

Phillip Riley Research Series

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# The Future Is Renewable: Targets and Policies By Country

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USA: California & Texas |  
February 2017



PHILLIP RILEY

# Introduction

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This Phillip Riley research series is an investigation into the renewable energy policies of Australia, the United States and various Asia Pacific nations. The reports look into the countries' renewable energy potential, climate change targets and the success of their policy to date. Each report focuses on the current and future use of renewable energy and takes into account the political, geographical and economic challenges unique to each nation.

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**Author:**

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# Targets and Policies By Country: California & Texas

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## California

Historically, California has always been a leader with regards to utilisation of renewable energy technologies. Stemming from concerns of fossil fuel dependence in the 1970s, soon-after began the expansion of California's solar and wind industry. Currently, under Senate Bill 350 (SB 350) (Clean Energy and Pollution Reduction Act of 2015) California has set an ambitious target of increasing their renewable energy production to 50% of their total power supply by 2030<sup>1</sup>. This target has been extended and adapted from the 2020 target, which was originally set under Assembly Bill 32 (AB 32) (The Global Warming Solution Act of 2006)<sup>2</sup>. AB 32 was the first of its kind to be implemented in The United States. The bill stated that it was a requirement for California to significantly reduce their greenhouse gas emissions, in a long-term and sustainable manner. Through a variety of methods, including the successful Cap-and-Trade Program, the Renewable Portfolio Standard and other incentive-based schemes, California has managed to significantly increase their renewable energy supply.

California's oil industry experienced its peak expansion in the 20th century. The growth in oil occurred as a result of the discovery of new oil fields and the increased demand to power automotive vehicles. However, this rapid expansion soon ended following the impact of the 1969 Santa Barbara oil spill. This oil spill, which occurred in Southern California, was the largest of its time to have occurred in the United States<sup>3</sup>. The large spill had a major impact on marine life and resulted in a large environmental movement involving the implementation of environmental legislation. Following the Santa Barbara oil spill, California saw a rise in natural gas and renewables in an

<sup>1</sup> [http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill\\_id=201520160SB350](http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB350)

<sup>2</sup> [http://www.leginfo.ca.gov/pub/05-06/bill/asm/ab\\_0001-0050/ab\\_32\\_bill\\_20060927\\_chaptered.pdf](http://www.leginfo.ca.gov/pub/05-06/bill/asm/ab_0001-0050/ab_32_bill_20060927_chaptered.pdf)

<sup>3</sup> <http://www.webcitation.org/5y21hCCkz?url=http%3A%2F%2Fwww.countyofsb.org%2Fenergy%2Finformation%2Fhistory.asp>

attempt to reduce their dependency on oil and coal. California imports majority of its natural gas from the Southwest, the Rocky Mountains and Canada via interstate pipelines. Natural gas has likely been chosen as California's major fossil fuel due to its highly flexible and 'clean' nature. The flexibility of natural gas allows for it to be effectively paired with more intermittent systems such as wind and solar power. Furthermore, although still a fossil fuel, natural gas produces significantly less carbon dioxide per joule than compared to both coal and oil. California's consumption of natural gas has declined in recent years due to a combination of both environmental policy, clean energy programs and growth in the renewable energy sector.

Implemented in 2006, Assembly Bill 32: The Global Warming Solution Act, was the first legislation put in place that looked into minimising the long term impacts of climate change. A key target of AB 32 is for California to return to 1990 levels of greenhouse gas emissions by 2020. In order to achieve this target, AB 32 requires not only for a reduction in greenhouse gas emissions, but for this reduction to be done in a technologically feasible and cost effective manner. Furthermore, AB 32 also states that the development of a Scoping Plan<sup>4</sup> is also a requirement. Released in 2011, the Scoping Plan's aim is to provide a number of feasible, sustainable techniques to be implemented in order to help California increase their renewable energy production and decrease their greenhouse gas emissions. The Scoping Plan acknowledges the need for a variety of differing strategies to decrease emissions, with a particular focus on California's transport sector.

A key strategy outlined in the Scoping Plan is the Cap-and-Trade Program<sup>5</sup>, which was implemented in 2012. The Cap-and-Trade Program places a limit on greenhouse gas

<sup>4</sup> California Environmental Protection Agency - Air Resources Board, Initial AB 32 Climate Change Scoping Plan Document, [https://www.arb.ca.gov/cc/scopingplan/document/adopted\\_scoping\\_plan.pdf](https://www.arb.ca.gov/cc/scopingplan/document/adopted_scoping_plan.pdf)

<sup>5</sup> California Environmental Protection Agency - Air Resources Board, Overview of Air Resources Board Emissions Trading Program, 2015, [https://www.arb.ca.gov/cc/capandtrade/guidance/cap\\_trade\\_overview.pdf](https://www.arb.ca.gov/cc/capandtrade/guidance/cap_trade_overview.pdf)

emissions, whereby companies must have enough 'emissions allowances' to cover their overall emissions. If a company has too few or too many emissions allowances, then these allowances can be bought or sold on the open market. Each year the limit on greenhouse gas emissions is adjusted to create an incentive for companies to reduce their greenhouse gas emissions. Throughout the duration of the Cap-and-Trade Program, California has seen a significant reduction the demand for emissions allowances, and in turn, a reduction in emissions. Although the Cap-and-Trade Program has had a very successful outcome, the Scoping Plan acknowledges that this program alone is not enough to meet California's targets. Within the plan, numerous complementary measures to be implemented are also detailed.

The Scoping Plan details over eight complementary measures to be implemented alongside the Cap-and-Trade Program. A particular focus has been placed on transport related emissions due to cars and trucks being the largest contributor (37.3%) to California's greenhouse gas emissions in 2014<sup>6</sup>. It is predicted that in the future, the amount of emissions released by vehicles in California is expected to increase. Therefore, a strong emphasis has been placed on reducing these emissions.

Implemented in 2011, the Low Carbon Fuel Standard<sup>7</sup> (LCFS) is a complementary measure (as stated in the Scoping Plan), which aims to increase the use of cleaner, low-carbon fuels in California. The LCFS achieves this by determining the carbon intensity of each fuel (throughout its lifecycle), then ensuring that the mix of fuel sold by oil refineries meets the required reduced carbon intensity target. This in turn not only reduces California's greenhouse gas emissions, but also decreases dependency on petroleum and promotes the use of alternative, low carbon fuels. California's LCFS was the first of its kind to be implemented in the world, and has successfully decreased the

<sup>6</sup> California Energy Commission, Tracking Progress, 2016, [http://www.energy.ca.gov/renewables/tracking\\_progress/documents/Greenhouse\\_Gas\\_Emissions\\_Reductions.pdf](http://www.energy.ca.gov/renewables/tracking_progress/documents/Greenhouse_Gas_Emissions_Reductions.pdf)

<sup>7</sup> <https://www.arb.ca.gov/fuels/lcfs/lcfs.htm>

use of high carbon intensity fuels. From its implementation in 2011 to 2015, the average fuel carbon intensity decreased by 21%<sup>8</sup>. The LCFS coupled with the other transport related schemes are expected to continue to decrease carbon emissions into the future, and therefore helping California to achieve their 2020 and 2030 targets.

A further complementary measure detailed in the 2011 Scoping Plan is the Renewable Portfolio Standard (RPS). Although the RPS was implemented in 2002, prior to the release of the Scoping Plan, it has been extended in the plan to ensure it is line with California's current targets. The RPS aims to diversify California's electricity supply by shifting their energy mix away from fossil fuel dependence. The RPS achieves this through requiring electricity companies to obtain a certain percentage of their energy from renewable sources per year. The 2008 target for the RPS required California utilities to obtain 33% of their energy from renewable sources by 2020<sup>9</sup>. This target was updated as of 2015, under SB 350, and it is now a requirement that energy companies within California obtain 50% of their energy supply from renewable sources. According to the California Energy Commission, California is currently ahead of schedule for meeting the RPS targets. As of 2016, approximately 27% of the energy in California was obtained from renewable sources<sup>10</sup>.

Other methods implemented to diversify California's energy supply include incentive based-techniques promoting consumers to increase their use of renewable energy. This includes the Million Solar Roofs, the California Solar Initiative, among many others<sup>11</sup>. Through the transformation of the energy sector, California aims to invest in the technology and infrastructure to help integrate large quantities of wind and solar

<sup>8</sup>[https://its.ucdavis.edu/research/publications/?frame=https%3A%2F%2Fitspubs.ucdavis.edu%2Findex.php%2Fresearch%2Fpublications%2Fpublication-detail%2F%3Fpub\\_id%3D2634](https://its.ucdavis.edu/research/publications/?frame=https%3A%2F%2Fitspubs.ucdavis.edu%2Findex.php%2Fresearch%2Fpublications%2Fpublication-detail%2F%3Fpub_id%3D2634)

<sup>9</sup> California Energy Commission, Senate Bill 2, 2011, [http://www.energy.ca.gov/portfolio/documents/sbx1\\_2\\_bill\\_20110412\\_chaptered.pdf](http://www.energy.ca.gov/portfolio/documents/sbx1_2_bill_20110412_chaptered.pdf)

<sup>10</sup> California Energy Commission, Tracking Progress, 2016, [http://www.energy.ca.gov/renewables/tracking\\_progress/documents/renewable.pdf](http://www.energy.ca.gov/renewables/tracking_progress/documents/renewable.pdf)

<sup>11</sup> California Energy Commission, Guidelines for California's Solar Electric Incentive Programs (Senate Bill 1), Third Edition, 2010, <http://www.energy.ca.gov/2010publications/CEC-300-2010-004/CEC-300-2010-004-CTF.PDF>

generation into their energy mix. The 2011 Scoping Plan which outlines these renewable energy measures, is updated every three years (as required by AB 32). This is to ensure progress is effectively tracked and plans for future adaptations are developed. In addition to AB 32, SB 350 was also introduced to outline California's long term targets and ultimately reduce the impacts of climate change.

Senate Bill 350: Clean Energy and Pollution Reduction Act of 2015 was the first major environmental legislation to be implemented since AB 32. SB 350 extends from AB 32 and details California's future renewable energy targets and methods to achieve them. SB 350 states California's 2030 target, which is to reduce greenhouse gas emissions by 40% below 1990s levels. SB 350 outlines the major areas where emissions reductions must occur in order to achieve the 2030 target. SB 350 takes both a top-down and a bottom-up approach to achieving California's renewable energy target. The bill focuses both on how large utilities can reduce their emissions, and also looks at the barriers currently faced by individuals, small businesses and socioeconomic groups in implementing renewable energy technologies.

As outlined in SB 350, California intends to achieve their 2030 target by means of a number of strategies. Through continuing to develop the RPS, this is likely continue to increase the proportion of renewable energy in California's energy mix. Large public utilities in California will also be required to develop Integrated Resource Plans (IRPs)<sup>12</sup>. IRPs, which are required to be updated every five years, must detail how the utility will reduce greenhouse gas emissions, their plan to further utilise clean energy technologies and any constraints they currently face. To ensure this this is effectively carried out, as of 2019, The IPRs of the 16 of the largest utilities will be looked into, to ensure they are achieving the target of 50% renewables. Furthermore, SB 350 also

<sup>12</sup> <http://www.energy.ca.gov/sb350/IRPs/>

looks at identifying the current barriers preventing the implementation of renewable energy solutions. After the identification of each barrier (eg, low income areas), a study<sup>13</sup> was developed outlining potential opportunities and methods to increase accessibility to clean energy technologies. SB 350 also outlines California's long-term climate change targets stating that the 2050 target is to reduce greenhouse gas emissions to 80% below 1990s levels.

California appears to be tracking well, and it is likely they will achieve their 2020 and 2030 targets. Having successfully reduced their reliance on coal, decreased greenhouse gas emissions and increased their use of renewable energy resources, California has become a leader in the clean energy sector. However, California acknowledges that in order for the effects of climate change to be effectively mitigated, collective, globalised action must occur. The Governor has signed accords with leaders from countries including China, Japan and Mexico to reduce greenhouse gas emissions. Furthermore the Governor is also working to continue this global action by leading the Subnational Global Climate Leadership Memorandum of Understanding. This is to help limit the rise in the earth's temperature to below 2 degrees Celsius. With the continuous developments to California's environmental legislation, their energy efficiency and use of renewable energy resources are likely to continue to increase into the future. California is likely to remain as a leader for others, encouraging action on climate change, both through leadership and sharing the successes of their own state.

<sup>13</sup> California Energy Commission, Low-Income Barriers Study, Part A, 2016, [http://docketpublic.energy.ca.gov/PublicDocuments/16-OIR-02/TN214830\\_20161215T184655\\_SB\\_350\\_LowIncome\\_Barriers\\_Study\\_Part\\_A\\_Commission\\_Final\\_Report.pdf](http://docketpublic.energy.ca.gov/PublicDocuments/16-OIR-02/TN214830_20161215T184655_SB_350_LowIncome_Barriers_Study_Part_A_Commission_Final_Report.pdf)

# Targets and Policies By Country: California & Texas

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## Texas

Similar to California, Texas is also known for its abundant natural resources and renewable energy supply. Texas differs from California and other states as it is the only mainland state with its own electricity grid. Currently, Texas receives majority of its energy from natural gas, coal and wind power. Texas' renewable energy sector is largely dominated by wind, with a strong emphasis placed on creating jobs in this area. Texas differs from California in that it currently does not have clear emissions reduction targets set in legislation, but rather uses incentives, funds and tax reductions schemes in order to promote renewable energy use within the state. A strong emphasis has been placed on research into renewable energy-related projects. Furthermore, many grants that have been implemented in Texas are related to reducing emissions in the transport sector. This is due to transport being the second largest consumer of energy, as a result of the large distances and high number of vehicles in Texas<sup>14</sup>. However even with these programs in place, Texas' energy mix is still highly dependent on natural gas and coal. The potential connection of the three grids on mainland United States may help Texas expand their renewable sector, with a particular focus on solar power. In order to achieve targets in line with California, clear long-term targets and a diversification of the renewable energy sector must occur.

The Electricity Reliability Council of Texas (ERCOT) is responsible for Texas' stand-alone electricity grid. In the past, natural gas and petroleum have dominated Texas' energy mix, with generation of coal gradually increasing over time. Currently Texas still dominantly produces natural gas and petroleum, however there are greater inputs from coal, nuclear energy and renewable energy. Texas' abundant natural resources

<sup>14</sup> <http://www.eia.gov/state/analysis.cfm?sid=TX&CFID=15819717&CFTOKEN=f47b8e1562a72b33-03D09DFF-5056-A727-59CE5E6F779FC336&jsessionId=8430ab93fc1f6eca40e2325d5b66796d467d#14>

has allowed for the rapid growth of the renewable energy sector, with a major focus on wind power. Due to the grid being independent, majority of the utilities within ERCOT are exempt from federal regulation. As a result of this, ERCOT is mainly dependent on resources within Texas to meet electricity needs. This provides large potential for employment within Texas' energy sector. In 2002, Texas saw a deregulation of their electricity market. This large restructuring of the market allowed for consumers to choose their electricity provider. This resulted in competition amongst energy suppliers, allowing costs to decrease and services to improve. Furthermore, this deregulation also allows customers the option to choose a 100% renewable energy plan. Providing consumers with the option to choose a sustainable energy plan has helped promote renewable energy use within Texas.

Currently, Texas does not have a state plan in place to reduce emissions. This is due to Texas, amongst other states, disagreeing with the Environmental Protection Agency's (EPA) Clean Power Plan<sup>15</sup> (as mentioned in the previous report). ERCOT state that under the plan, Texas would see the closure of coal-power plants and an increase in electricity costs. Furthermore, the Texas Public Policy Foundation also disagrees with EPA's Clean Power Plan as they state it would increase EPA's power, whilst not having a significant impact on global temperatures. Under the Clean Power Plan, Texas would have to reduce emissions by 38.4% from 2012 levels by 2030. Currently Texas has the highest energy-related emissions out of all of the United States<sup>16</sup>. The emissions produced by Texas almost doubles California's, who has the second highest energy consumption in the United states. Texas' high emission production may explain their reluctance to comply with the Clean Energy Plan. Although currently no state target has been set, Texas has previously implemented clean energy legislation. Much

<sup>15</sup> United States Government Publishing Office, Federal Register, Environmental Protection Agency, <https://www.gpo.gov/fdsys/pkg/FR-2015-10-23/pdf/2015-22842.pdf>

<sup>16</sup> Independent Energy Agency, Energy-Related Carbon Dioxide Emissions at the State Level, 2000-2014, 2017, <http://www.eia.gov/environment/emissions/state/analysis/pdf/stateanalysis.pdf>

of this legislation falls under the Renewable Portfolio Standard, with other non-legislative, complementary incentives also being implemented.

Commencing in 1999, The Texas Renewable Portfolio Standard (RPS) was one of the first to be implemented in The United States. The RPS, which is still in place today, requires a certain proportion of new renewable capacity to be installed by a set year. Currently, the RPS requires 10,000 MW of new renewable energy capacity to be installed by 2025<sup>17</sup>. This target was achieved in early 2010, 15 years ahead of schedule and as a result the RPS is considered a success. The RPS's success stems from the 2005 legislation which set this 2025 target. The legislation acknowledged that in order to achieve the long-term target, certain constraints on renewable transmission capacity resulting from Texas' independent grid needed to be overcome. The main constraint was east-west congestion on the grid. This occurred as a result of the greatest wind resources occurring in the west, whilst a majority of the population resides in the east. Another constraint was the wind in Texas being strongest at night, which is when energy demand is at its lowest.

In an attempt to overcome these limitations, the Competitive Renewable Energy Zone (CREZ) project was developed under the 2005 legislation. The project consisted of the installation of additional transmission lines in order to connect remote wind resources to the electricity grid. The CREZ initiative also required selected transmission providers to help build segments of the transmission infrastructure. These transmission lines were built with long term investment in mind and prepare the grid for connection with future wind farms. The CREZ project was a costly, long-term investment into the infrastructure that was required in order to successfully increase Texas' renewable energy capacity. Despite the risks of the extensive project, the CREZ scheme was successful due to the abundance of remote areas generating large amounts of wind

<sup>17</sup> <https://energy.gov/savings/renewable-generation-requirement>

within Texas. Connecting these remote regions to residential and industrial areas, through new transmission lines, reduced the east-west congestion on the grid. This increased the capacity of the grid, allowing for increased use of renewable energy technologies. This not only aided Texas in achieving their RPS target, but also allowed for the Texas wind boom to occur.

The Texas state government has also implemented a number of business incentives to help reduce greenhouse gas emissions and increase and diversify their renewable energy sector. A number of business incentives involve tax reductions and exemptions in relation to renewable energy technologies. An example of this is the Solar Energy Devices Business Franchise Tax Exemption<sup>18</sup>. This provides a franchise tax exemption to any company that is in the business of manufacturing, installing or selling solar energy devices. Wind power devices are also covered under this franchise tax exemption. These tax reductions and exemptions implemented by the Texas state government help encourage the expansion of the renewable energy sector, through consumer investment.

A further incentive implemented by the Texas state government is The Texas Emerging Technology Fund (TETF)<sup>19</sup>. The TETF provides funds to the research, development and commercialisation of technologies. This incentive has funded over \$46 million to renewable-energy projects. An example of a project that has been funded by the TETF is the development of algae biomass technology. This technology uses algae to convert waste water and carbon dioxide into renewable energy and animal feeds. Through promoting research in the renewable energy field, it ensures that once cost effective and sustainable technologies have been developed, they can be implemented almost

<sup>18</sup> State Energy Conservation Office, Texas Tax Code Incentives for Renewable Energy, <http://seco.cpa.state.tx.us/re/incentives-taxcode-statutes.php>

<sup>19</sup> The State of Texas, Office of the Governor, Texas Emerging Technology Fund: Fiscal Year 2012 Legislative Report, [http://gov.texas.gov/files/ecodev/etf/TETF\\_Report\\_FY2012.pdf](http://gov.texas.gov/files/ecodev/etf/TETF_Report_FY2012.pdf)

immediately. Funds from the TETF have also been put towards developing a National Institute for Renewable Energy and the National Wind Research Centre. The aim of these centres is to research renewable energy technologies and solve challenges being faced by the wind power industry.

Many programs implemented by the Texas state government have an underlying focus on reducing emissions in the transport sector. This is due to the transport sector contributing a large amount to Texas' overall emissions. Moreover, adjustments in this field are also being made in order to improve air quality and reduce exposure to bad pollutants. In order to minimise emissions the Texas Emissions Reduction Plan<sup>20</sup> (TERP) was developed in 2001. The TERP provides grants to a large number of varied of schemes that promote the reduction of emissions.

An initiative included in the TERP is the Texas Clean School Bus Program<sup>21</sup> (TCSP). The aim of the TCSP is to reduce student's exposure to diesel exhaust resulting from diesel school buses. The project achieves this by retrofitting older school buses with newer, more sustainable technologies. This helps in not only reducing children's exposure to diesel exhaust, but also reduces air pollution. The TCSP has had some success with 33% of buses in Texas either new or been completely replaced (if the original bus was too old to retrofit) and 21% of buses having been retrofitted with new technology<sup>22</sup>. However, as of 2012, there was still 46% of buses that needed to be upgraded. According to the Environment Defence Fund<sup>22</sup>, factors such as lack of funding, procedural issues (e.g. working within the boundaries of the school year) and technology challenges prevented the TCSP from retrofitting a higher number of buses.

<sup>20</sup> <https://www.tceq.texas.gov/airquality/terp>

<sup>21</sup> <https://www.tceq.texas.gov/airquality/terp/school-buses.html>

<sup>22</sup> [https://www.edf.org/sites/default/files/cleanbuses\\_14\\_screen.pdf](https://www.edf.org/sites/default/files/cleanbuses_14_screen.pdf)

Although these grants provide Texas with an opportunity to decrease their emissions, the future expansion and diversification of renewable energy in Texas has the potential to be constrained by Senate Bill 931<sup>23</sup> (SB 931). The legislation, which passed through the senate in 2015, would put a halt on the successful RPS and CREZ initiatives. It is suggested that SB 931 has been put forward as the renewable energy industry no longer needs the support that these two programs provide. If this bill were to advance further it could prevent future business investment and expansion of the renewable energy industry.

Despite the scare of SB 931, ERCOT released their 2016 Long-Term System Assessment<sup>24</sup>, which looks into the future generation capacity and transmission of the grid. The assessment states that although wind power has had a long history dominating the renewable energy field, solar plants are going to be the only new plants built over the next 15 years. The high solar irradiance in the west of the state makes Texas the perfect candidate for solar power. In the past, solar power has not developed at the same rate as wind, and this is likely due to it being more expensive and occupying more space. Under this long-term assessment, solar power has potential to grow at a faster rate than wind power. It is likely that ERCOT are looking to grow the solar market as it has the potential to lower consumer electricity costs. Increasing the amount of solar power in the energy mix will create an influx of daytime energy production. This is important as the grid is dependent on wind, which in Texas is strongest at night. Increasing the energy production during peak hours is likely to see a drop in energy prices during the day. This increased generation could provide even more benefits if the three United States grids are connected under the Tres Amigas SuperStation project<sup>25</sup>.

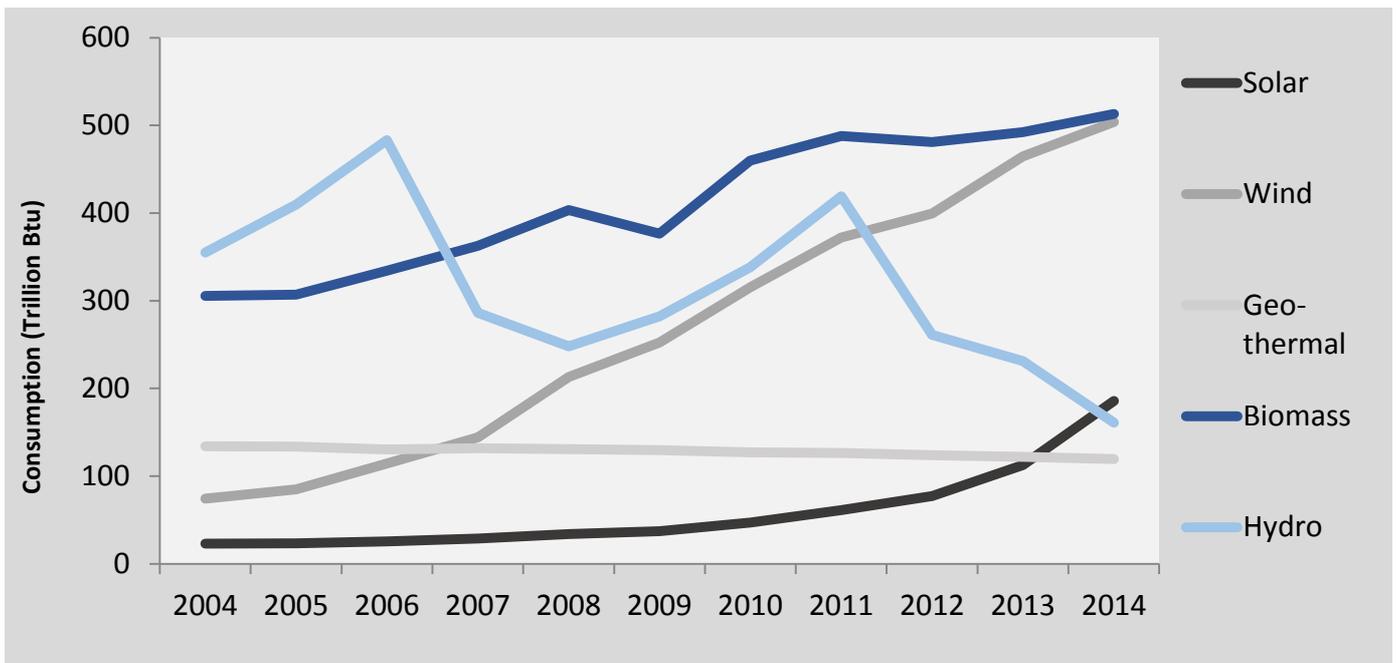
<sup>23</sup> <http://www.legis.state.tx.us/tlodocs/84R/billtext/pdf/SB00931S.pdf>

<sup>24</sup> Electric Reliability Council of Texas, 2016 Long-Term System Assessment, 2016, [http://www.ercot.com/content/wcm/lists/89476/2016\\_Long\\_Term\\_System\\_Assessment\\_for\\_the\\_ERCOT\\_Region.pdf](http://www.ercot.com/content/wcm/lists/89476/2016_Long_Term_System_Assessment_for_the_ERCOT_Region.pdf)

<sup>25</sup> <http://www.tresamigasllc.com/>

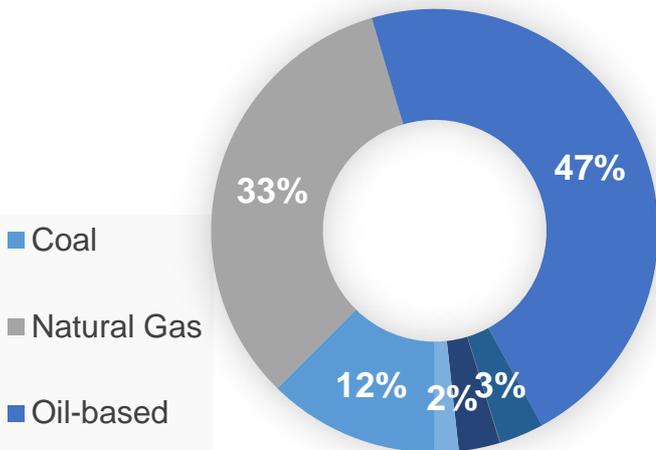
The Tres Amigas SuperStation project states that with new infrastructure being developed, a link between the Texas grid and the Eastern and Western grids can occur. This would result in a single, more resilient grid on mainland United States, which could support more renewable power. The Tres Amigas SuperStation would provide Texas with the opportunity to better manage fluctuations and also allow increased generation of intermittent systems (solar and wind) with a decreased risk of blackouts. This would provide Texas with the opportunity to reduce their reliance upon natural gas. Hopefully, with the recent developments in the Tres Amigas SuperStation project, Texas is able to expand their renewable energy sector, and create long-term goals to reduce their emissions.

## Combined Primary Renewable Energy Consumption (2004-2014), California and Texas

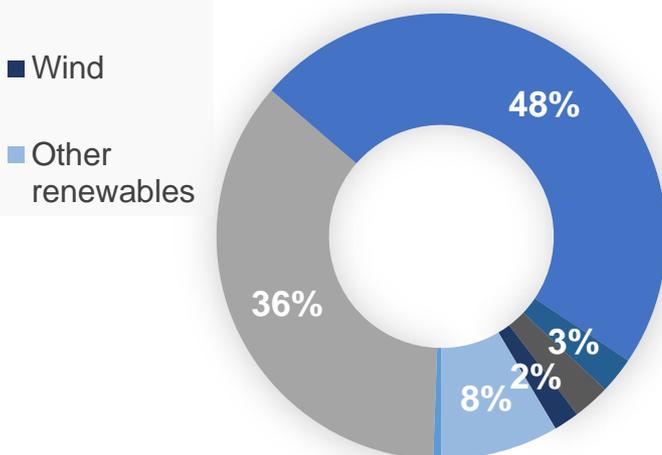


Resource: <http://www.iea.org/>

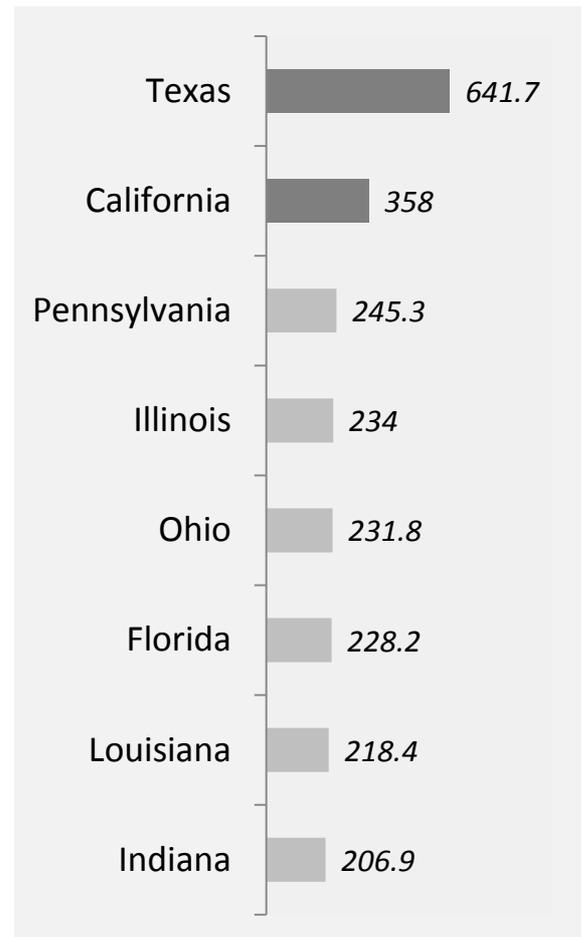
### Energy Consumption by Source, Texas (2014)



### Energy Consumption by Source, California (2014)



### CO<sub>2</sub> Emissions by State (Million t) (2014)



Resource: <http://www.eia.gov/environment/emissions/state/analysis/pdf/table1.pdf>

Resource: <http://www.iea.org/>

# Further Resources

## California

Air Resources Board - California, California's 2030 Climate Commitment, [https://www.arb.ca.gov/html/fact\\_sheets/2030\\_renewables.pdf](https://www.arb.ca.gov/html/fact_sheets/2030_renewables.pdf)

California Energy Commission, Total Electricity System Power, [http://www.energy.ca.gov/almanac/electricity\\_data/total\\_system\\_power.html](http://www.energy.ca.gov/almanac/electricity_data/total_system_power.html)

California Energy Commission, Tracking Progress, [http://www.energy.ca.gov/renewables/tracking\\_progress/](http://www.energy.ca.gov/renewables/tracking_progress/)

California Environmental Protection Agency, The Governor's Climate Change Pillars: 2030 Greenhouse Gas Reduction Goals, <https://www.arb.ca.gov/cc/pillars/pillars.htm>

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Centre for Climate and Energy Solutions, California Cap-and-Trade, <https://www.c2es.org/us-states-regions/key-legislation/california-cap-trade>

International Energy Agency, The United States Renewable Energy Policy, <http://www.iea.org/policiesandmeasures/renewableenergy/?country=United%20States>

Under 2, Subnational Global Climate Leadership Memorandum of Understanding, <http://under2mou.org/>

## Texas

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