Florida House of Representatives

Environment & Natural Resources Council

Governance of Energy Policies in Selected States

Committee on Energy

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Table of Contents

INTRODUCTION

As the State of Florida attempts to pursue multiple energy goals, including the traditional goals of reliability and affordability, and more recent goals of energy security and independence, as well as economic development and climate change, state energy policy has become more complex and prone to conflicting goals and policies. Energy policy, as with all state policy, is the responsibility of the Legislature. However, in implementing broad policies enacted by the Legislature, executive agencies and the Legislature's Public Service Commission also shape energy policy. In addition, the Governor influences energy policy in a variety of ways.

In Florida, there are several state agencies that actively participate in the development and implementation of the state's energy-related policies. Whether there should be a single state governmental agency responsible for developing, implementing, and coordinating Florida's energy policy is a question that has been recently raised by the Legislature's Energy Commission and the Governor's Action Team on Energy and Climate Change.

During the 2007 Legislative Session, the Governor's Office and some legislators argued that the state's energy policies and programs were fragmented and not aligned to accomplish core energy policy goals. In 2007, the Florida Legislature passed CS/HB 7123, which in part created a 12-member Energy Policy Governance Task Force to recommend a unified approach to developing and implementing the state's energy policies. The bill provided that members of the task force be composed of representatives from several state agencies and persons appointed by the Governor, Senate President, and Speaker of the House. CS/HB 7123, however, was vetoed by Governor Crist on June 20, 2007, and, as a result, the Energy Policy Governance Task Force was never created.

The purpose of this whitepaper is to identify how Florida's energy policies are currently developed and implemented, and to compare and contrast how other states similar to Florida develop and implement their energy policies. The other states discussed are California, New York, Ohio, and Texas. These four states were selected because, along with Florida, they are some of the highest consumers of electric and transportation energy in the country and because they have similar populations to Florida.

State	Population[1]	Electricity Consumption Per Year in Million KWh[2] (Rank)	Transportation Sector Energy Consumption in Trillion BTUs[3] (Rank)
Florida	18,089,888	218,584 (3)	1,550.0 (3)
California	36,457,549	252,764 (2)	3,174.5 (1)
New York	19,306,183	145,082 (5)	1,104.5 (4)
Ohio	11,478,006	154,221 (4)	1,016.3 (6)
Texas	23,507,783	320,615 (1)	2,701.0 (2)

[1] Population statistics provided by the U.S. Census Bureau as of latest official census.
[2] U.S. Department of Energy, Table F11a. http://www.ipsr.ku.edu/ksdata/ksah/energy/18ener7.pdf.
[3] U.S. Department of Energy, Table S7. http://www.eia.doe.gov/emeu/states/sep_sum/html/pdf/sum_btu_tra.pdf.

In order to identify how Florida, California, New York, Ohio, and Texas develop and implement state energy policies, this whitepaper analyzes five major subject areas of energy policy for each state, and identifies the governmental entity or entities within each state that participate in governing the development and implementation of those specific energy policies. This approach is intended to allow the reader to easily identify whether one or several different government entities participate in the development and implementation of energy policies within a specific subject area, and to compare each state to Florida. The five subject areas that are analyzed include:

- Electric Power Generation;
- Alternative Energy Initiatives;
- Energy Efficient Buildings;
- Climate Change; and
- Coordination and Policy Development.

Although this whitepaper offers no recommendations to revise energy governance in Florida, the background information and comparisons with other states should inform future deliberations on this issue.

STATE SUMMARIES

Florida

In 2006, Florida had approximately 18.1 million residents, making it the fourth most populated state in the nation. However, Florida is the third highest consumer of electricity in the nation, and its residents consume approximately 219,000 million kilowatt hours of electricity per year. Florida has five investor-owned electric companies, 34 municipally owned electric utilities, and 18 rural electric cooperatives, which are the primary electricity generators in the state.

As of 2005, Florida produced its electricity from power plants using several sources of energy including:

- Natural Gas 32.5%
- Coal 29.0%
- Nuclear energy 11.9%
- Oil 11.7%
- Interchange 5.9%
- Other[4] 5.9%
- Non-utility generation 3.1%[5]

The transportation sector is another major source of energy consumption in Florida. Florida ranks third in the U.S. for total amount of energy consumed by the state's transportation sector, and in 2006, Floridians consumed roughly 8,605.3 million gallons of gasoline.[6] However, Florida is dependent on imported gasoline. Florida has no petroleum refining capacity, nor is Florida supplied by a gasoline pipeline from the Gulf Coast petroleum refineries. Instead, Florida gasoline is supplied by waterborne tankers and barges from Texas Gulf Coast ports to destinations along the Florida Gulf and Atlantic coasts. Significant foreign supplies are also imported into Florida coastal ports.

Florida's energy policies are developed and implemented by different and sometimes overlapping state agencies, departments, offices, commissions, and boards. The primary state agencies responsible for developing and implementing Florida's energy policies are the:

- Florida Energy Office (FEO) within the Department of Environmental Protection (DEP);
- Public Service Commission (PSC);
- Department of Community Affairs (DCA);

[4] "Other" includes petcoke and hydro.
[5] *Facts and Figures of the Florida Utility Industry* - Published by the Florida Public Service Commission, March 2007.
[6] Florida Department of Environmental Protection, 2006 Florida Motor Gasoline and Diesel Fuel Report, Table 1.

- Department of Agriculture and Consumer Services (DACS); and
- Department of Management Services (DMS).

Within each of these state agencies are offices, commissions, and boards that also contribute to implementing specific energy related programs and policies within the State of Florida.

Electric Power Generation

Electric power generation is a major element of energy policy in Florida, and various regulations and programs related to electric power generation are currently administered under the following state agencies, departments, and offices:

- Public Service Commission (PSC);
- Department of Environment Protection (DEP);
- Department of Community Affairs (DCA);
- Florida Energy Office (FEO);
- Siting Coordinating Office (SCO);
- Utility Siting Board (USB); and
- Division of Air Resource Management within DEP.

One major aspect of electric power generation policy in Florida relates to the siting of electric power plants, transmission lines, and natural gas pipelines. Before a proposed electric power plant, transmission line, or natural gas pipeline can be constructed, the project must go through a certification review process to ensure that all necessary environmental and energy supply issues are evaluated. The requirements for power plant and transmission line siting are found in the Electric Power Plant and Transmission Line Siting Act,[7] and the requirements for natural gas pipelines are in the Natural Gas Transmission Pipeline Siting Act.[8] These siting regulations are implemented by different offices within DEP; however, other state agencies also participate in the implementation of these Siting Acts.

The DCA is required to prepare reports to DEP containing recommendations which address the impact upon the public of the proposed electrical power plant, based on the degree to which the electrical power plant is consistent with the applicable portions of the state comprehensive plan, emergency management, and other such matters within its jurisdiction.[9] In addition, the PSC is required to prepare a report determining the present and future need for electrical generating capacity to be supplied by the proposed electrical power plant, and an affirmative determination of need is a condition precedent to the issuance of DEP's project analysis and conduct of the certification hearing.[10] The SCO, in conjunction with the DEP's Office of General Counsel, has the task of coordinating the interagency review and certification (licensing) under the siting acts.

[7] Part II, Chapter 403, F.S.
[8] Part VIII, Chapter 403, F.S.
[9] Section 403.507(2), F.S.
[10] Section 403.507(4), F.S.

In addition to these governing entities, the Governor and Cabinet sit as the USB and provide the final decision on whether to grant siting certifications for power plants, electrical transmission facilities, and natural gas transmission pipelines. The DEP serves as staff to the Governor and the Cabinet when sitting as the USB.[11]

The Electric Power Plant and Transmission Line Siting Act also applies to the siting of nuclear power plants in conjunction with federal permitting requirements under the U.S. Nuclear Regulatory Commission. Florida currently has nuclear power plants at three different locations, and a total of five reactors producing steam generated electricity. These nuclear reactors are located at Turkey Point in Florida City, Crystal River, and Hutchinson Island near St. Lucie.

The regulation of power plant pollution emissions and the implementation of state and federal air and water pollution control laws are handled by the DEP. The Division of Air Resource Management within DEP is responsible for implementing the provisions of the federal Clean Air Act and other applicable state environmental laws, including the emissions standards adopted for electric power plants. Along with DEP, the Environmental Regulation Commission (ERC) has been granted the standard-setting authority of the department. The ERC is made up of the Governor and Cabinet and makes the final decision on setting air pollution emissions standards.

Furthermore, DEP and water management districts regulate power plants with respect to water pollution and the use of water resources in the production of electricity. The Office of Water Resource Management, under DEP, is responsible for implementing the National Pollution Discharge Elimination System (NPDES) permitting program in Florida, which requires electric power plants to receive a permit in order to discharge water that is used in the process of generating electricity into adjacent water bodies.[12] NPDES permits for steam electric power plants are issued by the Industrial Wastewater Section within DEP.[13] Electric power plants are required to obtain a Consumptive Use Permit (CUP) for the water that they extract for the electricity generation process. The CUP allows water to be withdrawn from surface and groundwater supplies for reasonable and beneficial uses, which includes electric power generation.

The PSC also plays a significant role in the regulation and implementation of electric power generation in Florida beyond the requirement of the Power Plant and Transmission Lines Siting Act. The PSC is a statutorily-created legislative body,[14] which consists of five members appointed by the Governor and confirmed by the Senate. The commissioners serve terms of four years. The commission chairman is elected by a majority vote of the commissioners, and serves as chair for two years. The PSC exercises regulatory authority over electric utilities in four key areas:

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[11] Department of Environmental Protection Website: http://www.dep.state.fl.us/mainpage/programs/siting.htm.
[12] Department of Environmental Protection website: http://www.dep.state.fl.us/.
[13] Department of Environmental Protection website: http://www.dep.state.fl.us/water/wastewater/iw/index.htm.
[14] Chapter 350, F.S.

- Rate setting/economic regulation;
- Competitive market oversight;
- Monitoring of safety, reliability, and service; and
- Conservation (Demand Side Management). [15]

The PSC establishes and monitors earnings levels for electric utilities. Whenever a company believes that its earnings are below a reasonable level, the company can petition the PSC for a change in rates. The commission conducts an extensive review of the company's earnings and determines its fair levels of rates and earnings. As part of the review, the commission analyzes the company's books and records in order to determine a reasonable rate of return. The review also includes an analysis of the actual rates charged by the company, allocates revenue requirements between classes of customers, and develops appropriate rate structures within rate classes.

In addition to reviewing a company's request for a rate increase, the PSC also monitors each company's earnings levels to reduce the likelihood that any company generates excessive earnings. Companies file annual reports which are reviewed to determine the amount of earnings for the prior year. If, based on prior year earnings, it appears that a company will experience excessive earnings in the coming year, the PSC fully analyzes that company's books and records and, when appropriate, reduces its rates. The PSC may make earnings subject to refund if the review indicates the company is over-earning.[16]

The PSC also obtains information from electric utilities on reliability, service quality, and service availability for review and enforcement. The PSC reviews regulated utilities' ten-year site plans to assess the utilities' abilities to meet Florida's energy needs over a ten-year planning horizon. The PSC also participates in formal and informal proceedings relating to:

- Long-range electric utility bulk power supply operations and planning;
- Electric and natural gas safety and service quality, including complaints;
- Electric utility conservation goals and programs; and
- Emergencies due to operational events or weather.[17]

In addition, the PSC is statutorily responsible for electric safety. The PSC, by rule, has adopted the National Electrical Safety Code as the applicable safety standard for transmission and distribution facilities subject to the PSC's safety jurisdiction. In addition, the rule sets requirements for accident reporting, quarterly utility compliance reports, and random PSC inspections of facilities. Electric safety engineers inspect utility electric transmission and distribution construction sites that are randomly selected from utility work orders. Any variances from the National Electrical Safety Code that are found are later inspected again to verify that the code variances have been corrected.

[15] Public Service Commission website: http://www.psc.state.fl.us/.
[16] PSC 2007 Annual Report.
[17] PSC 2007 Annual Report.

Safety compliance evaluations are conducted annually on all natural gas systems. These evaluations focus on corrosion control, leak surveys, leak repairs, emergency response, drug testing, employee training, employee qualification, maintenance, operation, and new construction. Also, commission staff supports and assists the state's Emergency Operation Center in energy related matters.

The PSC also sets Demand Side Management (DSM) requirements for public utilities. The Florida Energy Efficiency and Conservation Act (FEECA) places an emphasis on reducing the growth rates of weather-sensitive peak electric demand, reducing and controlling the growth rates of electricity consumption, and reducing the consumption of scarce fossil fuels. The PSC sets numeric electric-peak demand and energy savings goals for the seven electric utilities subject to FEECA, and closely monitors the utilities' conservation achievements. Since the enactment of FEECA, utility-sponsored DSM programs have reduced statewide summer peak demand by an estimated 4,983 megawatts (MW) and winter peak demand by 5,577 MW.[18] Annual energy savings from utility-sponsored DSM programs were estimated to be 5,896 gigawatt-hours (GWh) in 2006. The demand savings from these programs have deferred the need for ten typical 500 MW electric generating plants, or enough capacity to serve approximately 1.6 million households.[19] By 2015, DSM programs are forecasted to further reduce aggregate peak demand and energy consumption.

Alternative Energy Initiatives

The development of alternative energy is another major component of energy policy in the State of Florida. Alternative energy programs in Florida include initiatives to promote the development of renewable and alternative energy sources of electricity and alternative fuels for motor vehicles. Florida has created several programs for the purpose of developing various sources of alternative energy such as wind, solar, biomass, and geothermal energy for producing electricity. Florida also is promoting the development of alternative fuel sources for motor vehicles such as biofuels, hydrogen, and electric hybrids. With the exception of Florida's Farm-to-Fuel initiative as discussed below, the Florida Energy Office (FEO), within the Department of Environmental Protection (DEP), is the primary government entity that administers these alternative energy initiatives.

In July 2003, the State of Florida launched "H2 Florida," a statewide program to accelerate the commercialization of hydrogen technologies. The H2 Florida program, governed by the FEO, was established to spur investment in Florida's economy, increase economic security, reduce reliance on foreign oil, and maintain Florida's clean air.[20] H2 Florida partners the state with industry, local governments and universities to showcase hydrogen technologies and educate consumers on the newest hi-tech approach to clean, sustainable energy.[21] This program also includes a corporate income tax credit and a sales tax exemption.

[18] PSC's Review of 2006 Ten-Year Site Plans for Florida's Electric Utilities.
[19] PSC's 2006 Annual Report on the Florida Efficiency and Energy Conservation Act.
[20] Department of Environmental Protection website: http://www.dep.state.fl.us/energy/sources/hydrogen/default.htm.
[21] Florida Energy Office website: http://www.dep.state.fl.us/energy/sources/hydrogen/default.htm.

In addition, Florida is promoting the use of solar energy and is expanding the use of the two major types of solar technology: (1) solar electric systems (or photovoltaics) that produce electricity from sunlight; and (2) solar thermal systems that produce hot water. The State of Florida also offers a number of financial incentives to businesses, organizations and residents who are seeking to use renewable energy technologies, and the FEO oversees many of the rebate and grant programs that are available. The 2006 Florida Energy Act created a renewable energy technologies grants program, a solar rebate program, and a renewable energy technologies tax incentive program, and provided a sales tax holiday for energy efficient products. Additional funding was provided by the 2007 Florida Legislature to continue the grant and solar rebate programs. For fiscal year 2007-2008, the DEP was appropriated $3.5 million for the solar rebate program and $12.5 million for the renewable grant program.[22]

In addition to the FEO, the Department of Agriculture and Consumer Services (DACS) is also involved in the development and implementation of alternative energy policies and programs. Pursuant to s. 570.954, F.S., DACS administers the Farm-to-Fuel initiative to enhance the market for and promote the production and distribution of renewable energy from Florida-grown crops, agricultural wastes and residues, and other biomass, in order to enhance the value of agricultural products and expand agribusiness in Florida. In 2007, the Florida Legislature appropriated $25 million for the Farm-to-Fuel Grants Program to provide matching grants for demonstration, commercialization, research and development projects relating to bioenergy.[23] The program's purpose is to stimulate investment in energy projects that produce bioenergy from Florida-grown crops or biomass. Grant funds are available to Florida municipalities and county governments, established for-profit companies licensed to do business in Florida, universities and colleges in Florida, utilities located and operating within Florida, and not-for-profit organizations.

DACS is also responsible for regulating the quality and measurement of petroleum products sold in Florida. Specifically, DACS does field testing of gasoline and diesel fuels, and performs routine inspections of retail service station pumps.[24] DACS also establishes ethanol blending standards to ensure that gasoline that is blended with ethanol maintains the required vapor pressure, vapor-to-liquid ratio, and volatility performance standards.

Enterprise FL, Inc. (EFI) also plays a role in Florida's energy policy, as it pertains to alternative energy. EFI is a public-private partnership serving as Florida's primary organization devoted to statewide economic development. EFI's mission is to diversify Florida's economy and create better-paying jobs for its citizens by supporting, attracting and helping create business in innovative, high-growth industries.

EFI accomplishes this mission by focusing on a wide range of industry sectors, including life sciences, information technology, aviation/aerospace, homeland security/defense, financial/professional services and manufacturing. In collaboration with a statewide network

[22] Florida Energy Office website: http://www.dep.state.fl.us/energy/incentives.htm.
[23] On January 22, 2008, DACS awarded the $25 million to 12 projects.
[24] Department of Agriculture and Consumer Services website: http://www.floridafarmtofuel.com/.

of regional and local economic development organizations, EFI helps to improve Florida's business climate, ensuring the state's global competitiveness.

Enterprise Florida assists companies confidentially with their expansion and location plans. EFI provides, among other functions, site selection services, demographic information, incentive information, and trade leads. EFI also coordinates introductions to a network of economic development partners located throughout the state. EFI promotes economic development in several subject areas and has divided these into "industry clusters," which include:

- Life sciences;
- Information technology;
- Aerospace and aviation;
- Homeland security and defense;
- Financial/professional services;
- Manufacturing; and
- Emerging technologies.[25]

EFI has identified alternative energy development as "emerging technologies" and as having a significant amount of potential for expanding economic development in the state. EFI is promoting and providing its services to investors and entrepreneurs interested in developing alternative energy industries in Florida.

In coordination with EFI, the Innovation Incentive Program within the Office of Tourism, Trade, and Economic Development (OTTED) also promotes and responds to economic opportunities and innovative business projects, which could include businesses that are developing alternative fuel or other advanced energy related technologies. To be eligible for consideration for an innovation incentive award, an innovation business or research and development entity must submit a written application to EFI before making a decision to locate new operations in this state or expand an existing operation in this state.[26] EFI evaluates the application and then makes recommendations to the OTTED. The director of OTTED then recommends to the Governor the approval or disapproval of an award. In recommending approval of an award, the director includes proposed performance conditions that the applicant must meet in order to obtain incentive funds and any other conditions that must be met before the receipt of any incentive funds. The Governor must consult with the President of the Senate and the Speaker of the House of Representatives before giving approval for an award.[27]

[25] Enterprise FL, Inc. website: http://eflorida.com/.
[26] Section 288.1089(3), F.S.
[27] Section 288.1089(6), F.S.

Energy Efficient Buildings

Florida promotes energy conservation by encouraging the development of energy efficiency technologies for private and public buildings around the state, including residential homes, commercial buildings, schools and universities, and government-owned buildings. The Governor recently signed Executive Order 07-126, which in part directed the Department of Management Services (DMS) to adopt the United States Green Building Council's Leadership in Energy and Environmental Design for New Construction (LEED-NC) and Existing Buildings (LEED-EB) standards for all state buildings. The Legislature has also authorized DMS to provide assistance to state agencies contracting for energy conservation measures, and to engage in other activities for promoting and facilitating guaranteed energy performance contracting by state agencies.[28]

DMS and the Department of Financial Services (DFS) administer the Guaranteed Energy Performance Savings Contracting program. This program promotes energy efficient buildings by allowing a state agency to enter into a contract with an Energy Savings Contractor (ESCO) to install energy efficient upgrades in the building such as lighting, air conditioning, windows, etc., and the ESCO guarantees that the energy cost savings of the new upgrades will cover the cost of the loan to pay for the upgrades. If the savings do not cover the cost of repaying the loan, then the ESCO compensates the agency for the difference. The Guaranteed Energy Performance Savings Contracting Act[29] permits an agency, meaning the state, a municipality, or a political subdivision,[30] to enter into a guaranteed energy performance savings contract[31] with a guaranteed energy performance savings contractor[32] to significantly reduce energy or operating costs of an agency facility through one or more energy conservation measures.[33,34] The statute details the procedures for entering into such contracts,[35] the mandatory contract provisions,[36] and the procedures for program administration and contract review.[37]

Generally, when a state agency wants to have a state-owned building that the agency occupies upgraded to be more energy efficient, the agency may contact no fewer than three

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[28] Section 489.145(6), F.S.
[29] Section 489.145 (1), F.S.
[30] Section 489.145 (3)(a), F.S.
[31] Section 489.145 (3)(d), F.S., defines a "guaranteed energy performance savings contract," in pertinent part, as a contract for the evaluation, recommendation and implementation of energy conservation measures.
[32] Section 489.145 (3)(e), F.S., defines a "guaranteed energy performance savings contractor" as a person or business that is licensed under Chapter 471, 481, or 489, F.S., and is experienced in the analysis, design, implementation, or installation of energy conservation measures through energy performance contracts.
[33] Section 489.145 (4)(a), F.S.
[34] An "energy conservation measure" means a training program, facility alteration, or equipment purchase to be used in new construction, including an addition to an existing facility, which reduces energy or operating costs, and includes such matters as insulation, storm windows and doors, caulking or weather-stripping, automatic energy control systems, and heating, ventilating, or air-conditioning system modifications or replacements. Section 489.145 (3)(b), F.S.
[35] Section 489.145 (4), F.S.
[36] Section 489.145 (5), F.S.
[37] Section 489.145 (6), F.S.

ESCOs that have been authorized by DMS to contract with the state, and the agency selects the ESCO they feel is most highly qualified.[38] The agency then authorizes the selected ESCO to complete an Investment Grade Audit, which details the scope of the project, including energy and operating savings. The agency then submits the audit to DMS for approval, and after DMS approves the audit, the agency can negotiate a contract with the ESCO, which must also be approved by DMS. After DMS reviews the contract, DFS reviews the contract and Financing Agreement. The agency may execute a contract with the ESCO only after the contract and financing have been approved by the DFS.

The DEP, through Executive Order 07-126, administers the Florida Green Lodging Program, which recognizes and rewards environmentally conscientious lodging facilities in the state. The Executive Order prohibits state agencies and departments under the direction of the Governor from contracting for "meeting and conference space with hotels or conference facilities that have not received the DEP 'Green Lodging' certification...." The DEP encourages the lodging industry to conserve and protect Florida's natural resources. The Green Lodging Program is unique because it covers an all-inclusive list of environmental initiatives specific to the Florida environment.[39]

Several divisions within the Department of Community Affairs (DCA) administer various programs that promote energy policies pertaining to energy efficient buildings. As provided by the Legislature,[40] the Florida Building Commission (FBC), which is located administratively within DCA, is responsible for establishing, updating, and maintaining the Energy Efficiency Code for Building Construction, a state minimum energy conservation code. The Florida Energy Code is updated biennially to incorporate evolving technology and provides training and technical assistance for the building industry, local code officials, and consumers. Executive Order 07-127 directed the Secretary of DCA to convene the FBC for the purpose of revising the Florida Energy Code for Building Construction, as provided in statute,[41] to increase the energy performance of new construction in Florida by at least 15% from the 2007 Energy Code.

The Division of Housing and Community Development, in the DCA, is responsible for the appliance efficiency standards established in Florida law, for administering the Weatherization Assistance Program, and for administering the Low Income Home Energy Assistance Program.[42] Pursuant to s. 553.957, F.S., the DCA regulates the minimum energy

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[38] Section 287.055, F.S.

[39] Department of Environmental Protection website: http://www.dep.state.fl.us/greenlodging/.

[40] Section 553.901, F.S.

[41] Pursuant to Florida Statutes, DCA must first "prepare a thermal efficiency code to provide for a statewide uniform standard for efficiency in the thermal design and operation of all buildings statewide, consistent with energy conservation goals, and to best provide for public safety, health, and general welfare." (Section 553.901, F.S.) The FBC then "shall adopt the Florida Energy Efficiency Code for Building Construction with the Florida Building Code" Id. This is to be done pursuant to Chapter 120, F.S. DCA, not FBC, shall "determine the most cost-effective energy-saving equipment and techniques available and report its determinations to the commission," which will then update the code. Proposed changes to the code must be made available for public review at least six months prior to implementation.

[42] Department of Community Affairs website: http://www.dca.state.fl.us/.

efficiency of certain consumer appliances sold within the State of Florida. Appliances governed under this authority include refrigerators, freezers, and lighting. The Weatherization Assistance Program annually provides grant funds to community action agencies, local governments, Indian tribes and non-profit agencies to provide specific program services for low-income families of Florida. Funding for the grant program originates from the U.S. Department of Energy, with supplemental funding from the U.S. Department of Health and Human Services. The Low Income Home Energy Assistance Program provides grants to local governments and non-profit agencies to assist eligible low-income households in meeting the costs of home heating and cooling. Grants administered under this program are funded by the federal government.

Climate Change

Florida's energy policy pertaining to climate change is currently in the developmental stages. The Legislature has not yet established a specific policy, other than directing the Florida Energy Commission (FEC) to recommend steps and a schedule for the development of a comprehensive state climate action plan directed at controlling climate change. The Governor's Office is currently promoting the development of a climate change policy and has embraced the climate change issue by directing and requesting several state agencies (through three executive orders issued after the conclusion of a Climate Change Summit on July, 13, 2007) to establish rules that would promote or require the reduction of energy consumption, the use of zero or low carbon fuels and alternative energy sources, and the reduction of greenhouse gas emissions by electric utilities and new motor vehicles. These state agencies include the:

- Department of Management Services (DMS);
- Department of Environmental Protection (DEP);
- Department of Community Affairs (DCA);
- Public Service Commission (PSC); and
- Florida Building Commission (FBC).

The first of the three executive orders issued by Governor Crist pertaining to climate change was Executive Order 07-126, which directed state government to "lead by example" by quantifying operational emissions and meeting specific reduction targets; implementing a range of greenhouse gas emission reduction efforts that impact state government facilities and vehicle fleets; and using the purchasing power of state government to promote energy efficiency and reduced emissions.

The executive order directed DMS to adopt the Green Building Council's Leadership in Energy and Environmental Design for New Construction (LEED-NC) standards and strive for "Platinum Level" certification of energy efficiency for all new buildings constructed for or by the State of Florida. DMS is also directed to implement the Green Building Council's Leadership in Energy and Environmental Design for Existing Buildings (LEED-EB) for all buildings currently owned and operated by the DMS on behalf of client agencies.

Governor Crist's Executive Order 07-127 established reduction targets for the emission of greenhouse gases in Florida as follows:

- By 2017 – reduce greenhouse gas emissions to 2000 levels;
- By 2025 – reduce greenhouse gas emissions to 1990 levels; and
- By 2050 – reduce greenhouse gas emissions to 80 percent of 1990 levels.

The executive order also directed the DEP to promulgate an administrative rule restricting electric utility greenhouse emissions to these levels. The DEP is in the process of promulgating the rule, despite questions about its authority to restrict such emissions. Maintaining it has the authority, the department and the Governor's Action Team have stated the preferred method – rather than strictly regulatory restrictions – of reaching the targets is a "Cap and Trade Program," and have indicated legislative authority is required to implement the "Trade" portion of the program. The DEP has requested legislation addressing this issue.

DEP is further directed to promulgate rules adopting the California motor vehicle emissions standards for greenhouse gases found in Title 13 of the California Code of Regulations. However, any such rule can only be implemented in Florida upon California receiving a waiver from the Administrator of the U.S. Environmental Protection Agency (EPA), as provided in section 209 of Clean Air Act.[43] On December 19, 2007, the EPA denied California its waiver, and therefore, DEP would not be able to implement a rule establishing a greenhouse gas emissions standard for new motor vehicles. California, along with Florida and several other states, has filed a lawsuit challenging EPA's decision to deny the waiver.

Besides adopting a rule establishing greenhouse gas emissions standards for new motor vehicles, Executive Order 07-127, also requires the Secretary of DEP to adopt a statewide diesel engine idle reduction standard to reduce the amount of greenhouse gas emissions from diesel powered vehicles such as large tractor trailers and semi trucks.

Executive Order 07-127 further directed DCA to immediately convene the FBC for the purpose of revising the Florida Energy Code for Building Construction to increase the energy performance of new construction in Florida by at least 15 percent from the 2007 Florida Energy Code. The executive order also provided that the FBC should consider incorporating standards for appliances and standard lighting in the Florida Energy Code. These increased standards are intended to result in residential homes and commercial businesses to consume less electricity, thereby resulting in a decrease in the amount of greenhouse gases that electric utilities emit. In addition, the executive order directed DCA to initiate rulemaking of the Florida Energy Conservation Standards, with an objective to increase the efficiency of consumer products by 15 percent from current standards by July 1, 2009. Finally, it requested the Florida Public Service Commission to:

[43] See 42 U.S.C. 7543.

- Adopt a 20 percent Renewable Portfolio Standard with a strong focus on solar and wind energy;
- Adopt the Institute of Electrical and Electronics Engineers (IEEE) Standard 1547 for Interconnecting Distributed Resources with Electric Power Systems; and
- Require net metering for on-site renewable technologies of up to one megawatt in capacity.

Executive Order 07-128 established the Governor's Action Team on Energy and Climate Change (Action Team) and tasked it with creating a comprehensive Florida Energy and Climate Change Action Plan to achieve or surpass the statewide targets for greenhouse gas reduction specified in Executive Order 07-127. Executive Order 07-128 provided the Action Team with two phases for submitting recommendations. The first phase directed the Action Team to provide recommendations to the Governor by November 1, 2007,[44] on:

- Strategies and mechanisms for the consolidation and coordination of energy policy in Florida;
- Additional greenhouse gas emission reduction strategies beyond those directed in Executive Order 07-127, as well as an overall blueprint for development of actions;
- Policies to enhance energy efficiency and conservation, including statewide targets;
- Market-based regulatory mechanisms, such as cap and trade programs, for use in efficiently reducing greenhouse gas emissions;
- Strategies to diversify Florida's electric generation fuels to reduce greenhouse gas emissions and protect Florida's consumers from fuel price volatility;
- Policies for emission reporting and registry that measure and document emission reductions;
- Strategies for reducing the greenhouse gas emissions from motor vehicles;
- Strategies for increasing the amount of renewable transportation fuels and for reducing the carbon content of fuels, such as a low carbon fuel standard;
- Policies not addressed in Executive Order 07-126 to reduce greenhouse gas emissions from state and local governments;
- Policies to reward early emission reductions in advance of statewide or national greenhouse gas regulatory programs; and
- Other policies for efficiently reducing emissions in Florida in conjunction with, or independent of regional, national, or international agreements.

On December 31, 2007, the FEC, which is discussed in the next section, released its report and recommended the Legislature enact into statute greenhouse gas reduction targets. In response to concerns that the targets established by the Governor's Executive Order and Action Team were unnecessarily expensive because they are overly optimistic regarding the

[44] Report was released to the Governor on November 1, 2007, and was subsequently forwarded to the Legislature.

development of new technology and do not reflect anticipated regulatory timelines for nuclear power, the FEC recommended the targets be modified as follows:

- By 2020 – reduce greenhouse gas emissions to 2000 levels;
- By 2030 – reduce greenhouse gas emissions to 1990 levels; and
- By 2050 – reduce greenhouse gas emissions to 80 percent of 1990 levels.[45]

The FEC also recommended the targets be subject to sunset review in 2013.

Policy Development and Coordination

In addition to administering and implementing Florida's energy policies, various state government entities also develop energy policies as new information and technologies become available. Numerous entities develop energy policy through recommendations and by means of implementing policies established by the Legislature. The following government entities currently play a role in developing Florida's energy policies:

- Florida Energy Commission (FEC);
- The Governor's Action Team on Energy and Climate Change (Action Team);
- Public Service Commission (PSC);
- Department of Environmental Protection (DEP);
- Florida Building Commission (FBC); and
- Florida's colleges and universities.

The FEC was created by the Legislature in 2006 as a legislative body to consist of nine members appointed by the Speaker of the House and the President of the Senate and charged with providing recommendations to the Legislature to establish a state energy policy based on the guiding principles of reliability, efficiency, affordability, and diversity.[46] The FEC is required to develop annual reports that document its progress and make recommendations designed to help guide the Florida Legislature in choosing best practices and options for Florida's energy future.[47] In making these recommendations, the FEC is required to focus on the following factors:

- The state should have a reliable electric supply with adequate reserves.
- The transmission and delivery of electricity should be reliable.
- The generation, transmission, and delivery of electricity should be accomplished with the least detriment to the environment and public health.
- The generation, transmission, and delivery of electricity should be accomplished compatibly with the goals for growth management.

[45] Florida Energy Commission Report.
[46] Chapter 2006-230, Laws of Florida - Section 377.901, F.S.
[47] Florida Energy Commission website: http://www.floridaenergycommission.gov/index.cfm.

- Electricity generation, transmission, and delivery facilities should be reasonably secure from damage, taking all factors into consideration, and recovery from damage should be prompt.
- Electric rates should be affordable, as to base rates and all recovery-clause additions, with sufficient incentives for utilities to achieve this goal.
- The state should have a reliable supply of motor vehicle fuels, both under normal circumstances and during hurricanes and other emergency situations.
- In-state research, development, and deployment of alternative energy technologies and alternative motor vehicle fuels should be encouraged.
- When possible, the resources of the state should be used in achieving the goals enumerated in this subsection.
- Consumers of energy should be encouraged and given incentives to be more efficient in their use of energy.[48]

Volumes I and II of the FEC's recommendations were submitted to the Legislature on December 31, 2007.

The Action Team, established by Governor Crist in Executive Order 07-128, also is responsible for developing energy policy in Florida. In August 2007, Governor Crist appointed 21 members to the Action Team, and directed the members "to develop a comprehensive Energy and Climate Change Action Plan (Action Plan) that will fully achieve or surpass Executive Order targets for greenhouse gas reductions."[49] The Action Plan was required to be guided by an evaluation of the possible consequences to Florida's environment, economy, and society from global climate change. The Action Team submitted its first report to the Governor on November 1, 2007, and is required, by the Executive Order to submit Phase II of its report to the Governor by October 1, 2008. The Action Team will play a role in developing energy policy in Florida through the creation of its Action Plan.

As stated in the *Electric Power Generation* section of this report, the PSC contributes to energy policy development pertaining to electric utilities. Through its rulemaking process, the PSC develops future energy policy by researching and analyzing potential effects arising from the application and implementation of proposed policies. The PSC is currently in the process of adopting rules for net metering, which would promote the use of renewable sources of energy by allowing ratepayers to be reimbursed for the excess energy that is produced. At the Governor's request, the PSC also is exploring the creation of a renewable portfolio standard.

The DEP, through its electric power plant siting authority (Utility Siting Board), can determine whether or not a new power plant can be constructed. Furthermore, the DEP sets and enforces the operational permitting of electric utilities, which can be a factor in developing energy policy depending on whether DEP decides to increase its regulation over air and water pollution. DEP is currently in the beginning stages of developing a rule that

[48] Section 377.901(7), F.S.
[49] Executive Order 07-128.

would establish emissions standards to reduce the amount of greenhouse gases emitted by electric utilities.[50]

The FBC is charged with overseeing the Florida Building Code (Code) and has the authority to update and amend the Code. The FBC develops energy efficiency and conservation standards in the Code, which requires builders to develop residential and commercial buildings that are energy efficient and promote energy conservation.[51]

One other government source of policy development in Florida is the state's universities. The universities participate in research on policy and technology development on a wide range of energy issues. The University of Central Florida's Florida Solar Energy Center and the Center for Energy and Sustainability develop energy technologies and also promote energy conservation and sustainability. Florida State University's Center for Advanced Power Systems focuses on advanced power technologies with particular emphasis on transportation systems, as well as traditional utility systems.

The University of Florida has seven divisions or programs within the university that promote:

- The development of alternative fuels;
- The adoption of best design, construction, and management practices to reduce energy consumption, a sustainable energy future; and
- The resolution of environmental problems associated with planning and architecture and the determination of optimum materials and methods for use in minimizing environmental damage.

Policy coordination is another aspect of energy governance where an entity is responsible for overseeing how a state's energy policy is being governed so that it can determine whether energy policy is being developed and implemented in the most efficient manner to accomplish the state's policy goals. The FEC and DEP both appear to perform policy coordination in Florida.

The Legislature has established DEP's policy coordination duties in s. 377.703, F.S., by requiring the DEP to be the responsible state agency for coordinating the functions of any federal energy programs delegated to the state, including energy supply, demand, conservation, or allocation. Furthermore, DEP is directed to coordinate the energy conservation programs of all state agencies and review and comment on the energy conservation programs of all state agencies.[52] DEP is also required to coordinate, promote, and respond to efforts by all sectors of the economy to seek financial support for energy activities.[53] Finally, s. 377.703(3)(k), F.S., provides that DEP must coordinate energy-related programs of state government by:

[50] Department of Environmental Protection website: http://www.dep.state.fl.us/.
[51] Florida Building Commission website: http://www.dca.state.fl.us/FBC/index.htm.
[52] Section 377.703(3)(i), F.S.
[53] Section 377.703(3)(j), F.S.

- Providing assistance to other state agencies, counties, municipalities, and regional planning agencies to further and promote their energy planning activities;
- Requiring, in cooperation with the Department of Management Services, all state agencies to operate state-owned and state-leased buildings in accordance with energy conservation standards as adopted by the Department of Management Services;
- Promoting the development and use of renewable energy resources, energy efficiency technologies, and conservation measures; and
- Promoting the recovery of energy from wastes, including, but not limited to, the use of waste heat, the use of agricultural products as a source of energy, and recycling of manufactured products. Such promotion shall be conducted in conjunction with, and after consultation with, the Department of Environmental Protection, the Florida Public Service Commission where electrical generation or natural gas is involved, and any other relevant federal, state, or local governmental agency having responsibility for resource recovery programs.

DEP is required to make a report, as requested by the Governor or the Legislature, reflecting its activities and making recommendations of policies for improvement of the state's response to energy supply and demand and its effect on the health, safety, and welfare of the people of Florida.[54] The last report was completed in 2005, under an executive order by then Governor Bush.

Finally, in carrying out the duties described above, the FEC plays a role in coordinating energy policy in Florida by examining and evaluating the state's energy policies and programs, and providing recommendations to the Legislature in order to ensure that such plans and programs are consistent with the state's energy policy.

[54] Section 377.703(3)(f), F.S.

California

The State of California has a population of more than 37 million people.[55] It is the second highest consumer of electricity in the United States,[56] with only Texas utilizing more electricity.

Although there are few coal-fired plants in California, more than 20 percent of the state's electricity comes from coal plants in Nevada, Wyoming, Utah and other Western states.[57] The following chart is a break-down of the state's major sources of energy.

Electricity		**Natural Gas**		**Crude Oil**	
In-State	**78.1%**	**In-State**	**13.5%**	**In-State**	**39%**
Natural Gas	41.5%				
Nuclear	12.9%				
Large Hydro	19.0%				
Coal	15.7%				
Renewable	10.9%				
Imports	**21.9%**	**Imports**	**86.5%**	**Imports**	**61%**
Pacific Northwest	6.7%	Canada	23.5%	Alaska	16%
U.S. Southwest	15.2%	Rockies	23%	Foreign	45%
		Southwest	40%		

Source: California Public Utilities Commission website: http://www.energy.ca.gov/html/energysources.html

In 2004, gasoline consumption per capita was approximately 414.4 gallons.[58] In 2006, the state utilized approximately 20 billion gallons of gasoline and diesel, an increase of almost 50 percent over the last 20 years.[59]

Although, there are several entities that administer energy policy, the following agencies have a majority of the responsibility:

- California Energy Commission (Energy Commission or Commission);
- California Public Utilities Commission (CPUC);
- California Air Resources Board (ARB);
- California Environmental Protection Agency; and
- California Building Standards Commission.

[55] *2007 Integrated Energy Policy Report*. California Energy Commission. December 5, 2007. p. 2.
[56] How Florida Could Go Green. Tampabay.com. Craig Pittman and Ron Brackett. July 23, 2007.
[57] 'Dirty' power put off-limits to utilities. *San Diego Union-Tribune*. January 26, 2007.
[58] California Energy Commission website: http://www.energy.ca.gov/gasoline/statistics/gasoline_per_capita.html.
[59] California Energy Commission website: http://www.energy.ca.gov/transportation/index.html.

Electric Power Generation

The energy policy area of electric power generation is shared between the California Energy Commission (Commission), which is the primary agency responsible for developing and implementing energy policy, and the California Public Utilities Commission.

The California Energy Commission is comprised of five Governor-appointed Commissioners representing the fields of engineering/physical science, economics, environmental protection, and law, and the fifth is selected by the Governor from the public-at-large. Members must be confirmed by the Senate, and serve staggered five-year terms. The Governor selects a chair and vice chair from among the members every two years. The Commission nominates and the Governor appoints a Public Adviser for a term of three years who is responsible for ensuring that the public is represented at Commission proceedings.[60]

The Commission was established in statute in 1974 and has five major responsibilities:

- Forecasting future energy needs (all types) and keeping historical energy data;
- Licensing thermal power plants 50 megawatts or larger;
- Promoting energy efficiency through appliance and building standards;
- Developing energy technologies and supporting renewable energy; and
- Planning for and directing state responses to energy emergencies.[61]

The Commission receives its funding from a two-and-two-tenths of one mil ($0.00022) per kilowatt/hour electricity consumption surcharge collected by the electric utilities through consumers' bills. These funds are then transferred to the state treasury.[62]

The Commission is responsible for licensing thermal power plants that are 50 megawatts or larger and supporting infrastructure such as transmission lines, fuel supply lines, and water pipelines. The permitting process is a certified regulatory program under the California Environmental Quality Act and is coordinated with appropriate federal agencies that issue permits.[63] There is also a Small Power Plant Exemption program that is available for projects between 50 megawatts and 100 megawatts, if the proposed project does not create an "unmitigated significant impact" on environmental resources.[64]

The power plants that the Commission regulates are required to meet emission standards that are determined by the U.S. Environmental Protection Agency (EPA) and the California Air Resources Board. Local air districts in California ensure compliance with emission standards.[65]

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[60] California Energy Commission website: http://www.energy.ca.gov/commission/overview.html.
[61] Ibid.
[62] California Energy Commission website: http://www.energy.ca.gov/commission/overview.html.
[63] California Energy Commission website: http://www.energy.ca.gov/sitingcases/index.html.
[64] California Energy Commission website: http://www.energy.ca.gov/sitingcases/index.html#license.
[65] Email correspondence with Energy Commission staff. January 2008.

The other agency with a major responsibility for administering energy policy is the California Public Utilities Commission (CPUC), which is comprised of five Governor-appointed Commissioners, who serve staggered six-year terms. The Commissioners are confirmed by the Senate, and the Governor appoints one of the five to serve as Commission President.[66]

The CPUC regulates privately-owned telecommunications, electric, natural gas, water, railroad, rail transit, and passenger transportation companies, in addition to authorizing video franchises. The CPUC has the responsibility of:

- Ensuring that consumers have safe, reliable utility service at reasonable rates;
- Protecting against fraud; and
- Promoting the health of California's economy.[67]

The CPUC regulates the state's three major investor-owned utilities: Pacific Gas & Electric Co., in San Francisco; Southern California Edison in Rosemead; and San Diego Gas and Electric, in San Diego.

In October 2007, the CPUC established a risk/reward incentive mechanism to encourage the utilities to invest in energy efficiency. The mechanism enables the utilities to earn rewards on energy efficiency investments in amounts comparable to what they would otherwise earn on the supply side investments. That decision established a minimum performance standard for the utilities, under which incentive earnings begin to accrue only if the utility energy efficiency portfolio achieved at least 85 percent of the CPUC's goals. The utilities requested an amended rule, which was adopted by the CPUC that allows incentive earnings to accrue if at least 65% of the CPUC's goals are met. [68]

California's has a net metering law, which took effect in 1996, and requires all utilities to allow net metering for solar and wind-energy systems up to one megawatt. Investor-owned utilities are required to offer net metering for biogas-electric systems and fuel cells. Net excess generation is carried forward to a customer's next bill for up to 12 months. Any net excess generation remaining at the end of each 12-month period is granted to the customer's utility. The CPUC has adopted a rule which specifies standard interconnection, operating, and metering requirements for distributed generation systems up to 10 megawatts in capacity, including renewables, with separate rules for small renewables under 10 kilowatts.[69]

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[66] California Public Utilities Commission website: http://www.cpuc.ca.gov/PUC/aboutus/Commissioners/.
[67] California Public Utilities Commission website: http://www.cpuc.ca.gov/puc/.
[68] California utilities can keep monetary incentives for reaching power savings goals -- even if an audit later reveals that they missed the mark. Elizabeth Douglass. *Los Angeles Times*. February 1, 2008.
[69] Ibid.

According to state law, new nuclear power plants are permitted only if there is a solution to dispose of the waste without utilizing permanent storage. This has effectively put a moratorium on the building of new nuclear plants. Permitting would fall under the jurisdiction of the Energy Commission.[70]

Alternative Energy Initiatives

Both the California Energy Commission (Energy Commission) and the California Public Utilities Commission (CPUC) share responsibility for administering alternative energy initiatives through ambitious programs implemented throughout the state.

In 2002, California established its Renewable Portfolio Standard Program (RPS), with the goal of increasing the percentage of renewable energy in the state's electricity portfolio at least one percent each year to reach 20 percent by 2010. California is now considering an even higher goal of 33% renewable energy by 2020.[71] The following fuels count towards California's RPS goals: biomass, biodiesel, fuel cells using renewable fuels, digester gas, geothermal, landfill gas, municipal solid waste, ocean wave, ocean thermal, tidal current, solar photovoltaic, small hydroelectric (30 megawatts or less), solar thermal, and wind.[72]

Under the 2002 RPS legislation, the Energy Commission's responsibilities include the following:

- Certify eligible renewable resources that meet specific criteria;
- Design and implement a tracking and verification system to ensure that renewable energy output is counted only once for the purpose of the RPS and for verifying retail product claims in California or other states; and
- Allocate and award supplemental energy payments to eligible renewable energy resources to cover above-market costs of renewable energy.[73]

The CPUC mandates and ensures that investor-owned public utilities (IOUs) are 20 percent renewable energy by 2010. Specifically, the CPUC's responsibilities include the following:

- Determine annual procurement targets and enforce compliance;
- Review and approve each IOU's renewable energy procurement plan;
- Review IOU contracts for RPS-eligible energy;
- Establish the standard terms and conditions used by IOUs in their contracts for eligible renewable energy; and
- Calculate market price referents for non-renewable energy that serve as benchmarks for the price of renewable energy.[74]

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[70] Conversation with Energy Commission staff. December 2007.
[71] California Public Utilities Commission website: http://www.cpuc.ca.gov/PUC/energy/electric/RenewableEnergy/.
[72] California Public Utilities Commission website: http://www.cpuc.ca.gov/PUC/energy/electric/RenewableEnergy/faqs/01REandRPSeligibility.htm.
[73] California Energy Commission website: http://www.energy.ca.gov/portfolio/index.html.

Although California is implementing energy policies that require substantial increases in the generation of electricity from renewable resources, it is anticipated that extensive improvements will be necessary to guarantee that the electricity generated by new renewable power facilities will be reliably delivered to consumers. To address this issue, California has established the Renewable Energy Transmission Initiative (RETI), which is operated statewide to identify the transmission projects needed to do the following:

- Accommodate the renewable energy goals;
- Support future energy policy;
- Facilitate transmission corridor designation;
- Facilitate transmission and generation siting; and
- Facilitate permitting.[75]

According to the California Energy Commission:

> RETI will assess all competitive renewable energy zones in California and possibly also in neighboring states that can provide significant electricity to California consumers by the year 2020. RETI also will identify those zones that can be developed in the most cost-effective and environmentally benign manner and will prepare detailed transmission plans for those zones identified for development.[76]

The RETI effort will be supervised by a coordinating committee comprised of California entities such as:

- The California Public Utilities Commission;
- The California Energy Commission;
- The California Independent System Operator; and
- Publicly-Owned Utilities.[77]

The California Solar Initiative, created by the CPUC in January 2006, provides a total of $2.9 billion over ten years for renewable energy rebates, and does the following:

- Provides incentives to customer-side photovoltaics (PV), other renewable fuel projects, and solar thermal electric projects less than one megawatt capacity;
- Authorizes a pilot solar water heater incentive program for customers of San Diego Gas and Electric Company;
- Sets initial PV incentive levels at $2.80 per watt (went into effect January 1, 2006, to be reduced by an average of approximately 10 percent annually);

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[74] California Public Utilities Commission website: http://www.cpuc.ca.gov/PUC/energy/electric/RenewableEnergy/.
[75] California Energy Commission website: http://www.energy.ca.gov/reti/index.html.
[76] Ibid.
[77] Ibid.

- Allocates 10 percent of program funds for low-income and affordable housing; and
- Develops a pay-for-performance incentive structure to reward high-performing solar projects.[78]

The Energy Commission established a geothermal program in 1981 which "promotes the research, development, demonstration, and commercialization of California's earth heat energy sources, and which continues to develop a portfolio of near- to long-term research and development projects in California." The funding source is revenue paid to the United States government by geothermal developers from production on federal leases in California. Typically, there are funds available for awards to qualifying applicants, which are provided as grants or loans.[79]

The Energy Commission offers cash rebates on eligible grid-connected small wind and fuel cell renewable energy electric-generating systems through its Emerging Renewables Program (ERP). Specifically, the technologies eligible for ERP funding are the following:

- Small Wind Turbines - small, electricity-producing, wind-driven generating systems with a rated output of 50 kilowatts or less; and
- Fuel Cell - the conversion of sewer gas, landfill gas, or other renewable sources of hydrogen or hydrogen-rich gases into electricity by a direct chemical process.[80]

Another concern for California is the high energy consumption by the transportation sector. According to the California Air Resources Board (ARB), almost 100 percent of California's transportation system is fueled currently by fossil fuels, and the demand for transportation fuels is projected to grow by almost 35 percent over the next 20 years.[81] To address this dilemma, and pursuant to law, the ARB is to develop a joint plan with the Energy Commission to spend $25 million for the purposes of incentivizing the use and production of alternative fuels, including zero emission fuels. Further, the ARB is to develop regulations for the production of hydrogen as a transportation fuel. The regulations will encompass standards for renewable energy, criteria pollutants, and greenhouse gases.[82]

[78] Go Solar California website: http://www.gosolarcalifornia.ca.gov/csi/index.html.
[79] California Energy Commission website: http://www.energy.ca.gov/geothermal/index.html.
[80] California Energy Commission website: http://www.consumerenergycenter.org/erprebate/.
[81] California Energy Commission website: http://www.energy.ca.gov/afvs/vehicle_fact_sheets/index.html.
[82] State of California website: http://www.hydrogenhighway.ca.gov/.

The following is the estimated number of alternative-fueled vehicles being used in 2005 in the State of California:

Compressed Natural Gas (CNG)	Electric	Ethanol, 85% (E85)	Hydrogen	Liquefied Natural Gas (LNG)	Liquefied Petroleum Gas (LPG)	Total
31,111	25,892	21,224	0	1,244	14,459	93,930

Source: Energy Information Administration, Office of Coal, Nuclear, Electric, and Alternate Fuels and the DOE/GSA Federal Automotive Statistical Tool (FAST), 2005.[83]

California currently has two small ethanol producers, both of which make ethanol from food and beverage industry residuals. Several new, larger projects are underway to produce ethanol from corn and sugar cane, and eventually, waste and residual feedstocks when technologies for processing these materials are more widely available. Most of California's current ethanol fuel supply is delivered from other states in rail tank cars. It is then stored at fuel terminals and added to gasoline when tank trucks are filled for delivery to fueling stations. [84]

Energy Efficient Buildings

The portion of California's building code that addresses energy efficiency for buildings is found in Title 24, Part 6, of the California Code of Regulations: California's Energy Efficiency Standards for Residential and Nonresidential Buildings. The California Building Standards Commission is responsible for adopting, approving, publishing, and implementing California's building codes and standards.[85] Established by the California Building Standards Law in 1953, the California Building Standards Commission is an independent commission within the State and Consumer Services Agency. Commission members are appointed by the Governor and confirmed by the State Senate.[86]

In December 2004, Governor Schwarzenegger signed Executive Order S-20-04 which, together with an accompanying Green Building Action Plan, became known as the Green Building Initiative (GBI). The GBI directs that public buildings be 20 percent more energy efficient by 2015 and established a Green Action Team, which is comprised of several appropriate agency heads, a commissioner from the CPUC, and a representative from the real estate industry, to implement sustainable building practices and energy efficiency efforts statewide. The GBI provided mandates for "greening" state buildings with the goal of encouraging the private sector to set the same goals.[87]

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[83] *Alternative-Fueled Vehicles in Use* - link from Energy Information Administration website: http://tonto.eia.doe.gov/state/state_energy_profiles.cfm?sid=TX.
[84] California Energy Commission website: http://www.energy.ca.gov/afvs/vehicle_fact_sheets/ethanol.html.
[85] California Building Standards Commission website: http://www.bsc.ca.gov/default.htm.
[86] California Building Standards Commission website: http://www.bsc.ca.gov/abt_bsc/default.htm.
[87] Green California website: http://www.green.ca.gov/default.htm.

In September 2006, the Governor signed Assembly Bill 2160, which requested that the Energy Commission report on several items under the GBI, including obstacles to and incentives for green building projects in the private commercial sector. The Energy Commission held a public workshop in September 2007 to assist in identifying these obstacles and incentives.[88] The report should be released in early 2008.[89]

The Energy Commission administers an Energy Efficiency Financing Program, which provides financing for public schools and colleges, public hospitals and care institutions, and local governments through low-interest loans for feasibility studies and the installation of energy-saving measures in existing buildings, some new construction, or other energy-using facilities. Some energy saving measures include the following:

- Lighting;
- Motors or variable frequency drives and pumps;
- Building insulation;
- Heating and air conditioning modifications;
- Automated energy management systems and controls;
- Energy generation including renewable energy projects and cogeneration; and
- Streetlights and LED traffic signals.[90]

Loans for energy projects must be repaid from energy cost savings within 15 years, including principal and interest (approximate 10 years simple payback, which is calculated by dividing the dollar amount of the loan by the anticipated annual energy cost savings). Loans awarded for energy audits or studies must be repaid within two years. Up to $26 million in loan funds are available, with the maximum loan amount set at $3 million per application at a 3.95 percent interest rate. Loan applications are accepted on a first-come, first-served basis. The projects must demonstrate technical and economic feasibility and the loan term cannot exceed the useful life of loan-funded equipment.[91]

California established appliance efficiency regulations in 1976 in an effort to reduce California's energy consumption. The regulations and standards are updated by the Energy Commission and approved by the California Office of Administrative Law periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods.[92]

The Commission maintains a database of energy efficient appliances which can be used for verifying compliance with efficiency standards. According to the Commission, information included in the database is obtained from more than 500 different appliance manufacturers who must use standard test methods to prove the energy use and efficiency of their products.

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[88] California Energy Commission website: http://www.energy.ca.gov/greenbuilding/ab2160/index.html.
[89] Conversation with California Energy Commission staff. January 2008.
[90] California Energy Commission website: http://www.energy.ca.gov/efficiency/financing/index.html.
[91] California Energy Commission website: http://www.energy.ca.gov/contracts/efficiency_pon.html.
[92] California Energy Commission website: http://www.energy.ca.gov/appliances/index.html.

Appliances currently covered include the following:

- Refrigerators, Refrigerator-Freezers, Freezers, Wine Chillers;
- Plumbing Fittings and Fixtures;
- Central Air Conditioners and Heat Pumps;
- Room A/C, Package Terminal A/C, Package Terminal Heat Pumps;
- Spot Air Conditioners and Computer Room Air Conditioners;
- Cooking and Washing Appliances;
- Central Fan-Type Furnaces;
- Gas Space Heaters;
- Boilers;
- Pool Heaters, Portable Electric Spas, and Pool Pumps;
- Lighting Control Devices;
- Fluorescent Lamp Ballasts;
- Water Heaters (Gas);
- Water Heaters (Electric);
- Beverage Vending Machines;
- Distribution Transformers;
- Exit Signs;
- Traffic Signals;
- Ceiling Fans, Residential Exhaust Fans, and Whole House Fans;
- Consumer Audio & Video Products;
- Water Dispensers; and
- Commercial Cooking.[93]

According to the New America Foundation, California's building efficiency standards (along with those for energy efficient appliances), have saved more than $56 billion in electricity and natural gas costs since 1978. The Foundation estimates that the standards will save an additional $23 billion by 2013. "Following California's example many states have implemented Energy Efficiency standards specifically for appliances which exceed national regulations and include standards for both federally-regulated appliances and non-federally-regulated appliances."[94]

Climate Change

California is the second largest state emitter of greenhouse gases in the United States and twelfth largest emitter in the world.[95] According to the California Energy Commission's *2007 Integrated Energy Policy Report*,

> Most of California's greenhouse gas emissions - 81 percent - are CO_2 produced from fossil fuel combustion, 2.8 percent are from other sources of CO_2, 5.7 percent are from methane, and 6.8 percent are from nitrous oxide. Of those

[93] California Energy Commission website: http://www.energy.ca.gov/efficiency/appliances/index.html.
[94] New America Foundation website: http://www.newamerica.net/programs/climate/building_blocks/efficiency.
[95] *2007 Integrated Energy Policy Report*. California Energy Commission. December 5, 2007. p. 1.

emissions, 28 percent results from electricity generation and 39 percent from transportation.[96]

On June 1, 2005, Governor Schwarzenegger signed Executive Order S-3-05, which established the following statewide greenhouse gas emission targets:

- By 2010, reduce to 2000 Emission Levels;
- By 2020, reduce to 1990 Emission Levels; and
- By 2050, reduce to 80 percent Below 1990 Levels.[97]

To meet the targets, the Governor directed the Secretary of the California Environmental Protection Agency to lead a Climate Action Team, comprised of the Secretary of the Business, Transportation and Housing Agency, Secretary of the Department of Food and Agriculture, Secretary of the Resources Agency, Chairperson of the Air Resources Board, Chairperson of the Energy Commission, and President of the Public Utilities Commissions. The team was charged with implementing programs and policies in the state that reduce greenhouse gas emissions.[98]

In 2006, California adopted the Global Warming Solutions Act of 2006,[99] which required that the California Air Resources Board determine the statewide 1990 greenhouse gas (GHG) emissions level as a statewide aggregate emissions limit to be achieved by 2020. In January 2007, the statewide GHG emissions inventory responsibility was moved from the Energy Commission to the Air Resources Board.[100]

The Energy Commission and the California Public Utilities Commission work together to provide recommendations to the California Air Resources Board, as required by the California Global Warming Solutions Act of 2006. The law required the state to adopt emissions standards for investor-owned and municipal utilities. In 2007, the Public Utilities Commission adopted a GHG performance standard, which prohibits investor-owned utilities from entering or renewing long-term contracts for electricity from sources that emit more carbon dioxide than a modern natural gas plant. The standard was adopted as part of California's strategy to combat climate change by reducing emissions of greenhouse gases and is aimed at encouraging investment in cleaner energy sources, such as wind and solar, and discouraging the use of coal and other high-polluting sources.[101]

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[96] Ibid. p. 2.
[97] Executive Order S-3-05, by the Governor of the State of California.
[98] California Climate Change Portal website: http://www.climatechange.ca.gov/climate_action_team/index.html.
[99] Assembly Bill 32 - Nuñez & Pavley, Statutes of 2006, Chapter 488.
[100] California Climate Change Portal: http://www.climatechange.ca.gov/policies/greenhouse_gas_inventory/index.html.
[101] 'Dirty' power put off-limits to utilities. *San Diego Union-Tribune*. January 26, 2007.

The California Climate Change Portal website[102] provides a comprehensive description of the following state agencies' roles in climate change activities:

- California Air Resources Board;
- California Department of Food and Agriculture;
- California Department of Forestry and Fire Protection;
- California Energy Commission;
- California Energy Commission's PIER Program;
- California Environmental Protection Agency;
- California Integrated Waste Management Board;
- California Public Utilities Commission;
- California Technology, Trade and Commerce Agency;
- Caltrans;
- Department of Fish and Game;
- Department of General Services;
- Department of Toxic Substances Control;
- Department of Water Resources;
- Governor's Office of Planning and Research;
- State and Consumer Services Agency;
- State Water Resources Control Board; and
- University of California Campuses;[103]

California has created, by state statute, a Climate Action Registry (Registry) which is a non-profit, voluntary registry for greenhouse gas emissions. The purpose of the Registry is to help companies and organizations with operations in the state to establish GHG emissions baselines by which to measure any future GHG emission reduction requirements. Registry participants include businesses, non-profit organizations, municipalities, state agencies, and other entities. When organizations become a part of the Registry, they agree to register their GHG emissions for all operations in California, and are encouraged to report nationwide. The Registry requires the inclusion of all direct GHG emissions, along with indirect GHG emissions from electricity use.[104]

According to the Climate Action Registry website,

> Using any year from 1990 forward as a base year, participants can record their GHG emissions inventory. The State of California, in turn, will offer its best efforts to ensure that participants receive appropriate consideration for early actions in the event of any future state, federal or international GHG regulatory scheme….[105]

[102] State of California Climate Change Portal website: http://www.climatechange.ca.gov/index.html.
[103] State of California Climate Change Portal website: http://www.climatechange.ca.gov/policies/state_roles.html.
[104] California Climate Action Registry website: http://www.climateregistry.org/ABOUTUS/.
[105] Ibid.

The Registry requires the reporting of only CO_2 emissions for the first three years of participation, although participants are encouraged to report the remaining five GHGs covered in the Kyoto protocol (CH4, N2O, HFCs, PFCs, and SF6). The reporting of all six gases is required after three years of Registry participation. [106]

California is also a member of the national Climate Registry, a collaborative initiative between states, provinces, and tribes which is attempting to develop and manage a common greenhouse gas emissions reporting system. The goal is to "provide an accurate, complete, consistent, transparent and verified set of greenhouse gas emissions data from reporting entities, supported by a robust accounting and verification infrastructure."[107]

In regard to climate change and transportation, it is estimated that approximately 26 million registered vehicles operating in California produce about 40 percent of the state's greenhouse gas emissions. To address this problem, the Fuels and Transportation Division was created within the Energy Commission to focus on transportation energy and alternatives to conventional fuels.[108] The California Air Resources Board approves motor vehicle regulation including those designed to reduce greenhouse gas emissions.

The Federal Clean Air Act allows California to set its own vehicle emission standards; however, in order to do so, the federal Environmental Protection Agency (EPA) must grant a waiver. On December 19, 2007, the EPA denied California a waiver to pass its own rules regarding greenhouse gas emission standards for new motor vehicles. In response, on January 2, 2008, California and 15 other states filed suit against the federal government for denying the waiver. The 15 states joining California are: Arizona, Connecticut, Delaware, Illinois, Maine, Maryland, Massachusetts, New Jersey, New Mexico, New York, Oregon, Pennsylvania, Rhode Island, Vermont and Washington.[109] On February 1, 2008, the Florida Department of Environmental Protection and the State of Iowa jointly filed a motion to intervene in the suit.

Policy Development and Coordination

As evidenced in this brief description of California's energy policy governance, several entities are involved in developing energy policy in the State of California:

- The California Energy Commission develops and implements both building and appliance energy efficiency standards, develops transportation fuel policy and programs, manages climate change research programs, determines power plant siting, and in conjunction with the California Public Utilities Commission, coordinates the Renewable Portfolio Standard, and administers a wide variety of other energy efficiency programs.

[106] Ibid.
[107] The Climate Registry website: http://www.theclimateregistry.org/.
[108] California Energy Commission website: http://www.energy.ca.gov/transportation/index.html.
[109] New American Foundation website: http://www.newamerica.net/programs/climate/building_blocks/transportation.

- The California Public Utilities Commission coordinates with the Energy Commission on energy efficiency programs and the Renewable Portfolio Standard, and regulates utilities.
- The California Air Resources Board, along with the U.S. Environmental Protection Agency, sets the power plant emission standards in California and approves motor vehicle regulations, including those designed to reduce greenhouse gas emissions.
- The California Environmental Protection Agency leads the Climate Action Team in taking action to reduce greenhouse gas emissions across the state.
- The California Building Standards Commission, within the State and Consumer Services Agency, administers California's Building Code, including energy efficiency standards.

There is not one entity whose responsibility it is to conceptualize, plan, and routinely develop, coordinate, and ensure compliance with a comprehensive energy plan for the State of California.

New York

New York State, with a population of over 19 million people, ranks third in state population following California and Texas. Although New York's total energy consumption is among the highest in the United States, per capita energy consumption is among the lowest, due in part to the region's widely used mass transportation systems.

The average New York household consumes about one-half the electricity of the average U.S. household and ranks fifth in electricity consumption.[110] The residents of New York State consume an average of 145,000 million kilowatt hours of electricity annually. Between the years 1980 and 2001, there was an annual average increase of 1.4% in electricity consumption.[111] In 2001, the fuel breakdown for electric power generation in New York State was:

- Nuclear energy 29%
- Natural Gas 25%
- Coal 16%
- Hydropower 15%
- Petroleum 12%
- Wood and woodwaste 3%[112]

The New York Harbor area between New York and New Jersey has over 40 million barrels of refined product storage capacity, making it the largest petroleum product hub in the United States. New York's petroleum products are supplied by regional refineries located in New Jersey and Pennsylvania, the Colonial Pipeline system from the Gulf Coast, and foreign imports that originate in Canada, the Caribbean, South America, and Europe. New York City, like many large cities and the surrounding metropolitan areas, requires reformulated gasoline blended with ethanol for transportation. The New York Harbor is the primary Northeast distribution hub for ethanol supplies. In 2005, the state consumed 137,355 thousand barrels in motor gasoline.

In New York State, there are multiple agencies, offices, and divisions that develop and implement energy policy. Some of these governmental entities include the:

- New York State Energy Research & Development Authority (NYSERDA);
- Public Service Commission (PSC);
- Department of Public Service (DPS);
- Department of State (DOS); and
- Department of Environmental Conservation (DEC).

[110] U.S. Department of Energy/State Energy Profiles http://tonto.eia.doe.gov/state/state_energy_profiles.cfm?sid=NY
[111] U.S. Department of Energy/State energy statistics http://www.eere.energy.gov/states/state_specific_statistics.cfm/state=NY
[112] U.S. Department of Energy/State energy statistics http://www.eere.energy.gov/states/state_specific_statistics.cfm/state=NY

New York State's dedicated funding stream is the New York Energy Smart Program, which is used, in addition to federal funding, to fund energy policies. The five-year $750 million System Benefit Charge allocation under NYSERDA has been specified for the following goals:

- $436.3 million for energy efficiency programs, including $16.5 million for special consumer education and outreach programs;
- $113.7 million for low-income energy affordability programs; and
- $200 million for research and development projects, with a focus on promoting renewable resources, distributed electric generation, and combined heat and power installations.[113]

The System Benefit Charge is assessed by the Department of Public Service (DPS) on the state's investor-owned utilities which, in turn, assess their rate payers. Annual funding is approximately $175 million. Each utility is responsible for collecting an amount equal to a percentage of their revenue. Individual utility customers are assessed a fee based on their rate classification, which is typically less than $1 per month. NYSERDA then administers funds collected from the System Benefit Charge.[114]

Electric Power Generation

Electric power generation in New York is governed primarily by three governmental entities: the New York State Energy Research & Development Authority (NYSERDA), the Department of Environmental Conservation (DEC), and the Public Service Commission (PSC). These entities govern through power plant siting, regulation of power plant emissions, and rate setting.

Unlike many states, New York does not rely heavily on any one fuel for electricity generation. Nuclear power, produced at New York's four nuclear plants (six reactors), is the leading generation fuel, typically accounting for about three-tenths of state power generation.[115] NYSERDA develops statutory radioactive waste policy and nuclear coordination functions in the state. NYSERDA's President is the Governor's designated liaison to the U.S. Nuclear Regulatory Commission (NRC).

In New York, electric power plant siting is regulated by the State Board on Electric Generation Siting and Environment. The Siting Board is made up of four commissioners, one each from the New York State Departments of Environmental Conservation, Health, Economic Development, and Public Service or their designees. Also, two additional members are named by the Governor after an application is filed: one from the judicial district and one from the county where the facility is proposed to be located. The Chairman of the PSC (who directs the management of New York State Department of Public Service)

[113] New York State Energy Research and Development Authority website: http://www.nyserda.org/ny_energy_smart.asp
[114] Information provided by Rachel Winters, Legislative Affairs Analyst, with NYSERDA.
[115] Federal Department of Energy/State Energy Profiles website: http://tonto.eia.doe.gov/state/state_energy_profiles.cfm?sid=NY.

serves as the Chairman of the Siting Board. In addition, staff of the Department of Public Service (DPS) functions as staff to the Siting Board.[116]

The PSC is responsible for the setting of rates for investor-owned utilities. The PSC is also attempting to pursue economic development by contracting with utility companies to integrate renewable energy sources for consumers. Until recently, New Yorkers have purchased electricity only from their local utility. The PSC has opened New York's electric industry to competition. While the local utility companies will continue to deliver electricity through its wires, utility companies may now compete to sell electricity in New York State.[117] Consumers enter into an individual contract with the utility companies and the DPS provides lists of eligible (as determined by the PSC) companies to the public.

The Regional Greenhouse Gas Initiative, or RGGI, is a regional agreement to reduce greenhouse gas emissions from power plants. Responsibility for implementing RGGI is shared by three departments: the DPS, the DEC, and the NYSERDA. The DEC and NYSERDA are currently engaged in rulemaking to implement RGGI.[118] Staff of the DPS will be helping to develop the mechanics of RGGI. (The Chairman of the PSC also operates as the CEO of the Department of Public Service.)

In 2004, the PSC established Renewable Portfolio Standards (RPS) requiring 25% of electricity to come from renewables by 2013. The PSC designated NYSERDA as the central administrator of the RPS program.

In 2007, the PSC initiated a proceeding to design an electric and natural gas Energy Efficiency Portfolio Standard. The Energy Portfolio Standard will establish targets for energy efficiency, similar to Demand Side Management (DSM) programs, intended to reverse the pattern of increasing energy use in New York State through conservation.[119]

Alternative Energy Initiatives

New York has considerable renewable energy potential. Several powerful rivers, including the Niagara and the Hudson, provide New York with some of the greatest hydropower resources in the country, and New York's Catskill and Adirondack Mountains offer substantial wind power potential. In addition, parts of New York are densely forested, allowing for potential fuelwood harvesting.[120]

In New York State, several state governmental entities are involved with alternative energy initiatives to produce electricity and alternative fuel sources for motor vehicles. For the most part, however, the NYSERDA maintains administrative authority for most alternative energy initiatives, with incentives through the state's Energy Smart Program and in conjunction with

[116] New York Department of Public Service website: http://www.dps.state.ny.us/sitingboard.htm.
[117] New York Department of Public Service website: http://www.dps.state.ny.us/howtoshop.htm.
[118] New York Department of Environmental Conservation website: http://www.dec.ny.gov/energy/rggi.html.
[119] New York Department of Public Service website: http://www.dps.state.ny.us/Case_07-M-0548.htm.
[120] Federal Department of Energy/Sate Energy Profiles website: http://tonto.eia.doe.gov/state/state_energy_profiles.cfm?sid=NY.

federal programs. As mentioned above, nuclear power, produced at New York's four nuclear plants, is the leading generation fuel, but in addition, New York is one of the top hydroelectric power producers in the country, and its hydroelectric generation is the highest of any state east of the Rocky Mountains. Non-hydroelectric renewable energy sources contribute only minimally to the state power grid, although New York is one of the nation's top generators of electricity from municipal solid waste and landfill gas.[121]

As discussed earlier under electric power generation, by 2013, twenty-five percent of all power used in New York is to come from renewable resources, such as solar, wind, biomass, and hydroelectricity, via the Renewable Portfolio Standard (RPS). In order to achieve RPS goals, NYSERDA offers grants and incentives. Incentives are available for solar electricity and small wind. Incentives are also available for construction and operation of large renewable energy power plants, such as wind farms and biomass facilities. [122]

The Office of General Services is the primary governmental entity that administers programs for motor vehicles. In 2005, the Governor of New York issued executive orders requiring all state agencies and authorities to purchase and use biofuels for the state motor vehicle fleet. Under the Office of General Services, the Clean Fueled Vehicles Council is responsible for developing a fueling infrastructure network to support the increasing numbers of alternative fueled vehicles in the state's fleet.[123]

Energy Efficient Buildings

The Department of State (DOS), the New York State Energy & Research Development Authority (NYSERDA), the Department of Environmental Conservation (DEC), the Dormitory Authority (DASNY), and the Office of General Services all play a part in the effort to reduce energy consumption and integrate renewable energy sources through energy efficient buildings.

The Department of State, through their Codes Division, has developed an Energy Conservation Construction Code to integrate renewables into building construction. Effective in 2007, New York updated the statewide 2007 Energy Conservation Construction Code of New York State which is based upon the 2004 International Energy Construction Code (IECC) for residential and IECC 2003 for commercial buildings with state specific amendments. Additionally, New York approved state specific trade options for homes which allow for high efficiency furnaces, boilers, heat pump units efficiency, and tightly sealed homes to gain credit against insulation values upon verification.[124]

[121] U.S. Department of Energy/State Energy Profiles website: http://tonto.eia.doe.gov/state/state_energy_profiles.cfm?sid=NY.
[122] NYSERDA website: http://www.powernaturally.org/.
[123] New York Office of General Services website: http://www.ogs.state.ny.us/SupportServices/aboutus/cleanfuels/default.html.
[124] U.S. Department of Energy/Status of State Code: http://www.energycodes.gov/implement/state_codes/state_status.php?state_AB=NY .

The NYSERDA provides computer modeling, design charrette[125] coordination, and assistance in obtaining Leadership in Energy & Environmental Design (LEED) certification. In addition, NYSERDA provides Green Building Tax Credit assistance, green materials recommendations, and commission's life cycle costing analysis to building design teams to help make new and rehabilitated commercial, industrial, and institutional buildings green. The NYSERDA, along with a private consulting company,[126] provided technical assistance to the DEC in developing the technical components of proposed draft regulations for New York State's Green Building Tax Credit.

The DASNY provides financing and construction services to public and private universities, not-for-profit healthcare facilities and other institutions which serve the public good. It promotes and supports sustainable design approaches and construction practices. The DASNY requires that as of January 1, 2008, all projects that are new construction, addition, or significant renovation shall include submission to the U.S. Green Building Council (USGBC) for a LEED Silver rating. The New York Office of General Services offers a procedural manual as a guide for designing projects.[127]

Climate Change

The Center for Clean Air Policy, in collaboration with the New York Greenhouse Gas Task Force, made recommendations to then Governor Pataki to adopt a climate action plan designed to increase energy savings, security, air-quality, and fiscal prudence.[128]

New York is a member of the national Climate Registry, which is a collaboration between states, provinces, and tribes constructed to manage a common greenhouse gas emissions reporting system. The Climate Registry supports various greenhouse gas emission reporting and reduction policies for its reporting entities.[129]

As discussed earlier under electricity generation, New York State is part of the Regional Greenhouse Gas Initiative (RGGI) and has signed a Memorandum of Understanding (MOU) to implement a cap and trade program to lower $C0_2$ emissions from power plants. Under the RGGI agreement, the governors of 10 Northeastern and Mid-Atlantic states have committed to cap the amount of carbon dioxide (or CO_2, the principal greenhouse gas) that power plants are allowed to emit. State regulations will hold the allowed level constant through 2014, and then gradually reduce it. By 2019, the cap will be 10 percent lower than it initially was, and emissions are estimated to be 16 percent lower than they would be if the power plants had continued emitting on a business-as-usual basis.

[125] Green Design Charrettes are meetings between stakeholders of a construction project with the purpose of exploring green building opportunities and feasibility. NYSERDA coordinates green design charrettes for design teams, building owners, and developers to assist in the "building green" process.
[126] Dean Winter Associates.
[127] New York Office of General Services website: http://www2.ogs.state.ny.us/query.html?qp=&qt=+green+buildings.
[128] New American Foundation website: http://www.newamerica.net/files/04-2003_NYGHG_Recommendations.pdf.
[129] The Climate Registry website: http://www.theclimateregistry.org/index.html.

Responsibility for implementing RGGI will be shared by three departments of New York state government: the Department of Public Service (DPS), the Department of Environmental Conservation (DEC), and the New York State Energy Research & Development Authority (NYSERDA). The DEC and the NYSERDA are currently engaged in rulemaking to implement RGGI.[130] The DEC will establish New York's CO_2 Budget Trading Program through a new rule (6 NYCRR Part 242) and revisions to an existing rule (6 NYCRR Part 200, General Provisions). The NYSERDA administers the auction process by which the state sells emission allowances to power plants through a new rule (21 NYCRR Part 507 - CO_2 Allowance Auction Program). Under this rule, proceeds from sale of the allowances will fund projects and programs for energy efficiency and clean renewable energy.

As mentioned earlier, in 2004, New York State, through the NYSERDA and the PSC, implemented renewable portfolio standards (RPS) in an effort to combat climate change. The PSC ordered the major investor-owned utilities to collect revenues from ratepayers, to be administered by the NYSERDA, for the purpose of achieving a mandatory RPS target set at 24% of retail electricity consumption. The RPS program is designed such that the remaining 1% of the 25% goal comes from voluntary purchases made by retail customers. This combination of voluntary and mandatory targets creates a need for proactive participation from all energy stakeholders, including consumers, to achieve the 25% goal. [131]

In 2005, the New York State Environmental Board approved state regulations that required significant reductions in greenhouse gas emissions from motor vehicles by adhering to California's vehicle emissions standards.[132]

Policy Development and Coordination

In New York State, although there are many governmental agencies that play a role in policy development, there is no one agency or authority that ensures consistent development, coordination, and implementation of energy policies. The majority of energy policies, however, are administered by three governmental entities:

- New York State Energy Research & Development Authority (NYSERDA);
- Public Service Commission (PSC); and
- Department of Environmental Conservation (DEC).

The NYSERDA administers a portion of New York State's energy policies, in part because NYSERDA administers the funds collected from the System Benefit Charge. Energy issues included in the NYSERDA's purview are often shared with other governmental entities in the state. These energy policy coordination areas include: regulation of nuclear waste involved in electric power generation, renewable portfolio standards, alternative energy initiatives, alternative fuel development, and energy efficient buildings.

[130] New York Department of Environmental Conservation website: http://www.dec.ny.gov/energy/rggi.html.
[131] New York State Research and Development Authority website: http://www.nyserda.org/rps/about.asp.
[132] The Pew Center on Global Climate Change website:: http://www.pewclimate.org/search/node/new+york+state.

The PSC contributes to the state's energy policy development through regulation of electric utilities. The PSC's involvement in energy policy coordination in New York State includes, in conjunction with other governmental agencies: power plant siting, electric power generation including renewable portfolio standards, efficiency portfolio standards, and net metering.

The DEC in New York State, and more specifically, the Division of Air Resources, administers the environmental aspect of energy policy. The DEC, in a combined effort with other governmental agencies, deals with emission standards relating to coal-fired plants, petroleum, and natural gas, energy efficient buildings and design standards, and policies relating to climate change through their agreement with RGGI.

Ohio

With a population of 11.5 million people, Ohio is among the top states in total energy consumption. The industrial sector dominates energy consumption, largely due to several energy-intensive industries, such as steel. The state is rich in coal and offshore wind energy potential but has relatively few other energy resources.

Although Ohio is a moderate producer of coal, it is also a substantial consumer of coal. Ohio's production typically supplies less than one-third of state consumption. Coal fuels approximately nine-tenths of net electricity generation in Ohio.[133] The state's electricity consumption increased by 42,350 million kilowatt-hours (kWh) between 1980 and 2001, representing an annual average increase of 1.5%.[134] Ohio's natural gas consumption is led by the residential and industrial sectors. Nearly seven-tenths of Ohio households use natural gas as their primary source of energy for home heating.

In 2001, Ohio derived electricity from the following fuel breakdown:

- Coal 87%
- Nuclear 11%
- Natural Gas 1%
- Petroleum* 0%
- Wood Waste* 0%
- Hydropower* 0%[135]

*Petroleum, Wood Waste, and Hydropower have small percentages that collectively total 1%.

Ohio's total petroleum demand is also high, and Ohioans consume large amounts of motor gasoline and distillate fuel.[136] Ohio's crude oil production is minor, but the state has the second-highest refining capacity in the Midwest. Ohio's crude oil output is derived from wells producing fewer than 10 barrels a day (stripper wells) in the eastern part of the state. Refineries primarily depend on crude oil delivered by pipeline from the Gulf Coast and through an oil transportation hub in central Illinois. Ohio has a large network of product pipelines that connect its refineries to markets in Ohio and adjacent states. Ohio is one of the few states in the nation that allow the statewide use of conventional motor gasoline; however, several ethanol plants are currently being built in Ohio that will make the state a high-ranking producer and probable consumer of ethanol. [137]

[133] U.S. Department of Energy/State Energy Profiles website: http://tonto.eia.doe.gov/state/state_energy_profiles.cfm?sid=OH.
[134] U.S. Department of Energy website: http://www.eere.energy.gov/states/state_specific_statistics.cfm/state=OH.
[135] U.S. Department of Energy website: http://www.eere.energy.gov/states/state_specific_statistics.cfm/state=OH.
[136] Distillate fuel oil is lighter fuel oils distilled off during the refining process and used primarily for space heating, on– and off–highway diesel engine fuel (e.g., railroad engine fuel and fuel for agricultural machinery), and electric power generation.
[137] Energy Information Administration website: http://tonto.eia.doe.gov/state/state_energy_profiles.cfm?sid=OH.

Ohio also has multiple state agencies, offices, and divisions that play a role in developing and implementing energy-related policies. In Ohio, some of the governmental entities administering energy policy include the:

- Ohio Department of Development (DOD);
- Public Utilities Commission of Ohio (PUCO);
- Ohio Environmental Protection Agency (OEPA);
- Ohio Department of Agriculture (ODA);
- Ohio Air Quality Development Authority (OAQDA);
- Department of Administrative Services; and
- Department of Commerce.

The State of Ohio has a dedicated funding stream to fund energy policies with a state Public Benefit Fund called the Advanced Energy Fund. Ohio uses the Advanced Energy Fund to provide grants for energy efficiency and renewable energy initiatives. The fund is generated through a fee to consumers on their utility bill. The fee is a 9 cent per month charge on each account, regardless of use, for customers of investor-owned electric utilities. The fund generates approximately $5 million annually.[138]

Electric Power Generation

Electric power generation in Ohio is governed primarily by three governmental entities: the Ohio Air Quality Development Authority (OAQDA), the Ohio Environmental Protection Agency (OEPA), and the Public Utilities Commission of Ohio (PUCO). These entities regulate power plant siting, power plant emissions, and rate setting.

In Ohio, within the PUCO, there is a Power Plant Siting Board that makes decisions regarding power plant siting. The board is made up of the chairman of the PUCO, the Directors of the Departments of Environmental Protection, Health, Development, Natural Resources, Agriculture, and a representative of the public who is an engineer and is appointed by the Governor from a list of three nominees submitted by the Office of the Consumers' Counsel. In addition, the board includes four legislative members who can participate fully in all the board's deliberations and activities except that they serve as nonvoting members. The Speaker of the House of Representatives appoints one legislative member, and the President of the Senate and minority leader of each house, each appoint one legislative member.[139]

Regulation of power plant emissions is mainly governed by the PUCO, the Division of Air Pollution Control (DAPC), within the OEPA, and the OAQDA. The PUCO regulates utility companies. The OAQDA and the DAPC work in conjunction with the state and federal EPA regulations to govern the emission standards.

[138] Information provided by Greg Payne, Energy Public Policy Liaison, Ohio Department of Development.
[139] Public Utilities Commission of Ohio website: http://www.puco.ohio.gov/PUCO/ORC/Code.cfm?id=5412&terms=power+siting+board&searchtype=1&fragment=False.

There are several Ohio state agencies, in conjunction with the U.S. Nuclear Regulatory Commission, that administer the state's nuclear policies. Ohio has two nuclear power plants.[140] The PUCO is designated as Ohio's routing agency for radioactive materials and spent nuclear fuel. They work closely with the Ohio Emergency Management Agency and Ohio Department of Health to coordinate and conduct inspections of high-level and special interest radioactive material shipments, such as spent fuel and radioactive industrial sources.

In Ohio, there is pending legislation to create renewable portfolio standards (RPS) for the state. An energy bill, including advanced energy portfolio standards (SB 221), has been passed by the Senate and is currently before the House.[141]

The PUCO provides for net metering in the state. (If the consumer's renewable energy system is connected to the utility electric grid, net metering allows the consumer to send any excess electricity back to the electric grid and the consumer's electric meter actually spins backward.) Each investor-owned utility has simplified interconnection standards (so the consumer can connect their renewable energy system to the grid) and the ability[142] to offer a net metering agreement.[143] Qualifying facilities include solar, wind, biomass, landfill gas, hydropower, microturbines (with a capacity of 100 kW or less), and fuel cells. Such facilities must also be located on a customer generator's premises, and be connected in parallel to the utility's system. Finally, the generation facility must be intended primarily to offset part or all of the customer-generator's electricity requirements.[144]

Alternative Energy Initiatives

Policy administration of alternative forms of energy in Ohio such as solar, wind, hydroelectric, biomass/waste, and geothermal energies fall under the administration of the Energy Office within the Department of Development (DOD). The DOD administers the state's economic development programs. The Energy Office administers grants for energy efficiency and renewable energy initiatives through incentives and funding opportunities like the Advanced Energy Fund, as well as provides information about federal funding from the U.S. Department of Energy State Energy Programs (SEPs).

Some of the alternative fuel research in Ohio is being conducted through the state's higher education institutions, non-profit research organizations, and private companies. As an example, the U.S. Department of Energy has announced funding for an Ohio State University project that will promote the production of hydrogen from coal at large-scale facilities. The

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[140] U.S. Department of Energy website: http://www.eia.doe.gov/cneaf/nuclear/page/at_a_glance/states/statesoh.html.
[141] Ohio General Assembly website: http://www.legislature.state.oh.us/bills.cfm?ID=127_SB_221.
[142] Electric suppliers (electric utilities and competitive suppliers) are only required to offer net metering until the total generating capacity of all enrolled customer generators equals one percent of the supplier's aggregate customer peak demand in Ohio. The customer must comply with the utility's tariff and interconnection tariff and sign a contract with that utility.
[143] Ohio Department of Development website: http://www.odod.state.oh.us/cdd/oee/RE_solar.htm.
[144] Public Utilities Commission of Ohio website: http://www.puco.ohio.gov/PUCO/Consumer/Information.cfm?id=4412&terms=net+metering&searchtype=1&fragment=False.

Ohio State research project is one of six research and development projects selected by the U.S. Department of Energy to advance a central approach to combat climate change by allowing for the capture and subsequent sequestering of carbon dioxide generated during hydrogen production.[145] Another example of a public/private partnership in Ohio's alternative fuel area is the Ohio Fuel Cell Coalition, a group of industry, academic, and government leaders, working collectively in Ohio's fuel cell industry.[146] Much of the funding for alternative fuel research in Ohio comes from state grants.[147]

The Ohio Department of Agriculture (ODA) has been directed through 2007 legislation (HB 251) and Executive Order (2007-02) to increase their use of flex fuel vehicles and begin to measure the ODA's energy consumption. The ODA plans to increase the use of E85[148] vehicle pumps and the use of bio-diesel fuel to at least 25% of the states diesel purchases.[149]

Energy Efficient Buildings

In 2004, the Ohio state legislature created the Biofuels and Renewable Energy Task Force to analyze the existing industry, programs, incentives, and market in Ohio for the use of cleaner renewable energy.

The Task Force offered two recommendations on high performance "green" buildings. The first encouraged the State of Ohio to require energy efficiency and renewable energy usage for state-owned buildings, including schools. The second recommendation included a feasibility study on the possible adoption of the Leadership in Energy and Environmental Design (LEED) rating system for state building construction.[150]

Although the State of Ohio has not developed a design rating system for energy efficient buildings, the Ohio School Facilities Commission (OSFC) has a LEED initiative. The OFSC has adopted the LEED for Schools Green Building Rating System as part of its school design standards. Future OSFC-funded buildings are attempting to meet LEED Gold level and will be required to meet LEED Silver certification for environmental-conscious design with an emphasis in the energy and atmosphere category.[151]

Ohio promotes energy efficient buildings through their Energy Code. The Energy Code is administered by the Department of Commerce with training for Energy Codes supplied by

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[145] Ohio State University website: http://engineering.osu.edu/news/archive/2006/061211.php.
[146] Ohio Fuel Cells Coalition website: http://www.fuelcellsohio.org/aboutus.html.
[147] The Third Frontier Fuel Cell Program provides grants that support fuel cell industry. Projects must focus on research and development that address technical and cost barriers to commercialization and adapting fuel cell components produced in Ohio for use in fuel cell systems.
[148] Ethanol is a high octane fuel that can be made from corn, sorghum, and other agricultural products. When added to ordinary unleaded gasoline, ethanol increases the oxygen content of the fuel – helping it burn cleaner and cooler, which makes it a viable and appealing alternative to petroleum-based fuels. E85 is a blend of 85 percent ethanol fuel.
[149] Ohio Department of Agriculture website: http://www.ohioagriculture.gov/ethanol/.
[150] Green Energy Ohio website: http://www.greenenergyohio.org/page.cfm?pageId=259.
[151] Ohio Schools Facilities Commission website: http://www.osfc.state.oh.us/news/news.html#LEED.

the Department of Development (DOD). Green building and design is also encouraged in Ohio by the Board of Building Standards within the Department of Commerce.

In Ohio, energy projects can be paid for out of actual energy savings under a performance contract. Such projects usually include the installation of energy conservation equipment in buildings by professional contractors. Equipment is installed at no initial cost to the building owner, in return for part of the energy savings. These projects are much like Guaranteed Energy Performance Savings Contracts in Florida. Guaranteed energy savings contracts have existed for energy savings projects at both state buildings and at Ohio schools. One such project is the Energy Conservation Program, which allows school districts to make energy efficiency improvements to their buildings and use the cost savings to pay for those improvements. The Energy Conservation Program in Ohio gives districts the ability, in this one limited instance, to borrow funds without having to pass a ballot issue for the authority to borrow. Since the inception of the program, more than 500 Ohio school districts have taken advantage of this opportunity.[152] Also, state government agencies and universities are able to enter into performance contracts for energy projects. For state agencies, authority to enter into performance contracts is vested in the Department of Administrative Services; for universities, the authority is given to its Board of Trustees.[153]

In 2007, the Governor issued Executive Order 2007-02 which set goals for reduction of energy consumption. According to the Executive Order, each state agency, board, and commission also had to complete an energy audit of all of its facilities by June 2007. Upon completion of the energy audit, these organizations had to perform an overall reduction of 5 percent in building energy use for its facilities within the first year of the next biennium and 15 percent by the end of four fiscal years.

Climate Change

Ohio was one of 31 founding states of the Climate Registry. The Climate Registry is a national effort to reduce greenhouse gas emissions and combat climate change.[154] Ohio does not appear to have a climate action plan in effect nor are there renewable portfolio standards adopted in Ohio. The state has not adopted the California emissions standards, energy efficiency standards, or set emission reduction targets (although there is pending legislation before the House with regard to energy efficiency standards).[155] However, one way the state is seeking to lower greenhouse gas emissions is through a regional partnership charged with performing carbon sequestration research. The Midwest Regional Carbon Sequestration Partnership (MRCSP) is a partnership established by the U.S. Department of Energy's National Energy Technology Laboratory (DOE/NETL) to study carbon sequestration as one option for mitigating climate change.[156] As mentioned earlier, the U.S. Department of

[152] Ohio Schools Facilities Commission website: http://www.osfc.state.oh.us/programs/energy.html.
[153] Ohio Department of Administrative Services website: http://das.ohio.gov/gsd/oes/perform.html.
[154] Pew Center on Global Climate Change website: http://www.theclimateregistry.org/The_Climate_Registry_Press_Release.pdf.
[155] New America website/Energy and Environment: http://www.newamerica.net/programs/climate/building_blocks/transportation.
[156] Midwest Regional Carbon Sequestration Partnership (MRCSP) website: http://207.200.58.43/.

Energy is funding an Ohio State University project that will promote the production of hydrogen from coal at large-scale facilities. This research project was selected by the U.S. Department of Energy to advance a central approach to combat climate change by allowing for the capture and subsequent sequestering of carbon dioxide generated during hydrogen production.[157]

Policy Development and Coordination

In Executive Order 2007-02, Governor Strickland established an Energy Advisor and set goals and deadlines for energy consumption. The Energy Advisor in Ohio coordinates energy policy between state agencies. Ohio, like Florida, has various governmental entities developing and implementing energy policies. Four such entities that appear to administer the majority of Ohio's energy policies are the:

- Ohio Department of Development (DOD);
- Ohio Department of Administrative Services (DAS);
- Public Utilities Commission of Ohio (PUCO); and
- Ohio Air Quality Development Authority (OAQDA)

The DOD, and more specifically the Energy Office within DOD, is the lead state agency in the development of energy policies, but it is not a regulatory agency. Some of the energy areas where the DOD is involved are administration of the Public Benefit Fund and alternative energy initiatives.

Executive Order 2007-02 states that the Ohio Department of Administrative Services work with the Energy Advisor to establish a tool for state agencies, boards, and commissions to measure their energy consumption, which must include means of calculating each organization's "carbon footprint."

The PUCO helps steer energy policy through regulation of electric utilities. In conjunction with other governmental entities, the PUCO is involved in energy policy areas, such as power plant siting, electric power generation, and rate setting.

The Executive Director of the OAQDA was designated by executive order as the Energy Advisor to the Governor. As stated earlier, the Energy Advisor coordinates energy policy between Ohio's state agencies. The OAQDA is a quasi-governmental agency that regulates emission standards for coal-fired power plants, petroleum, and natural gas. The OAQDA also assists Ohio businesses to invest in air quality through the provision of conduit financing for the purchase, construction and/or installation of air quality facilities.

[157] Ohio State University website: http://engineering.osu.edu/news/archive/2006/061211.php.

Texas

With a population of 23.9 million, Texas leads the nation in producing and consuming more electricity than any other state (and its per capita residential use is significantly higher than the national average).[158] Texas' 25 petroleum refineries can process more than 4.6 million barrels of crude oil per day, accounting for more than one-fourth of total U.S. refining capacity, and more than one-fourth of total U.S. natural gas production, making it the leading natural gas producer in the nation.[159] Most of Texas' electricity is generated from power plants that burn natural gas or coal.

The following percentages represent resources used for producing electricity in 2001:

- Natural Gas 45%
- Coal 41%
- Nuclear 12%
- Petroleum 1%
- Hydro* 0%
- Wood and Waste* 0%
- Wind* 0%[160]

* Hydro, Wood and Waste, and Wind power have small percentages that collectively total 1%.

By the end of 2004, however, approximately 2.5 million megawatt hours of electricity were generated in Texas using renewable sources, which is approximately three percent of the state's total power consumption.[161] More than 90 percent of this three percent was from wind power. Today, the state's wind power potential is almost two times as much as its total annual peak electric demand.[162]

Texas's total petroleum consumption is the highest in the United States and its use of liquefied petroleum gases (LPG) is greater than the LPG consumption of all other states combined. According to the Energy Information Administration, this is due primarily to the state's active petrochemical industry, which is the largest in the United States. In 2004, Texas consumed 532.7 gallons of gasoline, per capita.[163] Four separate motor gasoline blends are required in Texas to meet the diverse air quality needs of different parts the state, including reformulated motor gasoline blended with ethanol required in the metropolitan

[158] Energy Information Administration website: http://www.tonto.eia.doe.gov/state/state_energy_profiles.cfm?sid=TX.
[159] Ibid.
[160] U.S. Department of Energy: http://www.eere.energy.gov/states/state_specific_statistics.cfm/state=TX#consumption.
[161] *Renewable Energy is a Natural* - pdf link from http://www.puc.state.tx.us/ocp/facts.cfm.
[162] Ibid.
[163] California Energy Commission website: http://www.energy.ca.gov/gasoline/statistics/gasoline_per_capita.html.

areas of Houston and Dallas-Fort Worth. The agriculture-rich Texas Panhandle has several corn- and milo-based ethanol plants that are operational or under construction.[164]

Texas has responded to the concern of energy consumption by administering energy policy through several state entities. The following entities are referenced in this paper:

- Electric Reliability Council of Texas (ERCOT);
- Public Utility Commission of Texas (PUCT);
- Texas Commission on Environmental Quality (TCEQ);
- State Energy Conservation Office (SECO);
- Texas General Land Office;
- Railroad Commission of Texas;
- Texas Department of Transportation; and
- Texas Facilities Commission.

Electric Power Generation

In January 2002, Texas implemented Senate Bill 7, which resulted in the deregulation of the electricity industry within the service area of the Electric Reliability Council of Texas (ERCOT). Most Texas power customers now may choose their electricity service from a wide variety of Retail Electrical Providers; however, the local utility in the area still maintains the power lines.[165] The state's major utilities are American Electric Power, Southwestern Electric Power Co., Central Power and Light Co., West Texas Utilities, TXU Electric, Reliant Houston Light and Power, Entergy, and El Paso Energy.[166] Customers served by cooperatives or municipal agencies only have choice if their utility opts in to deregulation.[167]

Several Texas utilities now offer customers power produced from renewable sources or "green power," which can include electricity generated from "relatively clean" natural gas-burning plants. Customers have the option to have a certain percentage of their power come from renewable sources. That percentage of renewable power is then produced or purchased from another power generator and placed in the utility's power supply.[168]

The Public Utility Commission of Texas (PUCT) was established by the Texas Legislature in 1975 and was given regulatory oversight over electric utilities (until 2002 when Texas deregulated its utilities industry) and telecommunications utilities in the state. Currently, the mission of the PUCT is to protect customers, foster competition, and promote high quality

[164]Energy Information Administration website: http://tonto.eia.doe.gov/state/state_energy_profiles.cfm?sid=TX.
[165] Summary of Texas' Senate Bill 7 – Texas Electric Restructuring Act. Office of Public Utility Counsel for National Association of State Utility Consumer Advocates.
[166]Texas Energy Partnership website link from http://www.seco.cpa.state.tx.us/TEP_Production/g/index.asp.
[167] *Summary of Texas' Senate Bill 7 – Texas Electric Restructuring Act*. Office of Public Utility Counsel for National Association of State Utility Consumer Advocates.
[168] *Renewable Energy is a Natural* - pdf link from http://www.puc.state.tx.us/ocp/facts.cfm.

infrastructure.[169] The PUCT is funded through General Revenue,[170] and has primary jurisdiction over activities conducted by the ERCOT.

In the energy arena, the PUCT has jurisdiction over the following:

- Rates and services of the investor-owned electric utilities outside the service area of the ERCOT, including transmission and distribution utilities; and
- Service quality of retail electric providers.[171]

The PUCT conducts oversight of the intrastate wholesale electric market in Texas by participating in activities related to market design, and by evaluating market performance and taking enforcement actions, when appropriate. Market design activities are carried out by the Competitive Markets Division, within the PUCT. Market monitoring is conducted by an independent market monitor that is funded by the ERCOT. The PUCT's oversight and enforcement activities are carried out by the Oversight and Enforcement Division.[172]

The ERCOT serves as one of eight regional entities with delegated authority from the North American Electric Reliability Corporation for the purpose of proposing and enforcing reliability standards within the ERCOT region. Specifically, the ERCOT operates the electric grid and manages the deregulated electric industry market for 75 percent of the state.[173] Areas outside the ERCOT are under the authority of the SERC Reliability Corporation (successor to the Southeast Electric Reliability Council), the Southwest Power Pool, Inc., or the Western Electricity Coordinating Council (WECC).[174] These areas are not subject to deregulation. The ERCOT is governed by a board of directors made up of independent members, consumers, and representatives from each of the ERCOT's electric market segments[175] and is funded through a charge of 42 cents per 1,000 kilowatts of electricity consumption.[176]

The ERCOT operates the wholesale energy market using a "zonal congestion management design with a real-time balancing energy market. ERCOT procures ancillary services in a day-ahead auction for those market participants that do not self-provide their share of ancillary service requirement," and "will move to a nodal market design in 2009."[177] The ERCOT monitors schedules submitted by wholesale buyers and sellers to ensure the system

[169] *Overview of the Commission* - pdf link from Public Utility Commission of Texas website: http://www.puc.state.tx.us/ocp/facts.cfm.
[170] Conversation with Public Utility Commission of Texas staff. January 2008.
[171] Overview of the Commission - pdf link from Public Utility Commission of Texas website: http://www.puc.state.tx.us/ocp/facts.cfm.
[172] Public Utilities Commission of Texas website: http://www.puc.state.tx.us/wmo/about/aboutwmo.cfm.
[173] Electric Reliability Council of Texas website: http://www.ercot.com/about/index.html.
[174] North American Electric Reliability Corporation website: http://www.nerc.com/regional/.
[175] Electric Reliability Council of Texas website: http://www.ercot.com/about/governance/index.html.
[176] Texas Office of the Attorney General website: http://www.oag.state.tx.us/oagnews/release.php?id=774.
[177] Public Utilities Commission of Texas website: http://www.puc.state.tx.us/wmo/about/aboutwmo.cfm.

can accommodate those submitted schedules, and, if necessary, will create a new market to fill the gap.[178]

The Texas Commission on Environmental Quality (TCEQ) is the environmental agency for the state. It is charged with air quality, water quality, and waste management. It is mainly funded by program fees (85 percent). Federal funds provide 10 percent of the budget; state general revenue, including earned federal funds, provides one percent; and other sources provide the remaining four percent.[179]

With regard to power plant siting, the TCEQ processes the permitting from a clean air standpoint[180] and the ERCOT determines and manages the interconnection to the electric grid for those areas that are deregulated. For power plant siting requests in areas outside the ERCOT, the PUCT will conduct a needs assessment to determine whether or not a new power plant is necessary. Biomass and waste energy plants are under the jurisdiction of the TCEQ, due to the emissions that are released into the environment.

Texas has two nuclear power plants which are regulated by the TCEQ for compliance with environmental requirements and the Texas Department of Health's (TDH) Bureau of Radiation Control. While TCEQ regulates disposal of low-level waste and has the authority to issue a license for a disposal facility, the TDH regulates and licenses the use, transport, and storage of radioactive materials.[181] The U.S. Nuclear Regulatory Commission retains primary oversight of the plants.[182] The two plants account for about one-tenth of the state's electric power production.[183]

In 1999, the PUCT adopted rules establishing a renewable portfolio standard (RPS), a renewable energy credit (REC) trading program, and renewable energy purchase requirements for competitive retailers in Texas. The standard required 2,000 megawatts of new renewables to be installed in Texas by 2009. This was to be in addition to the 880 megawatts of existing renewables generation. In 2005, the Texas Legislature passed Senate Bill 20, which increased the renewable energy mandate to 5,880 megawatts by 2015 (about five percent of the state's electricity demand), including a target of 500 megawatts of renewable energy capacity from resources other than wind. (As previously noted, wind accounts for nearly all of the current renewable energy generation in Texas.) The legislation also set a target of 10,000 megawatts in renewable energy capacity by 2025.[184, 185] Qualifying renewable energy sources include solar, wind, geothermal, hydroelectric, wave or tidal energy, biomass, or biomass-based waste products, including landfill gas. The RPS

[178] Electric Reliability Council of Texas website: http://www.ercot.com/about/index.html.
[179] Texas Commission on Environmental Quality website: http://www.tceq.state.tx.us/about/.
[180] Discussion with Texas Energy Conservation Office staff. January 2008.
[181] Texas Environmental Profiles website: http://www.texasep.org/html/wst/wst_6ird.html.
[182] Ibid.
[183] Energy Information Administration website: http://tonto.eia.doe.gov/state/state_energy_profiles.cfm?sid=TX.
[184] Database of State Incentives for Renewables and Efficiency website: http://www.dsireusa.org/library/includes/incentive2.cfm?Incentive_Code=TX03R&state=TX&CurrentPageID=1&RE=1&EE=1.
[185] State Energy Conservation Office website: http://www.seco.cpa.state.tx.us/re_rps-portfolio.htm.

applies to all investor-owned utilities; however, municipal and cooperative utilities can opt in.[186]

The PUCT established a REC-trading program that began in July 2001 and is to continue through 2019. Under the PUCT rules, one REC represents one megawatt-hour of qualified renewable energy that is generated and metered in Texas.[187]

The PUCT has adopted limited net metering rules [Substantive Rules Section 25.242(h)], which require any integrated investor-owned utility (IOU) that has not unbundled in accordance with section 39.051 of the federal Public Utility Regulatory Policy Act to provide specific net metering options for customers that operate qualifying facilities of 100 kilowatts or less that use non-renewable-energy resources, and to qualifying facilities of 50 kilowatts or less that use renewable-energy resources.[188] The customer effectively receives the retail price for energy produced up to the amount consumed on-site and the utility's avoided-cost rate for excess energy exported to the grid. Electric cooperatives, municipal utilities and river authorities are not required to interconnect and net meter.[189] For deregulated entities within the ERCOT, there are no clearly written rules for net metering.[190]

Both the PUCT and the ERCOT have coordination for administration of interconnection and net metering. The PUCT adopted interconnection standards (Substantive Rules Sections 25.211 and 25.212) in 1999, which apply to electrical generating facilities (consisting of one or more on-site distributed-generation units) located at a customer's point of delivery, with a maximum capacity of 10 megawatts and connected at a voltage less than 60 kilovolts. The total capacity of a facility's individual on-site distributed generation units may exceed 10 megawatts. However, no more than 10 megawatts of capacity will be interconnected at any point in time at the point of common coupling. These rules were adopted in response to the Texas Public Utility Regulatory Act of 1999's provision that "a customer is entitled to have access 'to on-site distributed generation.'"[191]

The Texas General Land Office, which was established in 1836, is responsible for the management of state lands and mineral-right properties, specifically for leasing the state's land holdings for energy and mineral development. It manages an in-kind oil and natural gas program (leasing drilling rights for oil and gas production), manages a state electric power program, and markets other resources, such as wind and geothermal power.[192]
The Railroad Commission of Texas regulates the state's oil and gas industry, gas utilities, pipeline safety, safety in the liquefied petroleum gas industry, and the surface mining of coal and uranium.[193]

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[186] Ibid.
[187] Ibid.
[188] Database of State Incentives for Renewables and Efficiency website: http://www.dsireusa.org/library/includes/incentive2.cfm?Incentive_Code=TX02R&state=TX&CurrentPageID=1&RE=1&EE=1.
[189] Ibid.
[190] Ibid.
[191] Ibid.
[192] Texas General Land Office website: http://www.glo.state.tx.us/about/landoffice.html.
[193] Railroad Commission of Texas website: http://www.rrc.state.tx.us/faqs.html.

Alternative Energy Initiatives

Despite the volume of its traditional fuel production, Texas has a high level of renewable energy potential due to its size and climate.

The State Energy Conservation Office (SECO), which was created in 1973 in response to the national energy crisis, serves as a statewide promoter of energy efficiency and provider of energy management services.[194] The SECO programs are primarily funded through oil overcharge settlement dollars resulting from federal court settlements of alleged violations of price controls in effect for crude oil and refined petroleum products.[195]

The SECO administers an Innovative Energy Demonstration Program (IEDP) which promotes the use of renewable energy and sustainable building design in Texas by increasing public awareness of the state's renewable energy resources, demonstrating new technologies and increasing the infrastructure necessary to escalate renewable energy use in existing state programs. It provides technical training and educational information on renewable energy resources. The program funds solar, wind, and biomass demonstration projects and sponsors conferences, workshops, and other educational endeavors to promote the use of renewable energy systems. IEDP initiatives are geared to offset and replace traditional methods of energy generation and consumption throughout the state.[196]

The SECO administers an Alternative Fuels Program which "promotes Texas' energy security and air quality by supporting public and private partnerships that deploy clean-burning alternative fuel vehicles and build their associated fueling infrastructure." The program depends on strong local initiatives. Originally, the Alternative Fuels Program was designed to help state agencies operate more of their fleets on alternative fuels, but has been expanded to include schools, local governments, and private fleets by promoting the reduction of petroleum use through four technologies: fuel blends, fuel economy, hybrids, and idle reduction.[197] Some examples of the SECO's promotion through the Alternative Fuels Program include support for the state's Clean Cities program,[198] financial assistance for an energy education school curriculum in energy basics and alternative fuels, and Adopt-a-School-Bus and Clean School Bus USA programs.[199]

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[194] State Energy Conservation Office website: http://www.seco.cpa.state.tx.us/seco_about.htm.

[195] State Energy Conservation Office website: http://www.buildingmedia.com/texas/seco/about.html.

[196] State Energy Conservation Office website: http://www.seco.cpa.state.tx.us/re.htm.

[197] State Energy Conservation Office website: http://www.seco.cpa.state.tx.us/alt.html.

[198] Clean Cities is a U.S. Department of Energy program that was established by the Energy Policy Act of 1992. The program partners with cities to create voluntary, locally based, government/industry partnerships to expand gasoline alternatives by accelerating the use of alternative fuel vehicles (AFVs) and by building local AFV refueling infrastructures.

[199] State Energy Conservation Office website: http://www.seco.cpa.state.tx.us/alt_cc.htm.

The Texas Department of Transportation is implementing low-emission technologies in the equipment fleet and using alternative fuels. In fiscal year 2005, a fleet of 4,500 alternative fuel vehicles reduced gasoline consumption by 5 million gallons. [200]

The Texas General Land Office promotes alternative fuels and works as a clearinghouse for information, encouraging more fleet managers to consider alternative fuels, improve the availability of refueling stations, and bring advanced technologies to the state.[201] For example, the agency participates in Clean Cities programs throughout Texas and works with NGV America (natural gas vehicles) and other state, regional, and national programs to highlight the advantages of natural gas vehicles. To encourage fleets to increase the number of heavy-duty natural gas vehicles, the General Land Office has a NGV Initiative Program Grant available for public-sector partners in certain Texas counties. The program is funded with a Texas Emissions Reduction Plan Grant through the Texas Commission on Environmental Quality. A variety of vehicles - including street sweepers, forklifts, buses, and garbage trucks - are eligible for grants to help cover the cost of replacing diesel vehicles with NGVs.[202]

The following is the estimated number of alternative-fueled vehicles being used in 2005 in the State of Texas:

Compressed Natural Gas (CNG)	Electric	Ethanol, 85% (E85)	Hydrogen	Liquefied Natural Gas (LNG)	Liquefied Petroleum Gas (LPG)	Total
11,376	0	12,257	0	501	67,456	91,590

Source: Energy Information Administration, Office of Coal, Nuclear, Electric, and Alternate Fuels and the DOE/GSA Federal Automotive Statistical Tool (FAST), 2005.[203]

Energy Efficient Buildings

In September 2005, Texas adopted the 2003 International Energy Conservation Code for state-funded residential construction, and the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) 90.1-2004 for state-funded commercial construction. The State Energy Conservation Office (SECO) is authorized to adopt the new codes if they will result in improved energy efficiency and air quality, based on the analysis and recommendations of the Energy Systems Lab at Texas A&M University.[204]

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[200] Texas Department of Transportation website: http://www.dot.state.tx.us/services/general_services/alternative_fuels.htm.
[201] Texas General Land Office website: http://www.glo.state.tx.us/altfuels/.
[202] Texas General Land Office website: http://www.glo.state.tx.us/energy/altfuels/index.html.
[203] *Alternative-Fueled Vehicles in Use* - link from Energy Information Administration website: http://tonto.eia.doe.gov/state/state_energy_profiles.cfm?sid=TX.
[204] Database of State Incentives for Renewables and Efficiency website: http://www.dsireusa.org/library/includes/incentive2.cfm?Incentive_Code=TX12R&state=TX&CurrentPageID=1&RE=1&EE=1.

For buildings other than state-owned buildings, energy codes must be adopted by local code jurisdictions to be enforceable. Most local jurisdictions adopt either the Standard or Uniform Building Codes.[205]

The Texas Facilities Commission oversees building maintenance and construction activities of state-owned office buildings and facilities, handles leasing of office space, and administers federal and state surplus property programs.[206] Further, it administers an energy management/utilities program that, in conjunction with SECO and Austin Energy, develops low cost measures to affect energy use, and provides for the management of utilities for approximately 71 state-owned facilities totaling over 10 million square feet.[207]

In accordance with Texas Government Code Section 2166.401, state government departments must compare the cost of providing energy alternatives for new and reconstructed state government buildings and for certain construction or repair to energy systems and equipment. The governing body must determine economic feasibility for each function by comparing the estimated cost of providing energy for the function using conventional design practices and energy systems with the estimated cost of providing energy for the function using alternative energy devices during the economic life of the building. The evaluation must identify the best energy alternative for the project considering both economic and environmental costs and benefits.[208] This is overseen by the Texas Facilities Commission.[209]

The SECO administers an energy saving performance program called the Texas LoanSTAR (loans to Save Taxes And Resources) Program, which uses a revolving loan mechanism. The program was initiated as a statewide energy efficiency demonstration program. As of November 2007, LoanSTAR has funded a total of 191 loans totaling over $240 million dollars, utilizing petroleum violation escrow funds (from the federal government) as a funding source. The loans are targeted for public buildings, including state agencies, school districts, higher education, local governments and hospitals. The program was created to "not only prove that the financed energy retrofits would pay for themselves, but also to demonstrate that the actual energy savings were being exceeded by over 20% of the originally estimated savings."[210]

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[205] Database of State Incentives for Renewables and Efficiency website: http://www.dsireusa.org/library/includes/incentive2.cfm?Incentive_Code=TX12R&state=TX&CurrentPageID=1&RE=1&EE=1.

[206] Texas Facilities Commission website: http://www.tfc.state.tx.us/.

[207] Texas Facilities Commission website: http://www.tfc.state.tx.us/communities/facilities/prog/FMD/energy-management-utilities-program.

[208] Database of State Incentives for Renewables and Efficiency website: http://www.dsireusa.org/library/includes/incentive2.cfm?Incentive_Code=TX06R&state=TX&CurrentPageID=1&RE=1&EE=1.

[209] Texas Government Code Section 2166.401.

[210] State Energy Conservation office website: http://www.seco.cpa.state.tx.us/ls.htm.

Climate Change

In addition to the laws, rules, and programs that have been discussed in this paper, many of which address climate change through reduced emissions, renewable resource utilization, and decreased energy consumption, it appears that there are no state entities in Texas that specifically address the policy area of climate change.[211] The Pew Center on Global Climate Change, in *Learning from State Action on Climate Change*, indicates that Texas does not yet have a climate action plan, nor GHG emissions targets.[212]

Policy Development and Coordination

In 2003, Governor Rick Perry signed Executive Order RP 29, which created a Texas Energy Planning Council. The council was directed to advise the Governor on a "balanced plan to provide the energy needed to fuel Texas' future economic growth and prosperity." Specifically, the council was directed to "explore ways to diversify future energy supplies via liquefied natural gas, nuclear, and clean coal technology as well as through renewable energy sources such as wind power, biomass, and fuel cells" and to "explore common sense ways to reduce energy consumption through practical energy conservation measures." The council was directed to submit a full report, with findings and recommendations, by December 31, 2004, and then it was to be dissolved.[213]

In the final report, the council stated,

> A clear conclusion from the voluminous testimony, input, and discussion is that Texas should establish a single entity [the Texas Energy Planning Council] to better coordinate and facilitate energy related issues statewide. As Texas becomes more organized with regard to energy, we can better compete for limited federal funding, attract more high tech energy related projects, and influence state and federal energy issues to the benefit of all Texans…Functionally, the Council would…serve as a 'one stop shop' for Texas energy issues. Its primary mission would be to coordinate, facilitate and expedite important Texas energy projects, and provide a unified front to parties outside of Texas.[214]

These recommendations were not implemented. Currently, there is no single entity whose responsibility it is to conceptualize, plan, and routinely develop, coordinate, and ensure compliance with a comprehensive energy plan for the State of Texas.

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[211] Discussion with Texas Energy Conservation Office staff. January 2008.
[212] *Learning from State Action on Climate Change*. Pew Center on Global Climate Change. December 2007. p. 17.
[213] Executive Order RP 29 - November 10, 2003, by the Governor of the State of Texas.
[214] *Texas Energy Plan 2005: Energy Security for a Bright Tomorrow*. *Texas Energy Planning Council. Council Recommendations*. December 2004. p. 10.