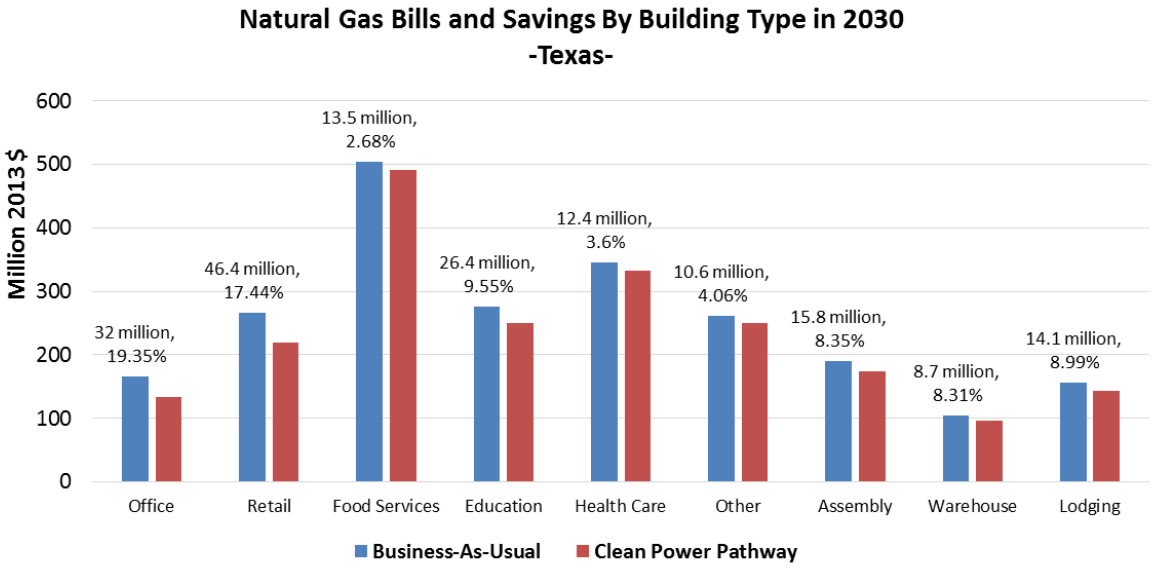
- Commercial building owners and occupants in Texas could realize an average annual electricity savings of **$1.19 billion** (7%) in 2030, compared to the business-as-usual case, if the state were to adopt the Clean Power Plan pathway described above. (See figure at right.)
- In addition, commercial owners and occupants would reduce their natural gas bills by an average of **$176.2 million** (7.9%) in 2030.



- Under business-as-usual (without new regulations), the electricity bills of commercial building owners and occupants in Texas would rise by about **34.3%** over the next 15 years.
- If Texas' leaders adopt the least-cost clean power pathway, Texas' commercial electricity bills would increase very little, if at all, while its CO_2 emissions would be cut significantly.
- Energy bill savings are expected to be greatest for **retail** and **office** buildings. In Texas it is estimated that these building space owners would cut their electricity costs by **$307** million and **$212 million** respectively in 2030.

- Occupants and owners of other building type ranging from **education** to **food** and **lodging** would also save significantly on their energy bills. (See figure below.)





(The numbers above the bars represent the potential savings in $2013 dollars, calculated as the difference between projected business-as-usual bills and Clean Power Pathway bills.)

The natural gas savings result primarily from a shift to electric heating and cooling systems in commercial buildings, triggered by the accelerated deployment of innovative air source heat pumps. With a focus on energy efficiency, these novel systems will replace the less efficient units that are commonly used on the rooftops of office buildings, schools, restaurants and big-box stores, tackling one of the most rapidly growing energy uses in the United States – air conditioning. Other policies include stricter building codes and strengthened equipment standards. These would produce a significant reduction in energy bills and carbon emissions.

Analysis based on Marilyn Brown, Alexander Smith, and Gyungwon Kim, 2016. *The Clean Power Plan and Beyond,* Georgia Institute of Technology, School of Public Policy Working Paper #89 (June).

The Clean Power Plan and Beyond:
Impacts on Energy Bills of Businesses in Virginia

City skylines have long been a symbol of innovation and prosperity. What you can't see is that these same buildings are some of the largest energy consumers in Virginia and are therefore responsible for significant amounts of the state's carbon pollution.

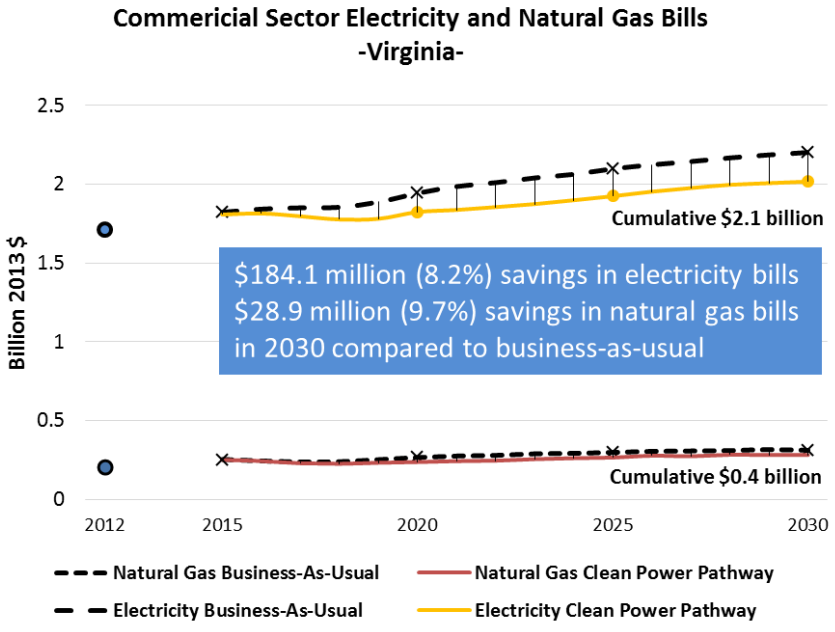
In August 2015, President Obama and the U.S. Environmental Protection Agency released the final Clean Power Plan, regulating carbon pollution from existing power plants for the first time. Since then, many cities have released Climate Action Plans, setting targets for carbon emissions. The success of these two initiatives are mutually dependent. EPA's Clean Power Plan requires strong local action, and the Climate Action Plans of cities, in turn, need national policies to ensure affordable, reliable, low-carbon electricity.

Georgia Tech has modeled low-cost pathways for compliance with the Clean Power Plan that accelerate the transition from coal plants to cleaner fuels such as natural gas. By emphasizing energy efficiency and renewable policies, these pathways temper the growth of new gas infrastructure. An analysis of the effects of such clean power pathways has just been released, describing their impacts on the energy bills and carbon pollution.

These results illustrate how commercial building owners and occupants can benefit from more efficient and more affordable air conditioning, lighting, electronics and other equipment, and from improved building shells as well as rooftop solar systems.

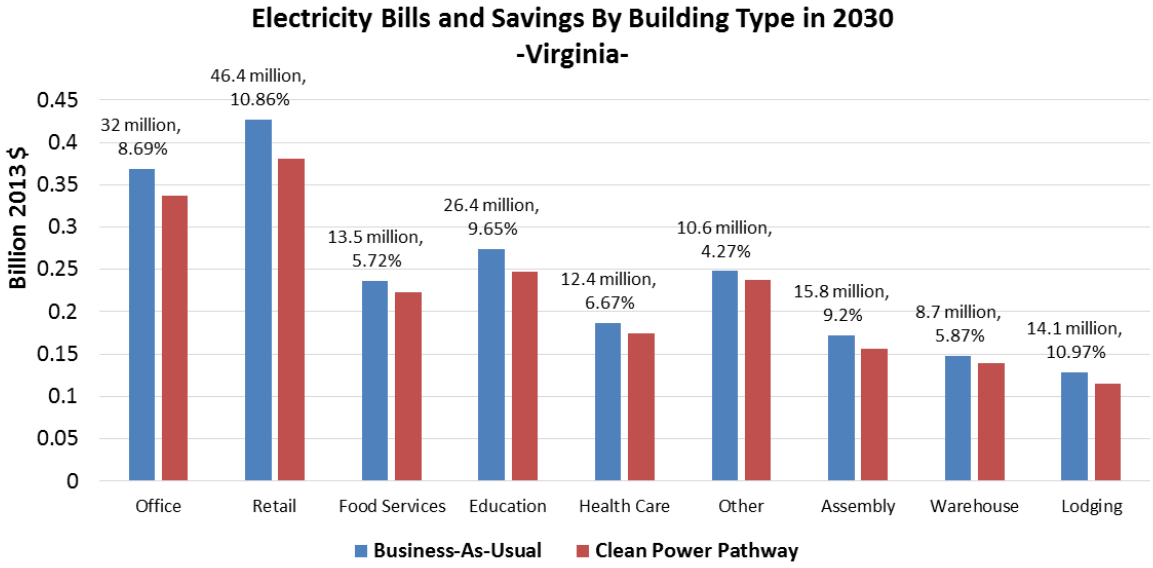
The Georgia Tech analysis found that:

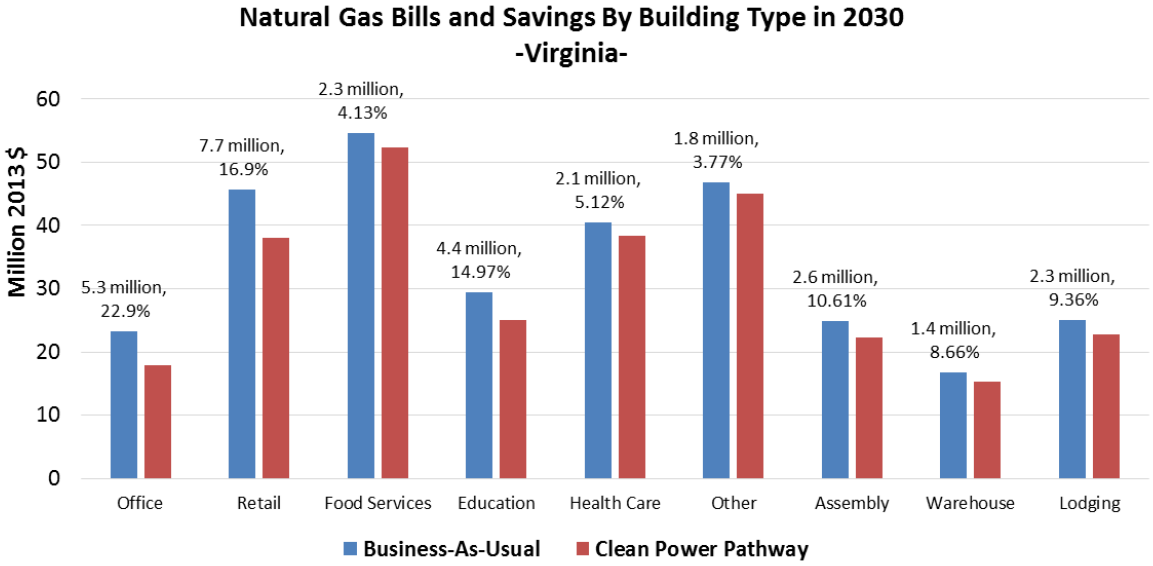
- Commercial building owners and occupants in Virginia could realize an average annual electricity savings of **$184 million** (8.2%) in 2030, compared to the business-as-usual case, if the state were to adopt the Clean Power Plan pathway described above. (See figure at right.)
- In addition, commercial owners and occupants would reduce their natural gas bills by an average of **$28.9 million** (9.7%) in 2030.



- Under business-as-usual (without new regulations), the electricity bills of commercial building owners and occupants in Virginia would rise by about **20.7%** over the next 15 years.
- If Virginia's leaders adopt the least-cost clean power pathway, Virginia's commercial electricity bills would increase very little, if at all, while its CO_2 emissions would be cut significantly.
- Energy bill savings are expected to be greatest for **retail** and **office** buildings. In Virginia it is estimated that these building space owners would cut their electricity costs by **$46** million and **$32 million** respectively in 2030.

- Occupants and owners of other building type ranging from **education** to **food** and **lodging** would also save significantly on their energy bills. (See figure below.)





(The numbers above the bars represent the potential savings in $2013 dollars, calculated as the difference between projected business-as-usual bills and Clean Power Pathway bills.)

The natural gas savings result primarily from a shift to electric heating and cooling systems in commercial buildings, triggered by the accelerated deployment of innovative air source heat pumps. With a focus on energy efficiency, these novel systems will replace the less efficient units that are commonly used on the rooftops of office buildings, schools, restaurants and big-box stores, tackling one of the most rapidly growing energy uses in the United States – air conditioning. Other policies include stricter building codes and strengthened equipment standards. These would produce a significant reduction in energy bills and carbon emissions.

Analysis based on Marilyn Brown, Alexander Smith, and Gyungwon Kim, 2016. *The Clean Power Plan and Beyond,* Georgia Institute of Technology, School of Public Policy Working Paper #89 (June).

The Clean Power Plan and Beyond:
Impacts on Energy Bills of Businesses in the United States

City skylines have long been a symbol of innovation and prosperity. What you can't see is that these same buildings are some of the largest energy consumers in the United States and are therefore responsible for significant amounts of the state's carbon pollution.

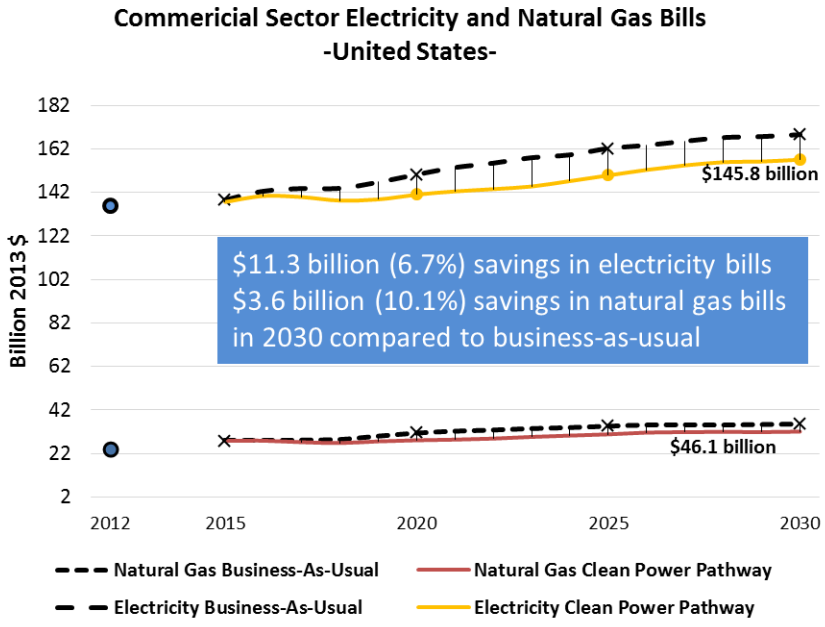
In August 2015, President Obama and the U.S. Environmental Protection Agency released the final Clean Power Plan, regulating carbon pollution from existing power plants for the first time. Since then, many cities have released Climate Action Plans, setting targets for carbon emissions. The success of these two initiatives are mutually dependent. EPA's Clean Power Plan requires strong local action, and the Climate Action Plans of cities, in turn, need national policies to ensure affordable, reliable, low-carbon electricity.

Georgia Tech has modeled low-cost pathways for compliance with the Clean Power Plan that accelerate the transition from coal plants to cleaner fuels such as natural gas. By emphasizing energy efficiency and renewable policies, these pathways temper the growth of new gas infrastructure. An analysis of the effects of such clean power pathways has just been released, describing their impacts on the energy bills and carbon pollution.

These results illustrate how commercial building owners and occupants can benefit from more efficient and more affordable air conditioning, lighting, electronics and other equipment, and from improved building shells as well as rooftop solar systems.

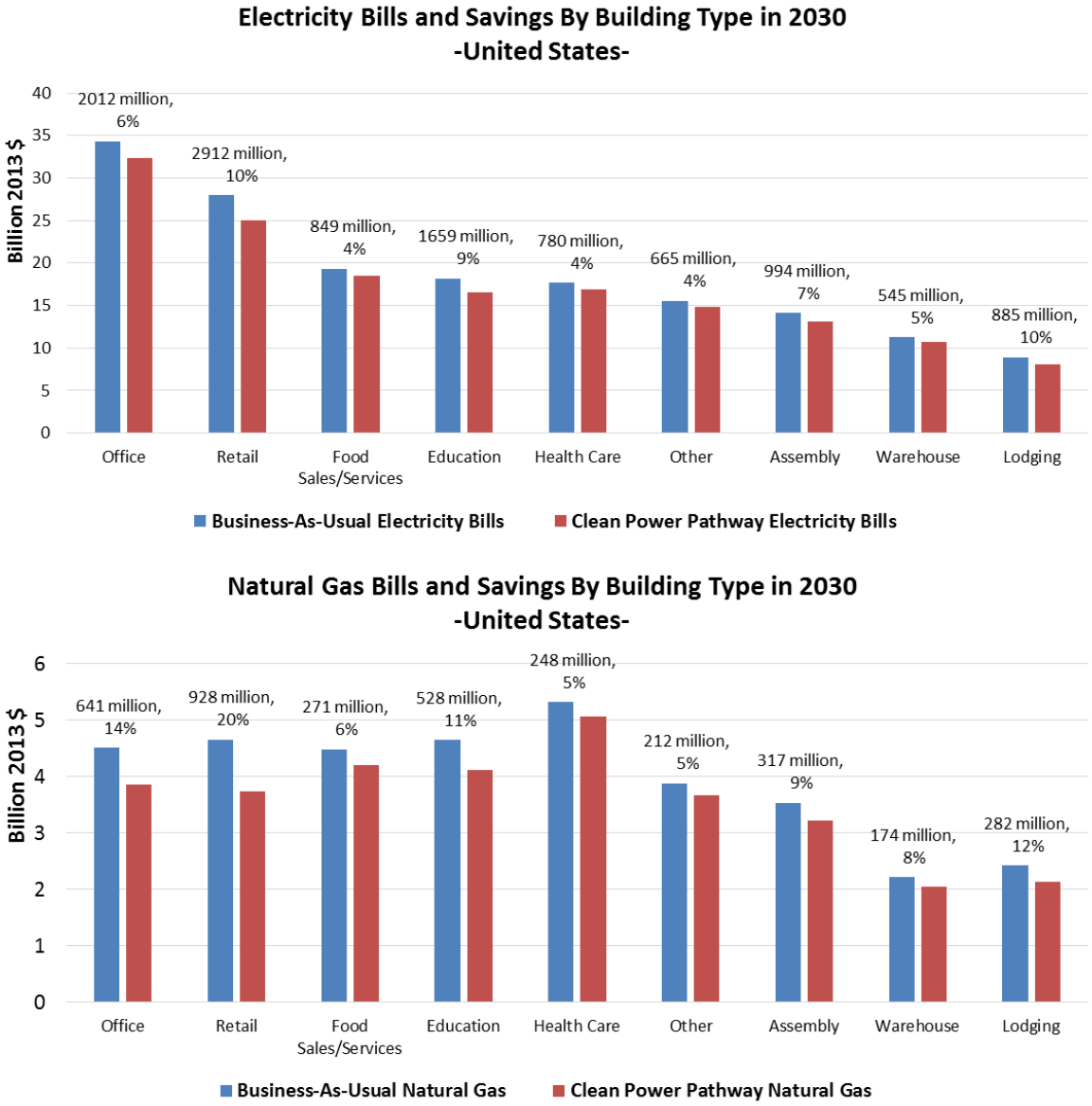
The Georgia Tech analysis found that:

- Commercial building owners and occupants in the United States could realize an average annual electricity savings of **$11.3 billion** (6.7%) in 2030, compared to the business-as-usual case, if the state were to adopt the Clean Power Plan pathway described above. (See figure at right.)
- In addition, commercial owners and occupants would reduce their natural gas bills by an average of **$3.6 billion** (10.1%) in 2030.



- Under business-as-usual (without new regulations), the electricity bills of commercial building owners and occupants in the United States would rise by about **21.4%** over the next 15 years.
- If the United States' leaders adopt the least-cost clean power pathway, the United States' commercial electricity bills would increase very little, if at all, while its CO_2 emissions would be cut significantly.
- Energy bill savings are expected to be greatest for **retail** and **office** buildings. In the United States it is estimated that these building space owners would cut their electricity costs by **$2,912** million and **$2,012 million** respectively in 2030.

- Occupants and owners of other building type ranging from **education** to **food** and **lodging** would also save significantly on their energy bills. (See figure below.)



(The numbers above the bars represent the potential savings in $2013 dollars, calculated as the difference between projected business-as-usual bills and Clean Power Pathway bills.)

The natural gas savings result primarily from a shift to electric heating and cooling systems in commercial buildings, triggered by the accelerated deployment of innovative air source heat pumps. With a focus on energy efficiency, these novel systems will replace the less efficient units that are commonly used on the rooftops of office buildings, schools, restaurants and big-box stores, tackling one of the most rapidly growing energy uses in the United States – air conditioning. Other policies include stricter building codes and strengthened equipment standards. These would produce a significant reduction in energy bills and carbon emissions.

Analysis based on Marilyn Brown, Alexander Smith, and Gyungwon Kim, 2016. *The Clean Power Plan and Beyond,* Georgia Institute of Technology, School of Public Policy Working Paper #89 (June).

The Clean Power Plan and Beyond: Impacts on Energy Bills of Businesses in the South

City skylines have long been a symbol of innovation and prosperity. What you can't see is that these same buildings are some of the largest energy consumers in the South and are therefore responsible for significant amounts of the state's carbon pollution.

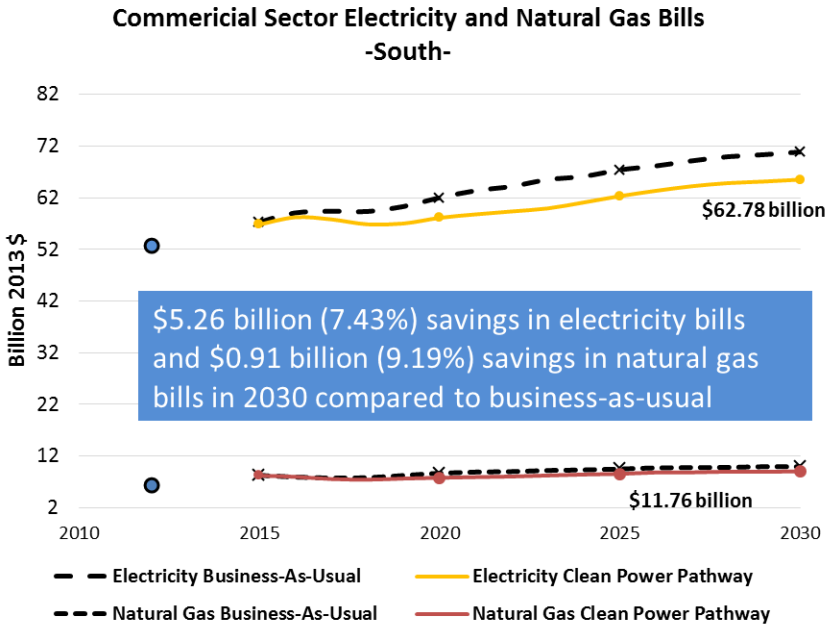
In August 2015, President Obama and the U.S. Environmental Protection Agency released the final Clean Power Plan, regulating carbon pollution from existing power plants for the first time. Since then, many cities have released Climate Action Plans, setting targets for carbon emissions. The success of these two initiatives are mutually dependent. EPA's Clean Power Plan requires strong local action, and the Climate Action Plans of cities, in turn, need national policies to ensure affordable, reliable, low-carbon electricity.

Georgia Tech has modeled low-cost pathways for compliance with the Clean Power Plan that accelerate the transition from coal plants to cleaner fuels such as natural gas. By emphasizing energy efficiency and renewable policies, these pathways temper the growth of new gas infrastructure. An analysis of the effects of such clean power pathways has just been released, describing their impacts on the energy bills and carbon pollution.

These results illustrate how commercial building owners and occupants can benefit from more efficient and more affordable air conditioning, lighting, electronics and other equipment, and from improved building shells as well as rooftop solar systems.

The Georgia Tech analysis found that:

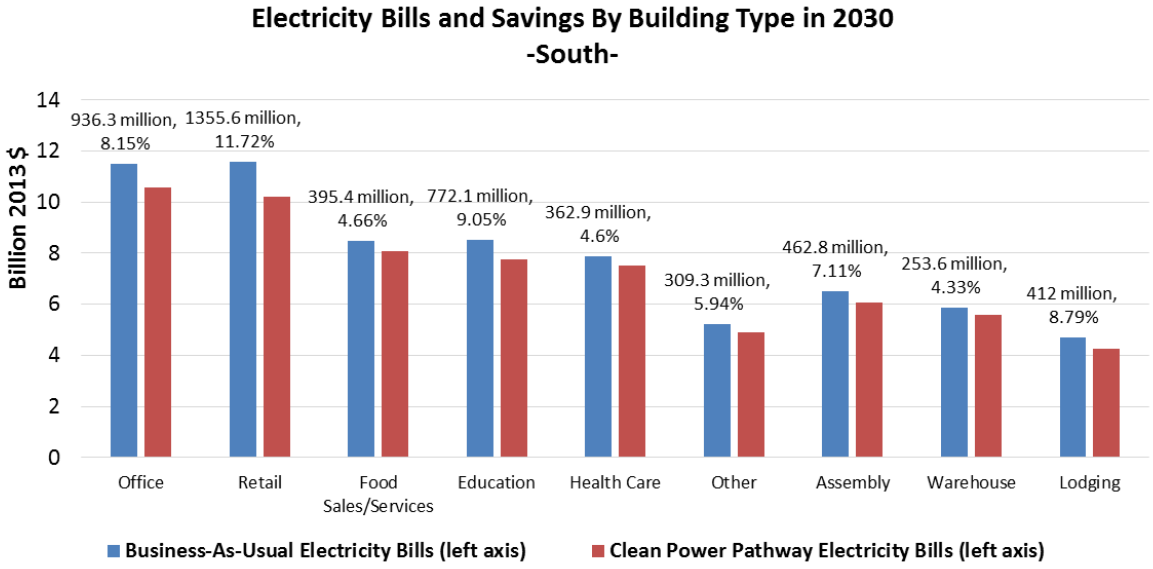
- Commercial building owners and occupants in the South could realize an average annual electricity savings of **$5.26 billion** (7.43%) in 2030, compared to the business-as-usual case, if the state were to adopt the Clean Power Plan pathway described above. (See figure at right.)
- In addition, commercial owners and occupants would reduce their natural gas bills by an average of **$.91 billion** (9.19%) in 2030.

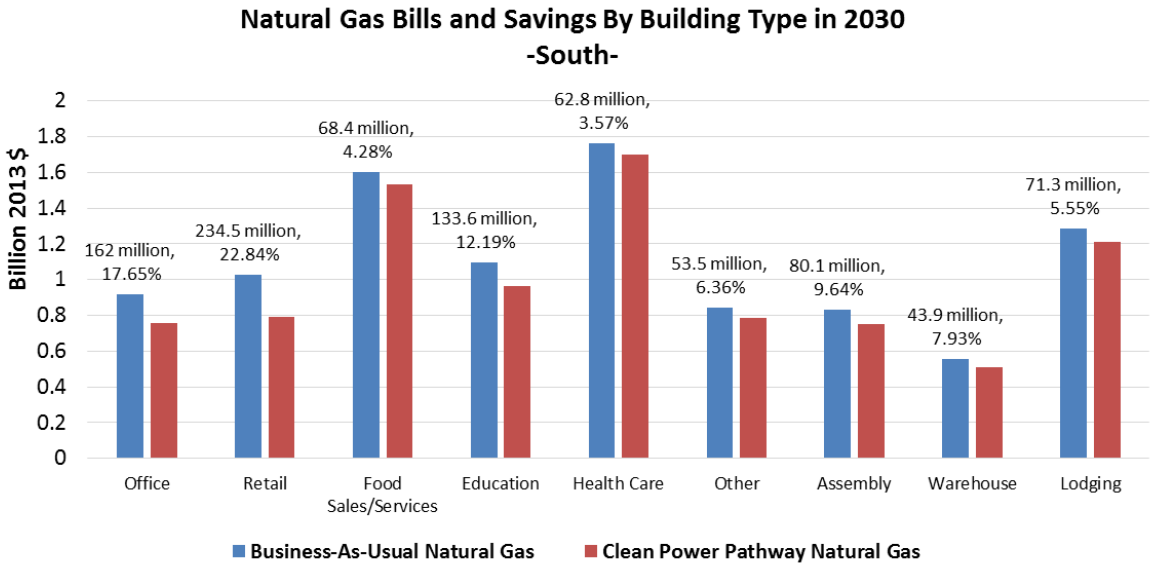


- Under business-as-usual (without new regulations), the electricity bills of commercial building owners and occupants in the South would rise by about **23.5%** over the next 15 years.
- If the South's leaders adopt the least-cost clean power pathway, the South's commercial electricity bills would increase very little, if at all, while its CO_2 emissions would be cut significantly.
- Energy bill savings are expected to be greatest for **retail** and **office** buildings. In the South it is estimated that these building space owners would cut their electricity costs by **$1,356** million and

$936 million respectively in 2030.

- Occupants and owners of other building type ranging from **education** to **food** and **lodging** would also save significantly on their energy bills. (See figure below.)





(The numbers above the bars represent the potential savings in $2013 dollars, calculated as the difference between projected business-as-usual bills and Clean Power Pathway bills.)

The natural gas savings result primarily from a shift to electric heating and cooling systems in commercial buildings, triggered by the accelerated deployment of innovative air source heat pumps. With a focus on energy efficiency, these novel systems will replace the less efficient units that are commonly used on the rooftops of office buildings, schools, restaurants and big-box stores, tackling one of the most rapidly growing energy uses in the United States – air conditioning. Other policies include stricter building codes and strengthened equipment standards. These would produce a significant reduction in energy bills and carbon emissions.

Analysis based on Marilyn Brown, Alexander Smith, and Gyungwon Kim, 2016. *The Clean Power Plan and Beyond,* Georgia Institute of Technology, School of Public Policy Working Paper #89 (June).