

An Environment Texas Research and Policy Center Report

# Texas Torchbearers

Cities Leading the Way to a Clean Energy Future



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## Executive Summary

Due in large part to smart state policies in the late 90s and early 2000s, Texas has become the undisputed national leader in wind power. But in other areas of the “clean-tech industry,” the state of Texas is falling behind. In the most recent Clean Edge report, Texas ranked 22nd in the nation for U.S. leaders of clean tech.<sup>1</sup> Texas cities have stepped in to pick up the slack, making an impact on energy waste reduction and renewable energy production, alternative vehicles, and green buildings.

This report analyzes the environmental and energy efforts of the ten largest cities in Texas. By reviewing their policies on building codes, solar production, purchasing of renewable energy, requirements for green building certification, and number of electric recharge stations, we ranked the cities based on what they are doing, and what they could be achieving.

We determined that Austin is certainly doing the most of the Texas cities. Austin has successfully adopted the most energy efficient building code available, the 2012 International Energy Conservation code, has set strong solar goals and policies, purchases 100% of city power from renewable energy sources, requires new public building construction to meet high green building standards, and has many accessible electric charging stations available throughout the city.

San Antonio, Houston and Dallas are not far behind Austin. All of these cities require new public buildings to meet environmental building certifications. San Antonio has spurred significant local solar development, and Dallas and Houston purchase nearly half of their municipal electricity from renewable energy sources like wind. San Antonio and Dallas would benefit from stronger building codes that improve energy efficiency, while Houston’s solar production is negligible due to a lack of utility-supported solar power.

El Paso, Plano, Arlington and Fort Worth have some green policies set in place, but should strive to follow the paths of the top five cities, making gains in each category. Corpus Christi and Laredo are barely skimming the surface of implementing green policies, even though they have adopted some general sustainability goals. These cities would see major benefits in pollution reduction, and energy savings, as well as adding new jobs to their local economy, if they began to plan and implement policies for a greener future.

## Texas City Rankings for Clean Energy Leadership

Rank	Cities	Residential Building Codes	Utility-Supported Solar	Municipal Renewable Energy	Green Public Buildings	Electric Recharge Stations	Total
1	Austin	3	2.5	3	2	2.5	13
2	Houston	2	0	2	2	1.5	7.5
2	San Antonio	0	2.5	1	2	2	7.5
4	Dallas	0	1	2	2.5	1	6.5
5	El Paso	0	1	2	2.5	1	4
5	Plano	0	.5	0	2	1.5	4
7	Arlington	0	.5	0	0	1	1.5
7	Fort Worth	0	1	0	0	.5	1.5
9	Laredo	0	.5	0	0	.5	1
10	Corpus Christi	0	0	0	0	.5	.5

## Introduction

The state of Texas was an early leader in clean energy, adopting one of the nation's first renewable energy and energy efficiency mandates and statewide building codes. These policies have helped the state save energy, reducing pollution and saving consumers billions of dollars, while creating a vibrant new clean-tech industry for the state.

But the state has failed to keep up the pace of cutting-edge policy and investment and is falling behind. According to the American Council for an Energy Efficient Economy, today the state ranks just 33rd in the nation for energy efficiency.<sup>2</sup> Despite having the best solar potential in the nation, Texas ranks just 20th in the country for per capita solar installations.<sup>3</sup>

These unimpressive rankings do more than just hurt state pride. They point to a continued reliance on fossil fuels which contribute to global warming, undermine our energy independence, and cost Texas families and businesses more and more each year.

Lately, Texas cities have stepped in to pick up the slack, charging this movement forward by promoting energy efficiency,

electric plug-in vehicles, production and purchasing of renewable energy, and building environmentally designed buildings. Through energy efficiency efforts and production of renewable energy, these cities can push Texas to regain leadership in the green movement, benefitting citizens immensely by reducing pollution, improving air quality, creating new jobs, and spurring economic growth.

This report provides a snapshot of what local governments in Texas are doing to move towards to a green economy, and demonstrates the successes they've gained and the barriers they face. By looking at the 10 most populous cities in the state, it evaluates how they measure up against each other and top green cities in America. The cities represent many of the diverse climates that can be found in Texas, from the arid desert of El Paso to the temperate woods of Houston, presenting different challenges and opportunities for improving local policy. Cities ranked include: Arlington, Austin, Corpus Christi, Dallas, El Paso, Fort Worth, Houston, Laredo, Plano, and San Antonio.

# Findings

## Increasing Energy Efficiency in New Homes

Homes account for more than one-third of all of Texas' electricity use. Unfortunately, much of the electricity we produce in our homes is wasted through inefficiencies such as leaky enclosures, poor insulation, and outdated or improperly installed equipment. These inefficiencies result in an unnecessarily high demand for energy. Making buildings more energy efficient through better building codes is a cost-effective means of reducing energy use, lowering electricity bills and reducing demand for fossil fuels.

In 2001, Texas adopted its first statewide building code for energy, which has been a big success. According to the Energy Systems Laboratory at Texas A&M, adoption and implementation of new energy codes for the construction of new single-family homes resulted in \$1.7 billion in energy savings: \$776 million from electricity savings and \$927 million avoided costs of constructing new power plants and transmission lines, relieving

power plants from putting unnecessary stress on the grid.<sup>4</sup>

Taking action to build more energy-efficient buildings also reduced our global warming emissions and saves water. Upgraded building codes saved 2.8 billion gallons of water at Texas power plants and reduced 879 tons of NOx emissions, which is equal to cutting the annual pollution emissions from 46,000 cars.<sup>5</sup>



Energy efficient home with solar panels installed on roof.

## Adopting the International Energy Conservation Code:

The International Energy Conservation Code (IECC) is a periodical set of building efficiency codes released by the International Code Council, which is a committee of representatives from across the building industry, including code regulators and construction industry representatives from here in Texas. The newest available version, the 2012 IECC, represents the most energy efficient code a city can have. The codes ensure that new homes are built with more insulation, better windows, and more efficient lighting fixtures, achieving approximately 15% greater efficiency for homes than the 2009 standards.<sup>6</sup>

According to an analysis by the Building Codes Assistance Project, homes built in San Antonio following the 2012 IECC would result in \$205 of energy savings every year for homeowners.<sup>7</sup> Families would break even on their investment within 11 months,

and end up pocketing around \$6,000 in net energy savings over 30 years.<sup>8</sup> For many San Antonio homeowners, this would make a big difference in their housing costs.

Currently, the state of Texas only requires new buildings to meet the 2009 IECC. Accordingly, many cities in Texas have only adopted the 2009 codes, while some are out of state compliance and have not even updated their codes to that level. In a recent Clean Edge Report analyzing 2013 U.S. Clean Tech Leadership, Texas ranks only 24th in the nation for having implemented important clean tech policies, partially because of having weak residential building codes.<sup>9</sup> By relying on outdated codes, cities are allowing more wasteful buildings to be built, denying homeowners the benefits of reduced pollution and energy efficiency savings.

## Successful Texas Cities on Residential Building Codes:

More than 20 Texas cities have already adopted some or all of the 2012 IECC.\* Of the 10 largest cities in Texas (those included in our report), **Austin is the only city to have already adopted the 2012 IECC residential code.** In fact, with added local amendments, Austin's code is actually even more energy efficient than the 2012 IECC. Houston ranks second in this category, by adopting an amendment to the 2009 IECC to increase energy efficiency by 15% by 2014. Currently, Houston has met the first 10% of that goal, with the next 5% to be adopted in 2014. Houston also requires new homes to be built solar-ready.

The rest of the cities remain only at the state minimum, following the 2009 codes. Plano reports that the 2012 IECC is under review for adoption. El Paso has adopted the 2012 IECC as a voluntary standard, and agreed to reduce or eliminate building permit fees for

those to meet this voluntary standard.

Many of the cities do encourage builders to go beyond their minimum codes through voluntary green building efforts. Austin has one of the most successful green building programs in the nation, and San Antonio promotes a voluntary program called San Antonio Green Built. Corpus Christi also works with the local Homebuilding Association to offer a Corpus Christi Green Building Program, while Dallas offers a similar program. Green building programs are a great way to encourage projects to use new technologies or experiment with innovative techniques, but unless cities have already adopted the 2012 IECC as a baseline, these voluntary green building programs don't generate the same city-wide impacts on energy and fiscal savings that are achieved from stronger building codes.

### \* Texas cities that have adopted 2012 IECC:

Alton	Eagle Pass	Pflugerville
Austin	Gatesville	Port Arthur
Cedar Park	Hereford	Richardson
Cibolo	La Porte	Rollingwood
College Station	Live Oak	Round Rock
Deer Park	McKinney	Universal City
Denison	Mission	West University Place

### Texas cities planning to adopt 2012 IECC in 2013:

Abilene	Frisco	Plano
Bellaire	Missouri City	

## Recommendations for Building Efficiency:

**All cities in Texas should adopt the 2012 IECC and push for state-wide adoption of the code.** Buildings constructed to meet the 2012 energy code use even less energy, reducing utilities bill and making healthier homes for families.

Considering the magnitude of construction occurring in the state –135,000 building permits were issued for Texas in 2012<sup>10</sup>– if all new homes were built to the 2012 IECC standard, Texas would see a dramatic shift in energy use in the state, and dramatic savings for citizens.

## Adopting Strong Solar Policies

Texas ranks number one in the United States for solar energy potential, and has the lowest residential solar installation prices of anywhere in the nation.<sup>11</sup> The National Renewable Energy Laboratory estimates that Texas has the space to install more than 20,000 GW of utility-scale solar energy generation and 60 GW of distributed solar energy on rooftops.<sup>12</sup> That amount of solar generation could produce more than 100 times the electricity consumed each year in Texas.<sup>13</sup>

### Utility Supported Solar Power

Cities with municipal utilities have great potential to encourage solar energy. The establishment of local renewable electricity standards, strong net metering and interconnection policies, and other pro-solar policies can help increase solar energy produced within cities. Local governments can also eliminate red tape and help residents to go solar by reforming their permitting process – reducing fees, making permitting rules clear and readily available, speeding up the permitting process, and making inspections convenient for property owners.

Many cities in America help homeowners access distributed solar, (solar installations on the rooftops of homes, businesses, warehouses, schools and municipal buildings, generating electricity close to where it is consumed), through installation rebates and creative financing options such as third-party power purchase agreements and property

Despite excellent potential, however, Texas ranks 20th in the nation for solar energy per capita. That means Texas produces less solar energy per capita than less sunny states like New Jersey and Massachusetts.<sup>11</sup> “Going solar” is a smart solution for Texas—it reduces our reliance on coal and natural gas power plants that cause air pollution, contribute to global warming, and use large amounts of water for cooling. Solar power also creates local jobs and keeps money in the local economy.



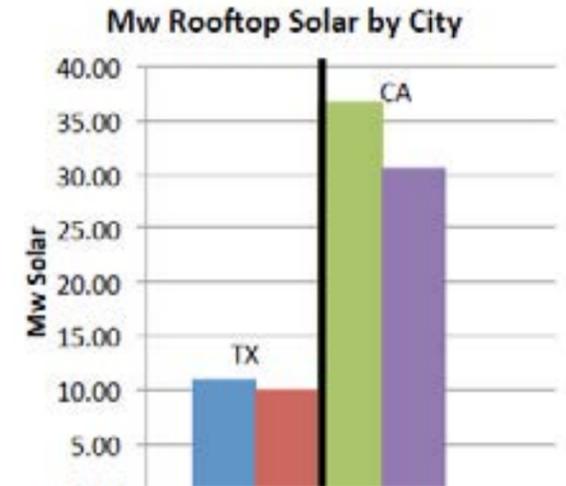
Blue Wing Solar Project in San Antonio, Texas.

assessed clean energy (PACE) financing. Cities can also produce utility-scale solar, much larger projects that are typically built on open land. Four cities in California (Los Angeles, San Diego, Riverside, and Santa Clara) produce over 100 megawatts of solar, setting the standard for what is possible to accomplish on a local level.<sup>14</sup>

### Successful Texas Solar Cities:

**Austin and San Antonio both have far greater solar capacity than other Texas cities, producing 85% of solar capacity in Texas.** This success comes in part because they own their electricity providers, Austin Energy and CPS Energy respectively. Austin and San Antonio produce both solar at both distributed solar and utility scale projects. In addition to the solar already produce, CPS Energy has a contract to eventually deliver 400 MW of solar through a partnership with OCI Solar Power.

When including the solar produced by Austin Energy and CPS Energy at utility-scale projects in surrounding cities, these two central Texas cities each produce well over 40 times as much solar electricity as the next highest city of El Paso.<sup>16</sup> Dallas follows closely after El Paso in distributed solar production.



	TX		CA	
	Austin	San Antonio	San Jose	San Diego
Population:	842,592	1,382,951	1,322,553	967,487
Solar Per Capita	0.013	0.007	0.036	0.03

Distributed Solar KW Per Capita (rooftop solar only)

### Recommendations for a Solar State:

Many Texas cities cannot excel in solar at the local level because they are at the mercy of their utility providers. Unlike in San Antonio and Austin, most local utility providers are privately owned and restricted by regulations of the Public Utility Commission that prevent the utilities from offering robust solar programs. Cities should appeal to the state to strengthen Texas’ renewable portfolio standard by including a goal of building 4,000 MW of solar energy capacity by 2020, a requirement that will make solar energy production a significant part of utilities’ energy portfolios.

Because most Texas utilities are deregulated, they have limited ability to offer solar energy programs unless the state adopts a solar energy generation requirement. Texas should adopt a new requirement soon to allow utilities and their customers to take advantage of the 30 percent federal investment tax credit

for new solar PV systems, set to expire in 2016. Texas should also require utilities to reach that 4,000 MW goal in part by installing solar PV panels on 250,000 roofs, which would fulfill approximately one-quarter of the 4,000 MW goal. Distributed solar energy generation produces electricity where it is consumed, and therefore reduces the need for additional transmission infrastructure. The State could also adopt a solar rebate funded by a small charge on each electric bill and, thereby, support statewide solar industry growth, particularly in the deregulated markets.

San Antonio and Austin should continue to pursue strong solar programs, demonstrating the kind of production Texas could see on a statewide level. Both cities should increase their solar production goals and support new pathways for continued market development.

## Powering Cities with Renewable Energy



Texas is a world leader in wind energy production. Using wind energy in Texas averts more than 16,000 tons of emissions of smog-forming nitrogen oxides, nearly 23,000 tons of sulfur dioxide, and 17 million tons of carbon dioxide from the state's power sector each year – helping Texans to breathe easier.<sup>17</sup>

Wind energy uses no water, helping drought-plagued Texas to save 6.5 billion gallons per year, enough to serve the domestic water needs of 130,000 people.<sup>18</sup>

Switching to renewable energy is an easy way for cities to reduce their carbon footprint. Electricity generated from renewable sources, such as solar, wind, geothermal, low-impact biomass, and low-impact hydro resources helps spur the development of and market for new, domestic renewable energy while keeping the country safer by investing in American energy supply. In 2012, Texas use of renewable energy rose 13 percent from the prior year, with wind energy making up the largest source.<sup>19</sup>

### *City Activities Powered by Renewables:*

Local governments can purchase renewable energy from wind to power some or all of their municipal activities. Not only are municipal activities a large portion of a city's overall energy use, but they also represent a city's willingness to support renewable energy sources such as wind power. Supporting wind helps reduce electricity prices -- Texas' wind boom has coincided with a 26 percent decline

in electricity prices over the past four years.<sup>20</sup> A 2012 report by the Brattle Group found that wind energy had reduced wholesale power prices in West Texas.<sup>21</sup> By setting high goals to purchase municipal power that is from renewable sources, cities can play a role in bringing more renewable energy onto the grid and continuing to drive down the price of electricity.

### *Successful Texas Renewable Cities:*

Some Texas cities are setting precedent in this category, while others are doing nothing above the bare minimum. In terms of percent purchased, City of Austin leads the pack in this category, powering 100% of its municipal activities with renewable energy sources.

Austin currently ensures that all of its municipal power comes from renewable sources, leaving no room for expansion. Houston is also a stellar leader, requiring that

48% of city power is purchased from renewable sources. Due to the city's population, **this goal makes Houston the largest municipal purchaser of renewable electricity in the country.** The City of Dallas follows, purchasing over 280 million kilowatt-hours of wind power annually, which makes up about 40% of municipal energy use. San Antonio currently purchases 11% annually.

### *Recommendations for Promoting Renewables:*

All cities in Texas should follow the lead of Austin, Houston and Dallas by committing to negotiate contracts with their electric providers that include purchasing renewable energy. Energy providers continue to expand plans for renewable energy purchase, meaning most cities have no excuse for not negotiating a renewable energy contract. Cities like Arlington, Fort Worth and Plano have lots of options in North Texas to make this switch --

twenty-four retail electric providers offer 52 plans tied to 100 percent renewable sources.<sup>22</sup> In addition, energy rates for renewables are not significantly more than from most fossil-fueled plans in the North Texas market.

Houston, Dallas and San Antonio should also strive to expand their city purchasing goals, eventually reaching 100% renewables.



*An energy saving green roof powered by wind turbines in Houston, Texas.*

## Promoting Environmentally Designed Buildings

The easiest way to invest in a building's energy efficiency and environmental performance is to incorporate those standards into the design before it is built. Some major opportunities for energy savings can only be realized if they're designed into the shape and features of the building. Other environmental features like energy efficient water heaters, insulation, energy-saving light systems, use of renewable materials, and products that improve indoor environmental quality are much cheaper and easier to install at the time a building is constructed rather than as modifications to an existing building.

Considering the need for energy and water in a state with the high temperatures and significant droughts of Texas, employing a rating system like Leadership in Energy

& Environmental Design (LEED) by the United States Green Building Council (USGBC) is one way to ensure buildings are constructed to maximize efficiency and minimize environmental footprint. According to the USGBC, LEED takes a "triple bottom line" view of sustainability, meaning that economic, environmental and social factors are considered throughout the entire building process from concept, design, development and future operation.<sup>23</sup> Buildings can receive a range of certifications from LEED depending on how many points they pursue. LEED-certified Platinum level requires the most number of points, followed by Gold, Silver, and then LEED-certified for meeting the minimum.

### *Require LEED Certification for New Municipal Building Construction:*

Much like municipal activities being powered by renewable energy sources, requiring LEED-certification for new public buildings is a way in which a city can show its support for and engage in green building practices. Many cities have begun requiring LEED-certification for new public buildings such as police stations or convention centers. Not only do more efficient buildings save energy, water,

and tax dollars, but a study from Harvard Business School found that by requiring LEED-certification of municipal buildings, cities see the adoption of LEED-certification double in the private sector.<sup>24</sup> This result is likely because a government standard invites suppliers of LEED expertise into the market, making them more accessible to developers and demonstrating demand.

### *Successful Texas Cities Building Green:*

While Austin, Dallas, El Paso, Houston, Plano, and San Antonio all have requirements for new public buildings to be LEED-certified Silver, **Dallas takes the prize in this category for an addition requirement that all Public Works and Transportation facilities achieve the LEED Gold standard.** Since Dallas passed the LEED requirement in 2008, it has since

built 1 LEED Platinum, 7 LEED Gold, 14 LEED Silver, and 1 LEED Certified City owned facilities. **Houston is also a leader in this category, boasting the fifth highest number of LEED-certified buildings in the country,** and demonstrating how local requirements do correlate to private investment in LEED. The other large cities in Texas have no requirements for LEED-certified public buildings.



*Timberglen Branch library in Dallas, Texas, a LEED gold standard building.*

### *Recommendations for Green Building Commitments:*

All Texas cities should institute ordinances requiring new public buildings to be LEED-certified. When local governments commit to build green, they make a statement of leadership and commitment to efficiency, investment in the local green economy, and saving taxpayer dollars.

And of course, even where we are doing well, there is room for growth. While Austin, Houston and Dallas made the top 20 list in the Green Buildings category of the Clean

Edge Metro Clean Tech Index, no Texas city was listed in the top 10.<sup>25</sup> These cities should push for more local green building and also require the higher certification of LEED Gold, like Dallas has done for Public Works and Transportation facilities. Nationally, cities like Portland and Nashville require that all new municipal buildings earn LEED Gold certification. Texas cities should follow suit.

## Making Electric Cars a Viable Mode of Transport

Replacing gasoline-powered cars with those run on electricity reduces the smog found in our cities and other densely populated areas. A U.S. Department of Energy's Pacific Northwest National Laboratory study found that powering a car on electricity would result in 93 percent less smog-forming volatile organic compound (VOCs) and 31 percent less nitrogen oxide (NOx) emissions than powering a car on gasoline.<sup>26</sup>

Luckily, electric vehicles are quickly

becoming more readily available to the average consumer. More than 30,000 electric vehicles are already on the road in the United States, and more are coming soon.<sup>27</sup> Dealers sold 17,000 electric vehicles in the first year that they were on the market, far exceeding the 9,300 hybrids sold the first full year those vehicles were available, and nearly matching the 20,000 hybrids sold in the first two years hybrids were on the market.<sup>28</sup>

### *Electric Vehicle Charging Stations:*

Most plug-in cars can charge in a normal wall outlet found in many home garages, where owners will charge their cars overnight for normal use. In addition, rapid chargers have been developed that can fill a 100-mile battery in under 30 minutes.<sup>29</sup> In order to increase electric car accessibility and freedom for drives, most modern cities are installing charging stations to support the use of electric vehicles. Supplying drivers of these emission-free cars easy access to charging stations wherever they go makes everyday use of electric vehicles practical and convenient for anyone.

Shifting to electric-vehicles could massively reduce the impact that Texans have on the environment. Most motorists recharge their vehicles at night, meaning consumers typically to tap into under-utilized electric capacity generated during off-peak hours, and also make use of wind power generation, which peaks at night. Cities can also promote use of renewable energy through electric cars by installing charging stations that utilize 100% renewable energy sources.



*This electric car charging station is powered by solar panels installed on the roof.*

### *Successful Texas Cities for Electric Vehicles:*

**Austin leads the way for electric vehicle recharge stations, with 19 stations per 100,000 residents. San Antonio and Houston are also leaders in the state, with 10 and 9 charging stations per 100,000 residents respectively.** These cities have made commitments to transforming the way that Texans view transportation, through public investment and by supporting private-public partnerships. **Austin Energy, with the assistance of Department of Energy Funding, has developed the Texas River Cities Plug-in Electric Vehicle Infrastructure Plan to implement “a convenient and dependable charging infrastructure network” throughout Central Texas to San Antonio, including 110 charge stations.**<sup>31</sup> Austin's

municipal charging stations also utilize 100% renewable energy.<sup>29</sup> San Antonio boasts over 130 charging stations, with 4 chargers available at each station.

Other Texas cities have also made use of public/private partnerships for installing recharge stations. An \$114.8 million stimulus grant by the Department of Energy allowed Texas Instruments, Inc. (Dallas based company) to install 46 electric-vehicle charging stations statewide.<sup>32</sup> A \$240,000 federal grant from the Department of Energy will be utilized in Houston to install 39 total electric-vehicle charging stations to be used free of charge at both Houston airports.<sup>33</sup> These cities are adding to a network of charging stations that ensures Texans easy access for their electric vehicles all over the state.

### *Recommendations:*

Most of the Texas cities ranked have their work cut out for them to make electric vehicle charging infrastructure widely available to the public. Cities should create and implement long-range plans for electric vehicle charging infrastructure and work with community stakeholders and private firms to further develop and expand the infrastructure network.

While Austin, San Antonio and Houston have many charging options available

to the public, they miss the cut for the top cities in the county for electric car recharge stations. Cities like San Francisco, Seattle, and Portland, despite having smaller populations, have well over 200 charging stations, making available more than 20 electric recharge stations available per 100,000 residents.<sup>34</sup> Austin, Houston and San Antonio should keep working to expand cleaner energy transit opportunities within the city limits and beyond.

# Defining the Texas Torchbearers: Standards for Clean Energy Cities

This report was designed to examine which cities in Texas are serving as leaders in energy efficiency and production. Cities were ranked based on the total number of points they received. Each category had a maximum amount of 3 points. In categories based on a highest standard possible (such as adopting the highest efficiency building codes or purchasing 100% renewable energy), 3 points were awarded for reaching that standard. In other categories such as LEED-certification levels and electric car recharge stations, the maximum standard was based on data from leading cities in the United States, in order to gauge not only how Texas cities compare to each other, but how they compare nationally.

To receive a perfect score, a leader in energy efficiency and production is a city that:

- Has adopted the 2012 IECC;
- Produces a minimum of .1 KW solar power per capita;
- Purchases over 50% municipal energy from renewable sources;
- Requires new public buildings to be LEED-Gold certified (or to reach equivalent outcomes); and
- Has installed at least 20 electric recharge stations per 100,000 residents.

## Data

City + Population	Arlington 375,600	Austin 842,592	Corpus Christi 312,195	Dallas 1,241,162	El Paso 672,538	Fort Worth 777,992	Houston 2,160,821	Laredo 244,731	Plano 272,068	San Antonio 1,382,951
Code	2009 IECC	2012 IECC	2009 IECC	2009 IECC	2009 IRC	2009 IECC	2009 IECC+	2009 IECC	2009 IECC	2009 IECC
Score	0	3	0	0	0	0	2	0	0	0
Capacity (KW)	349	41271	none	1243	1436	972	none	98	263	52615
KW Per capita	0.00093	.0489	none	.001	.0021	.0012	none	.0004	.00097	.038
Score	.5	2.5	0	1	1	1	0	0.5	.5	2.5
% Renewables	none	100	none	40	none	none	48	none	none	11
Score	0	3	0	2	0	0	2	0	0	1
LEED for New Public Buildings	None	LEED silver	None	LEED silver / gold	LEED silver	None	LEED silver	None	Highest level of LEED	LEED silver
Score	0	2	0	2.5	2	0	2	0	2	2
Charging Stations	13	161	3	64	20	15	191	2	16	134
Charging Stations Per 100,000 Residents	3	19	1	5	3	2	9	1	6	10
Score	1	2.5	0.5	1	1	0.5	1.5	0.5	1.5	2
TOTAL	1.5	13	.5	6.5	4	1.5	7.5	1	4	7.5

## Methodology

### Building Codes

This category measures mandated building efficiency through city building codes. Cities were awarded points for codes resulting in higher efficiency than the 2009 IECC, the state minimum. Cities were awarded 3 points for the 2012 IECC, or amendments to the code that producing 15% higher efficiency than the 2009 IECC. Cities with amendments for 10% greater building code efficiency than the 2009 IECC received 2 points. Cities with amendments for 5% greater building code efficiency received 1 point. Cities that remain at the 2009 IECC received zero points.

### Utility-Supported Solar Power

This category measures KW solar power produced per capita. City population was based on the 2012 census if available, or 2011 estimates. A top score in this category was based on highest producing solar cities in America, which produce upwards of 100 MW, or .1 KW solar per capita. Cities that produce more than .1 KW per capita would have received a 3. Points were then awarded as follows:

Greater than .1 KW per capita	3	.005-.0099	1.5
.03-.099 KW per capita	2.5	.001-.0049	1
.01-.029	2	Less than .001, more than zero	.5

### City Purchased Renewable Energy

This category awards points for percentage of renewable energy purchased by the municipality. Cities that purchase 100% from renewable sources received 3 points. Cities that purchased 40-99% renewable energy received 2 points. Cities that purchased 1-39% renewable energy received 1 point. All other cities received zero points. This data was collected from the Database of State Incentives for Renewables and Efficiency (DSIRE)<sup>35</sup> and the EPA Power Partnerships website.<sup>36</sup>

### Green Certified Municipal Buildings

This category awards points for city for ordinances requiring new public buildings to meet certain LEED or other green building certification for new municipal buildings. Cities with a LEED gold requirements received 3 points. Cities with partial LEED gold requirements received a 2.5 Cities with LEED silver requirements received 2 points. Cities with LEED-Certified requirements received 1 point. All other cities received zero points. Data collected from DSIRE.<sup>37</sup>

### Electric Recharge Stations

This category ranked cities by number of electric car charger stations per 100,000 residents. City population was based on the 2012 census if available, or 2011 estimates. A score of 3 was awarded to cities with 20 or more charging stations per 100,000 residents, as the top 5 cities in America for electric car recharge stations have at least 20 per 100,000 residents. Points were then awarded as follows:

20 stations or more	3	5-9 stations	1.5
15-19 stations	2.5	3-4 stations	1
10-14 stations	2	1-2 stations	.5

Data was self-reported from City of San Antonio Office of Sustainability and CPS energy, Austin Energy and collected from the Department of Energy database.<sup>38</sup>

# Notes

1. Pernick, Ron, and Bryce Yonker. "2013 U.S. Clean Tech Leadership Index, State & Metro." Clean Edge, Inc., June 2013.
2. Id.
3. Metzger, Luke, Elizabeth Ridlington, and Judee Burr. Environment Texas Research & Policy Center, Reaching for the Sun: Repower Texas with Clean Energy, 14 Feb. 2013.
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