



2018 Case Study Report

CITIES ARE READY FOR 100% CLEAN ENERGY

Columbia, SC | Concord, NH | Denton, TX | Denver, CO | Fayetteville, AR | Minneapolis, MN | Norman, OK | Orlando, FL | Santa Barbara, CA | St. Louis, MO



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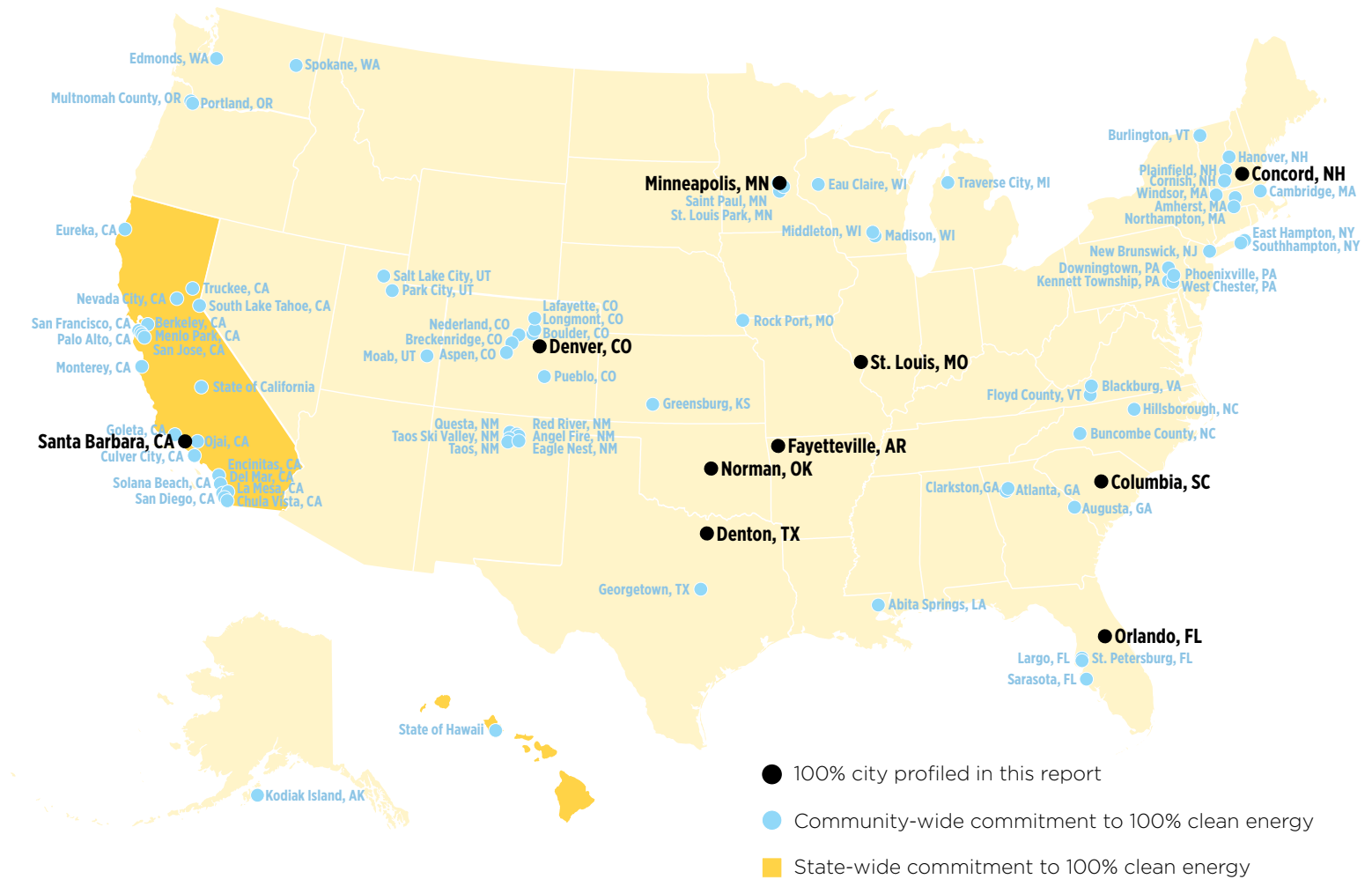
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FROM SURVIVING TO THRIVING



STATE AND COMMUNITY COMMITMENTS TO 100% CLEAN ENERGY



Introduction

As leaders from around the world gather in San Francisco for the Global Climate Action Summit, one need only look at America's cities to see how local leadership is having a global impact on the fight to stop climate change and transition to 100 percent clean and renewable energy.

More than 80 cities in the United States have now established bold commitments to move away from dirty fuels and repower their communities with 100 percent clean, renewable energy sources like wind and solar.

These cities are taking meaningful steps to achieve their goals and realize a vision for healthy, vibrant, and more equitable communities powered with clean energy. As a direct consequence, fossil fuels

are being pushed out and the bar is being raised for electric utilities, states, and energy generators to go all-in on clean and renewable power.



In Colorado, local demand for clean energy spurred Xcel Energy to replace two units at Colorado's largest coal plant with a \$2.5 billion investment in clean energy. Now, Xcel has agreed to work with the cities of Denver and Breckenridge to help those communities achieve their 100% clean energy goals.

In St. Louis, the city's commitment to transition to 100% clean energy, coupled with the support from St. Louis-based 100% clean energy companies like Anheuser-Busch, prompted the electric utility Ameren to launch new programs to bring more clean energy online.

In Traverse City, Michigan, the municipal utility serving the community adopted a commitment to move to 100% clean electricity by 2040, providing a clear path for the first city in Michigan to achieve this ambitious goal.

And in California, where nearly 20 cities ranging from San Diego to San Francisco are pursuing 100% clean energy through community-choice programs and other means, Gov. Jerry Brown has now signed into law legislation that will move the world's fifth largest economy to 100% clean energy by 2045.

Cities of all sorts are moving with common purpose to protect public health, create jobs, and reduce energy burdens for local residents by making a just transition to clean energy. In Atlanta, a plan prepared by the city's Office of Resilience, found that one pathway for the city to reach 100% clean energy would create at least 8,000 new local jobs and reduce electricity bills for residents by at least 25%.

Still, it's up to all of us in our own communities to shape what a true 100% clean energy economy looks like, and to ensure that we get there in a way that empowers and benefits everyone—particularly those hit first and worst by fossil fuel pollution.

Together, we can create a new energy economy that transforms not only how we power our country but also *who* has power to decide what's best for our communities.

We can do this. And if the fact that more than 80 American cities are already on their way to 100% clean energy proves anything, it's that we *will* do this.

—JODIE VAN HORN
Ready For 100 Director





Columbia, SC

100% RENEWABLE ENERGY BY 2036

Following catastrophic flooding across the state, South Carolina's capital is emerging as a clean energy leader.

Sit in on a City Council meeting in Columbia, South Carolina, and you won't just hear about renewable energy, you'll experience it: The city powers its council meetings with 100% solar energy. Drive along city streets, and you'll see that nearly all of the traffic lights have been converted to LED, solar panels are becoming ever more common, and preserving urban green space is clearly a priority. These are small steps toward the goal of 100% renewable electricity, but "Soda City" is making progress.

In 2015, record downpours caused all three of the rivers that flow through Columbia to overflow, causing severe flooding, washing out hundreds of roads, destroying 45 dams, causing billions of dollars in damage, and costing 19 people their lives. In response, Mayor Steve Benjamin pushed to acknowledge and address the growing threat of climate disruption by supporting clean energy legislation at state and local levels. Led by Mayor Benjamin, Columbia adopted its clean energy resolution in June 2017, becoming the first city in

South Carolina to commit to transition to 100% clean energy.

Columbia is taking important steps to meet this goal, including a thorough energy efficiency audit, planning a solar-powered wastewater facility, and transitioning municipal operations to 100% renewable energy. Clean energy efforts will run parallel to sustainable water management and wastewater infrastructure improvements that are designed to guard against future flooding.

"It's up to us as leaders to creatively implement clean energy solutions for our cities across the nation. It's not merely an option now; it's imperative. Cities and mayors can lead the transition away from fossil fuels to 100% clean and renewable energy."

— **STEVE BENJAMIN**

Mayor of Columbia

City Stats

- Population: 133,114
- Electric Utility: South Carolina Electric & Gas (SCE&G)
- First municipality in South Carolina to commit to 100% clean energy

While the floods emphasized the importance of more sustainable city development, they were not the only motivating factor. Community health was another primary motivation, particularly that of frontline communities—those which endure the first and worst effects of fossil-fuel pollution and natural

disasters. The resolution also emphasizes economic growth, job creation, and reduced utility costs.

SETTING THE BAR HIGH IN SOUTH CAROLINA AND BEYOND

Thanks in part to the Solarize South Carolina program and legislation that lifted the cap on net metering and rooftop solar, solar energy-related jobs in Columbia increased by 46% in just one year (2015-2016). However, not all of Columbia's clean-energy efforts have gone smoothly. The solar legislation came with a stipulation that would cap the program if solar output reached 2% of peak energy production. The rapid growth of solar energy in Columbia and other parts of the state triggered this cap several years sooner than expected, which could result in the loss of thousands of solar-related jobs and a drop in solar power usage. A bill that proposed allowing new customers to install home solar panels failed at the state level in the most recent legislative session. Also, plans to develop a solar-powered wastewater facility were waylaid by the 2015 floods, and the local utility backed out. The city has now picked up the baton and is looking to redesign and build the facility itself.

In December 2017, Columbia became the only city in South Carolina to receive a 3-star certification by STAR Communities, a measure of local sustainability progress against national standards. The city has set a goal to improve its rating from 3 stars to 4 (out of a possible 5) over the next three years.





Concord, NH

**100% RENEWABLE ELECTRICITY BY 2030;
100% CLEAN ENERGY IN ALL SECTORS BY 2050**

With strong support from public, private, and faith-based sectors, the state capital joins three other New Hampshire cities in the promise for a clean energy future.

Like a snowball gaining mass with each rotation, the clean energy movement is picking up momentum in the small state of New Hampshire. In 2017, the town of Hanover committed to transitioning to 100% clean energy, and Plainfield and Cornish have since followed Hanover's lead. Now Concord, the state capital, has set its sights on a more sustainable future and has begun the planning process to achieve its clean energy goals.

On July 9, 2018, the Concord City Council voted unanimously to work toward 100% clean and renewable energy. The resolution already had plenty of community buy-in: Endorsements came from organizations as diverse as the State Employees Association, the Unitarian Universalist Church of Concord, the Chamber of Commerce, and the editorial board of The Concord Monitor. The capital's largest private sector employer, Concord Hospital, was also supportive of the initiative.

In building community support, Concord is taking a page from the playbook of Hanover, which was the first city in the nation to have its 100% clean energy goals approved in a vote by its residents. Concord's resolution states that Concord Energy & Environment Advisory Committee will work with the city government to create a stakeholder committee that will help shape Concord's strategic energy plan. This measure is intended to ensure that every part of the Concord community is able to offer input on the plan, which the city plans to gather through

public meetings. Within the first year, the Energy and Environment Committee will spearhead the development of a strategic plan to establish feasible pathways to complete the transition to 100% clean energy.

PRACTICAL STEPS TOWARD DESIGNING THE FUTURE

Although the ink is barely dry on this resolution, clean energy isn't a new idea in Concord. The city has already taken meaningful steps in several important areas, including:

- Planning development of a large solar photovoltaic facility on the city's closed landfill.
- Developing changes to the local zoning ordinance to accommodate the siting of solar projects.
- Investigating opportunities to use New Hampshire's Volkswagen settlement money to invest in electric-vehicle charging infrastructure in the city.
- Engaging in discussions with major city institutions, local gas and electric utilities, and state policymakers about how best to achieve the adopted renewable energy goals.

With its clean energy resolution in place and strong community support behind it, Concord must now carefully plan how the city will achieve these goals in a manner that takes into consideration the needs of all community members.

City Stats

- Population: 43,019
- Electric Utility: Unitil Energy Systems
- State capital and third New Hampshire city to commit to 100% clean energy

"We had a lot of public support for the resolution; many people showed up at the City Council sessions. We now want to go back out to the community with the spirit and ambition of this resolution, and figure out how to make it real."

— ROBERT WERNER

City Councilor and Chair of the Energy and Environment Committee

Efforts by cities like Concord and Hanover bolster statewide legislation that promotes clean energy for all New Hampshire residents. These measures include tax incentives for individuals, businesses, and nonprofits, as well as net metering for homeowners using solar- or wind-generated power.





Denton, TX

100% CLEAN ELECTRICITY CITYWIDE AS EARLY AS 2020

In Denton, highly polluting fracked gas and “Texas tea” give way, as communities demand a cleaner future.

Denton, a mid-sized college town about 40 miles north of Dallas, isn’t a newcomer to the fight against fossil fuel pollution. Located in a heavily fracked region with at least 300 gas wells inside the city limits, Denton tried to ban fracking in 2015, only to be overruled at the state level. The Denton area suffers from some of the worst air pollution in Texas and, as health concerns become more pressing, the city is pushing hard for 100% clean energy.

In February 2018, Denton became the second Texas city to commit to achieving 100% clean energy, following the lead of Georgetown, which had already achieved that goal. Denton adopted a Simply Sustainable plan in 2012 to seek out and increase renewable energy resources. In 2016, the general manager of Denton Municipal Electric (DME) announced the Denton Renewable Plan, which has three main goals: achieve 70% renewable energy by 2019; end the city’s contract with the Gibbons Creek coal plant; and build a 220-megawatt gas peaker plant to supplement the energy supply as needed.

At public meetings, most of the North Texas community was supportive of additional renewable energy, but suspicious of the need for new gas units in an area already suffering from poor air quality. Despite these concerns, the plan was approved by the Denton City Council in early 2017.

Denton’s struggle didn’t end there. Questions emerged about how the gas technology was chosen, and several city officials, resigned or were placed on leave, largely due to the way the contract was negotiated and granted. With several new council

“This is the beginning of an energy transformation in Denton. The foundation has been laid for the day when Denton has its own renewable generation capability with community and utility-scale solar installations.”

— ED SOPH
Denton resident

City Stats

- Population: 136,268
- Electric Utility: Denton Municipal Electric
- Joins Georgetown as the second Texas city to adopt a 100% clean energy goal

members and the mayor still skeptical of the plan, the council commissioned a third-party study to review the Denton Renewable Plan and determine the feasibility of a more aggressive renewable energy goal.

The environmental consulting firm’s report recommended that Denton accelerate and expand its renewable goal to achieve 100% clean energy. Although the city is currently locked into ownership of the new gas plant, the study recommended using the plant primarily as a financial hedge against spikes in local energy prices and not to meet electricity needs in the city. Denton would still purchase enough wind and solar energy to meet all the community’s electricity demands, and the gas units would run 10% to 15% of the time to earn money on the Texas energy market. The report also recommended that Denton add to existing solar and wind contracts by securing 200 megawatts of solar and 100 megawatts of coastal wind power over the next two years.

Wasting no time, the Denton City Council unanimously approved a contract for a 100-megawatt solar project called Bluebell II to augment its existing contract with 30-megawatt Bluebell I. With more resources expected to come online in the next two to three years and the cost of wind and solar dropping steadily, Denton is surging to the forefront as a municipal clean energy leader.





Denver, CO

100% CLEAN ELECTRICITY CITY-WIDE BY 2030

The Mile-High City teams up with utility provider Xcel Energy to invest in a greener future for all.

In a state historically dominated by coal and fracked gas, Colorado consumers are now demanding more sustainable energy—and city leaders and utility providers are listening. Denver has bucked pressure from powerful oil and gas interests to push the city toward its clean energy goals, and Xcel Colorado (Public Service Company of Colorado or PSCO) is stepping up, laying out major investment plans for clean energy infrastructure.

In July 2018, Denver joined nine other Colorado communities in making the commitment to transition to 100% clean, renewable electricity. What's more, they are promising to do it by 2030—perhaps even sooner. Colorado's capital took bold strides toward ensuring a more environmentally responsible future in 2015, when the city presented a first-of-its-kind Climate Action Plan that pledged to reduce carbon emissions by 80% by the year 2050.

Under the leadership of Mayor Michael Hancock, the new 80x50 Climate Action Plan goes beyond clean power: It incorporates strategies for land use and development, home and business efficiency

upgrades, and mass transit planning to meet the city's 80% carbon reduction goal. The plan also includes provisions for a community solar program, a net-zero building code for new construction by 2035, and a fleet of 100% electric light-duty vehicles, taxis, and car shares by 2050. Reaching these goals will require strong strategic partnerships, of which Denver has many. A varied coalition of more than 50 nonprofits and businesses is standing behind the mayor's clean energy plans. Supporters include the Working Families Party, the Colorado Latino Forum, the Denver NAACP, the Democratic Party, and the Denver Labor Federation.

A WIN-WIN COMMITMENT TO CLEAN ENERGY

One of the state's most important partners in this transition is regional utility provider Xcel Energy. The local utility, PSCO, has recently finalized encouraging agreements with Colorado communities, including Breckenridge and now Denver, to move toward 100% renewable energy. Denver accounts for 25% of Xcel's retail sales, so the state's capital holds considerable sway with its utility provider. Xcel has announced plans to replace two units at Colorado's largest coal plant with a \$2.5 billion investment in clean energy generation, owing in part to community pressure urging the utility transition to clean energy. This move alone is expected to save more than \$213 million, while reducing carbon emissions by 59%. By 2026, Xcel plans for 55% of the energy they generate in Colorado to come from renewable sources.

As the clean energy movement sweeps across the state, Colorado is poised to become a model for the rest of the country: It is the first state in which the renewable portfolio standard is set by public vote, rather than by legislation; its abundant wind and solar resources make the transition to clean energy both affordable and logical; and 10 communities in Colorado have now committed to transition to 100% clean energy.

"We are excited about this...it makes good economic sense, and the end results will be cleaner air, increased efficiency of our buildings and vehicles, and better quality of life. We think it's going to be a great experience for the people of Denver, working toward a cleaner and healthier community that they can be proud of, and knowing they are also contributing to solving a pressing worldwide problem."

— JERRY TINIANOW

Chief Sustainability Officer, Department of Public Health and Environment, City and County of Denver

City Stats

- Population: 704,621
- Electric Utility: Xcel Energy (55% renewable energy by 2026)
- State capital and largest city in Colorado to commit to 100% clean energy
- Colorado: Renewable Portfolio Standard (RPS) 30% by 2020 for investor-owned utilities

With one of the country's fastest-growing economies and a clear commitment to sustainability, Denver is rising fast as a clean energy star.





Fayetteville, AR

100% CLEAN ENERGY IN CITY GOVERNMENT OPERATIONS BY 2030;
CITY-WIDE BY 2050

University of Arkansas town leads the state in committing to clean energy goals.

All across the U.S., forward-thinking mayors and other city leaders are pledging to make their communities “stronger, healthier, more resilient, and more equitable” through the Mayors for 100% Clean Energy initiative. Fayetteville’s mayor, Lioneld Jordan, took his pledge for the city one step further by adopting a community-wide 100% clean energy commitment as part of the city’s Energy Action Plan, which outlines bold steps to transition the city to 100% renewable energy sources by 2050.

Named one of the “Best Places to Live” by U.S. News & World Report, the fast-growing city of Fayetteville became the first in the state of Arkansas to commit to transition to 100% clean and renewable energy when its City Council voted to adopt this goal 7-1 in January 2018. The commitment is part of the city’s comprehensive Energy Action Plan, which lays out ambitious goals and strategies for energy efficient transportation, buildings, waste management, carbon emissions reduction, and more. Mayor Jordan stated, “I believe we live in a day and time in which

we know that climate change poses a very serious and very real threat. And I am proud that we have developed our action plan to address climate change issues.”

The mayor’s vision for the community has a strong partner in the University of Arkansas, home of the Razorbacks and the city’s largest employer. Both the city and the university announced their support in April for the development of a renewable wind farm in Oklahoma known as the Wind Catcher Energy

"We are going to meet these goals because we are making it a priority, and together we will get there. Fayetteville is motivated and committed to join local leaders around the world and be part of a collective solution to a global problem."

— LIONELD JORDAN
Mayor of Fayetteville

City Stats

- Population: 85,257
- Electric Utility: Ozarks Electric and SWEPCO
- First city in Arkansas to commit to 100% clean energy

Connection. Unfortunately, the Wind Catcher project was canceled after Texas regulators refused to approve it—a blow not only to clean energy efforts in Fayetteville but also across the region.

As Fayetteville continues to explore clean energy solutions with its existing utility companies, Ozarks Electric and SWEPCO, the city is simultaneously looking at solar investments and other energy-efficient upgrades for municipal buildings. It is also

launching a bike-share program, strategizing to increase urban tree planting, and working out how to use funds from the Volkswagen settlement to invest in electric-vehicle charging stations for its downtown area.

With Fayetteville leading the way and Little Rock not far behind, the demand for clean energy may spread to other parts of the state, bringing a more sustainable future to all Arkansas residents.





Minneapolis, MN

100% CLEAN ELECTRICITY FOR CITY OPERATIONS BY 2022;
COMMUNITY-WIDE BY 2030

As Minneapolis maps out a clean energy plan that will benefit all its residents, utility provider Xcel Energy will play an important role.

In April 2018, Minneapolis became the largest city in the Midwest to date to commit to 100% clean and renewable electricity, focusing its efforts on a shift from fossil fuels to wind and solar power. With a population of more than 420,000, this Twin City carries major clout in the region and is paving the way for the rest of the state to transition to renewable energy.

Sponsored by Jacob Frey (City Council member at the time but now the mayor) and supported by the Sierra Club and national youth activist organization iMatter, the unanimously approved resolution sets ambitious goals of transitioning municipal operations to 100% clean electricity over the next four years and of transitioning the entire community to 100% by 2030. The resolution bolsters the city's existing Climate Action Plan, which focuses on drastically reducing carbon emissions in the coming decades.

Despite its reputation for long, frigid winters, Minneapolis ranks high for solar capacity and was

named a "Solar Builder" in a report released by citizen advocacy group Environment America. The state's community solar program is, indeed, setting the standard for solar energy, both in capacity and legislation. The community solar program has plans in place to produce 400 megawatts of clean energy—that's 10 times the amount produced so far in the entire U.S. from similar programs. In addition, Minnesota's solar energy doesn't come with a cap on development. As a result, 92% of residential customers in Xcel's program are saving on utilities with a community solar subscription, and almost a

“Resolutions like this one are more than just a statement of values—they’re a roadmap for environmental policies that better serve all our neighborhoods. Historically, some communities have experienced more of the negative consequences of climate change, and have also been excluded from accessing green jobs and the clean energy they produce. Minneapolis is committed to ensuring that energy remains affordable and that our transition to clean energy meets the needs of those most marginalized and affected by pollution.”

— THE OFFICE OF MAYOR JACOB FREY

third of the power generated through the community solar program will go to public-sector entities such as schools.

Xcel Energy, which has its headquarters in Minneapolis, currently operates five solar power plants in the state and 21 across the country. Minneapolis alone makes up 15% of Xcel’s customer base in Minnesota, and it joins several other cities in Xcel’s national service territory that have made #ReadyFor100 commitments—most recently, Denver, Colorado. As the movement for clean energy builds momentum nationwide, the large-scale utility provider appears to be listening.



City Stats

- Population: 422,331
- Electric Utility: Xcel Energy (30% renewable energy by 2020)
- Largest city in the Midwest to commit to 100% clean energy

BRINGING EQUITY INTO THE ENERGY DISCUSSION

Along with environmental sustainability and other critical issues, Mayor Frey campaigned on promises of healing race relations in Minneapolis and bringing affordable housing to all residents. His policy on clean energy doesn’t ignore those campaign promises—in fact, the resolution adopted by Minneapolis contains some of the strongest equity language of any such resolution in the country. It includes:

“Strategies to ensure that all consumers, especially those who have been left out of the benefits of energy programs in the past, communities of color, low-income communities, renters, and communities that have borne the brunt of past environmental racism, receive equitable benefit from this transition...”

This forward-thinking approach to environmental sustainability sets a standard for community engagement and equity-based solutions. By making it clear that clean energy initiatives must consider everyone in the community, Minneapolis sets an important precedent that may influence other Midwestern neighbors to follow suit.



Norman, OK

100% CLEAN ENERGY BY 2050

The first city in Oklahoma to make the #ReadyFor100 commitment, Norman is tackling climate change and building an inclusive community.

Despite abundant natural wind and solar resources, change is coming slowly to the oil- and gas-dependent state of Oklahoma. The city of Norman is attempting to turn the tide by joining the national movement toward sustainable energy.

Although Norman is the third-largest city in Oklahoma and home to the University of Oklahoma, the state's largest university, the town itself is largely rural—making it atypical in the #ReadyFor100 movement. However, an expiring franchise agreement between the city and its utility provider, Oklahoma Gas & Electric (OG&E), prompted volunteer activists to urge the city to advocate for cleaner energy options.

After a yearlong campaign, the volunteer-led team persuaded the city to commit to 100% clean, renewable energy across all sectors, including heat and transportation, by 2050. A unanimous vote by the City Council in May 2018 made Norman the first city in Oklahoma to adopt such a goal—considered

a big win for Mayor Lynne Miller's administration.

Councilmembers weighed in on the numerous environmental benefits, job opportunities, and economic advantages of renewable energy, and the resolution garnered cross-community support from environmental, commercial, educational, and faith groups.

THE WINDS OF CHANGE BEGIN TO BLOW

Oklahoma is rated second in the nation for installed wind power generation capacity and ranks in the top 10% for solar generation capacity. Wind currently supplies close to 30% of the state's total energy consumption. However, the growth rate for solar energy remains low (currently ranked 49th in

“This is a big step forward for our city. Norman is 190 square miles and about one-third of our city is rural, which is unusual. We have a community that supports taking care of the environment. We’re only at the beginning, but the intention is here and we’re ready to focus.”

— **LYNNE MILLER**
Mayor of Norman

City Stats

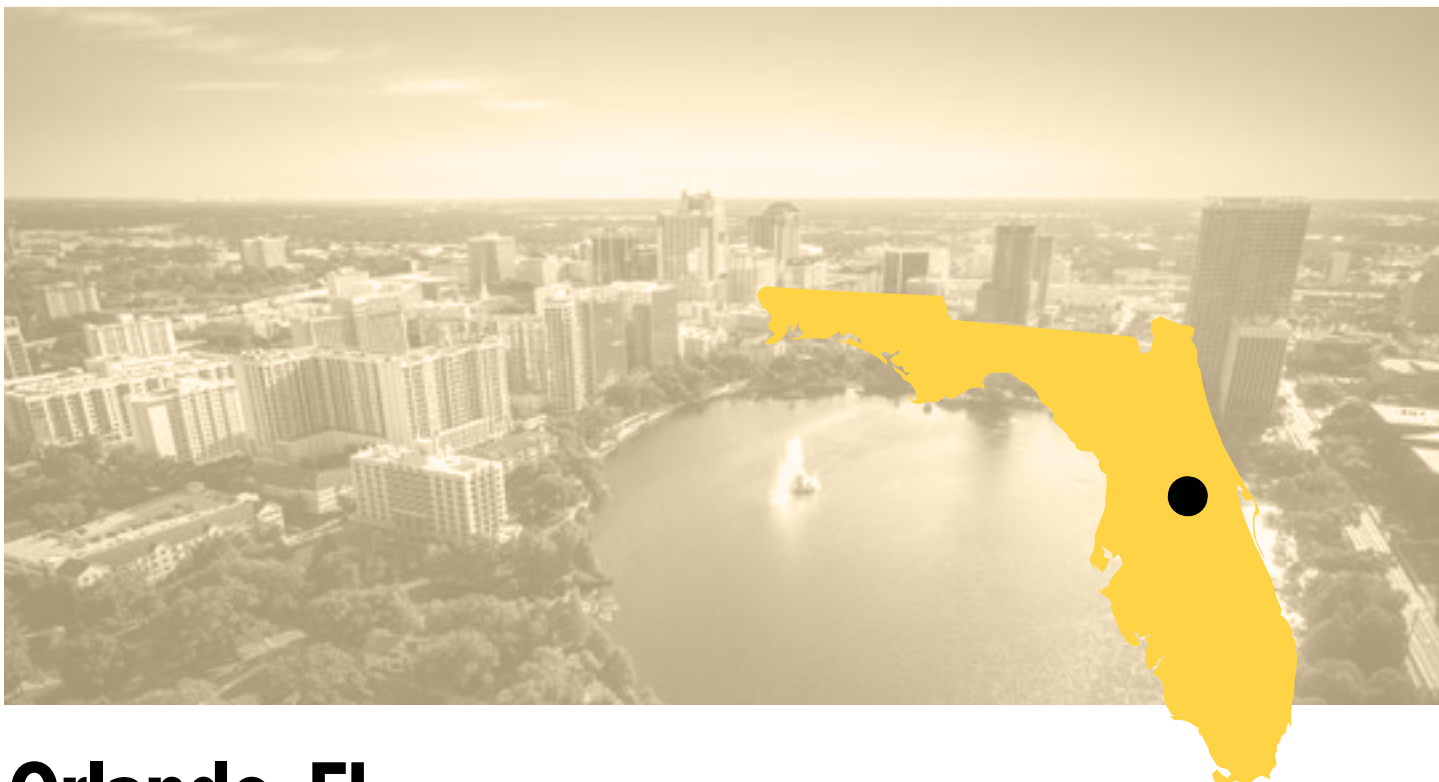
- Population: 122,843
- Electric Utility: Oklahoma Gas & Electric (OGE) and Oklahoma Electric Cooperative (OEC)
- First city in Oklahoma to commit to 100% clean energy

the nation). Methane pollution, earthquakes, and water contamination—all direct results of fracking in the state—provide a strong impetus for increasing Oklahoma’s renewable energy generation and consumption.

The city of Norman is currently working with its two utilities, OG&E (the primary utility) and OEC (a rural electric co-op), to determine its best options for moving to clean energy. The University of Oklahoma is already using 100% renewable energy through the purchase of renewable energy credits. Norman is exploring a solar program for its public schools and looking at updating its legislation to make the adoption of solar energy easier. Through a 2017 pilot program, Norman became the first city in Oklahoma to incentivize energy-efficient home building. Other sustainability efforts include plans to promote electric vehicles and greener building practices.

One of Mayor Miller’s goals in bringing renewable energy to Norman is ensuring that it is made affordable and accessible to all, so ensuring representation from all community sectors will help the city to plan and achieve equitable solutions. New infrastructure is costly, and the mayor is determined to find a way to bring in more renewables without burdening those who can least afford it. To this end, Norman is working to appoint a stakeholder committee, which will also be part of the subcommittee for the Mayor’s Climate Change Agreement. The grassroots volunteer effort remains strong, and the city plans to hire a full-time sustainability director by the end of the year.





Orlando, FL

100% RENEWABLE ELECTRICITY IN CITY OPERATIONS BY 2030;
COMMUNITY-WIDE BY 2050

The future looks bright for Orlando's solar-focused, 100% clean energy plans.

In August 2017, Orlando's City Council unanimously passed a resolution to transition to 100% clean energy in municipal operations by 2030, and community-wide by 2050, making it the second-largest city in Florida to pledge to #ReadyFor100.

Led by Mayor Buddy Dyer, a strong supporter of the 100% clean energy movement, Orlando's resolution was supported by a broad and diverse coalition of local organizations, including the League of Women Voters, IDEAS for Us and the NAACP, as well as Sierra Club. This coalition is now working to secure a commitment to retire the city utility's two remaining coal-fired power-generation units and replace them with renewable sources.

A full transition plan is still in process, but with two solar farms already in place and plans underway for building more, Orlando, which famously receives an average of 300 days of sunshine a year, is already leveraging its best-known natural resource. The second solar farm, a 24-acre facility capable of

generating 13 megawatts of clean energy, now powers Orlando's city hall, all 17 fire stations, and its police headquarters with 100% clean energy.

Shifting to solar may seem like an obvious solution in the Sunshine State. However, as in other parts of the country, the upfront costs of solar infrastructure and concerns about availability can present hurdles to community buy-in. To address these issues, Orlando is working closely with its municipal utility, the Orlando Utilities Commission, to decarbonize its energy offerings and rapidly expand the availability of solar energy, while at the same time creating programs that reduce, defray, or even eliminate the upfront costs for end consumers.

City Stats

- Population: 280,257
- Electric Utility: Orlando Utilities Commission

Two of the solar support programs now available include Community Solar, which allows residents and businesses to choose the source of their energy, with up to 100% coming from renewable sources, and Collective Solar, a cooperative model that creates economies of scale, enabling homeowners to opt-in to rooftop solar at significantly reduced costs. Orlando has also implemented a PACE program that will provide \$500 million in clean energy financing to residents and businesses.

PLANNING AHEAD FOR A STRONG, CLEAN ENERGY ECONOMY

In addition to being a well-known tourism and theme park capital, Orlando is an emerging hub for technology and startup companies. New companies bring new construction projects, and the city is planning to ensure a sustainable, clean energy economy by requiring that all new buildings be certified LEED Silver at minimum. Every new building must also be solar-ready or have the capacity to add on solar. Other steps the city has taken include reducing the soft costs of solar, streamlining the new building permit process, implementing contractor

“Our city is poised to be a leader of the clean energy economy. The mayor’s office is aware of the different needs and economic disparities within our communities and is working toward a just and inclusive transition to clean energy, making sure we are not leaving anyone—particularly our most vulnerable community members—behind.”

— CHRIS CASTRO

Director of Sustainability, City of Orlando

training, and clearly defining solar-energy equipment in its energy code. The city is addressing economic barriers to clean energy adoption with several initiatives, including one to subsidize retrofitting lower-income residents’ homes, a pilot program in subsidized housing, and efficiency financing for homeowners.

Close to 10 percent of Orlando’s overall energy now comes from renewable sources—a good start for the state’s third-largest metropolitan area. Of course, the city will need to ramp up quickly to reach its ambitious 100% clean energy goals. The mayor’s office is applying due diligence in this direction, stating: “We know where we need to go, and now we’re figuring out together how to get there.”





Santa Barbara, CA

100% RENEWABLE ELECTRICITY BY 2030

Several California communities are ahead of the clean energy curve thanks to Community Choice Aggregation, newly welcomed by Santa Barbara.

As cities across America join the quest for clean, sustainable energy, some are wrestling against well-financed, change-resistant utility companies. Others may own a municipal utility or can work together with their utility providers to transition to cleaner energy sources. Meanwhile, some communities are breaking from investor-owned utilities by joining forces to procure their own energy sources through Community Choice Aggregation programs, or CCAs.

CCAs enable communities to bypass investor-owned utility providers by banding together to purchase their own energy wholesale and, therefore, exercise more control over their energy options. Through the CCA, decisions about power supply, rates, and incentives are brought to the local level. California's 18 operational CCAs already represent many counties and cities across the state, with another nine CCAs expected to launch soon.

CALIFORNIA CITIES PURSUE 100% CLEAN ENERGY WITH CO-OP SPIRIT

Just 90 miles north of Los Angeles, the small, green-minded city of Santa Barbara committed to the goal of 100% clean, renewable energy in June 2017. The City Council's #ReadyFor100 resolution set an interim milestone of 50% clean energy in municipal buildings and operations by 2020, followed by a 100% city-wide deadline of 2030. Since committing to these goals, Santa Barbara has been working

“The community is very supportive of the city’s 100% renewable energy goal and forming a Community Choice organization. Both hearings were packed with public speakers, with most people expressing a desire to get off of fossil fuels. Building local, renewable energy and energy storage were also dominant themes. Our community is eager to use renewable energy and storage to replace the Ellwood Natural Gas Peaker Plant rather than building a new gas-fired plant as Southern California Edison wants to do.”

— **MICHAEL CHIACOS**

*Director of Energy and Climate Programs,
Community Environmental Council*

on a zero-net energy report for city facilities and is creating a strategic energy plan to find the most economical pathways. In July 2018, the City Council voted unanimously to form a new Community Choice Energy program in partnership with Santa Barbara County and the neighboring cities of Goleta and Carpinteria.

Santa Barbara still has a lot of work ahead, but if all goes well, the city expects to launch its CCA energy program in 2021, which will immediately bump its renewable energy mix from its current, 32-34% range up to 50%.

Further north, San Francisco and San Jose were trailblazers in the CCA trend, each having adopted 100% renewable energy goals more than a decade ago. To date, 19 additional California cities have committed to 100% clean energy goals, and many are looking to CCAs to make these commitments feasible. Some reports project that by 2020, 85% of California’s energy customers could be supplied by entities other than investor-owned utilities.

East Bay Clean Energy has already launched, serving the city of Oakland and Alameda County as the nation’s most progressive and equitable CCA to date. Other California cities, like Encinitas and San Diego,

City Stats

- Population: 92,101
- Electric Utility: Southern California Edison; forming new Community Choice program
- California: 100% renewable energy by 2045; Community Choice Aggregation

have more recently committed to 100% clean energy goals and are exploring how CCAs can help them succeed.

Right now, California is one of just seven states (CA, IL, MA, NJ, NY, OH, and RI) where CCAs are a legal pathway for communities to pursue their energy goals, though several other states are investigating how to follow suit.





St. Louis, MO

100% CLEAN, RENEWABLE ENERGY CITY-WIDE BY 2035

Deep in the heart of coal country, the Midwest’s “Gateway City” forges a new reputation as a clean energy leader.

While a 100% clean energy goal is ambitious for any city, it is perhaps even more so in a longtime coal industry capital like St. Louis—home to two of the country’s largest coal companies. But in the wake of the Trump administration’s withdrawal from the Paris Climate Accord, Lewis Reed, president of the St. Louis Board of Aldermen, urged his city to take the future into its own hands.

In October 2017, the St. Louis Board of Alderman, led by President Reed, unanimously approved a commitment to transition to 100% clean, renewable energy by 2035. Its supporters have a long-term vision for St. Louis, one driven by green job creation, cleaner air, and better quality of life for all residents.

The city has set a deadline to develop its clean energy transition plan by December 2018 and, to that end, has assembled a diverse and inclusive stakeholder committee to gather input and expertise from every corner of the community. Reed stated:

“I’m excited about our stakeholder committee. We have a main committee plus a separate task force. The committee includes people from all communities in our city, from university professors and activists to neighborhood representatives, as well as energy experts who understand how to manage this process and transition. We are all at the table, and we have the ability to put things into legislation that will affect our city’s well-being long into the future.”

As an interim step, St. Louis recently adopted the 2018 International Building Codes, which include a number of stricter national and international

“We have a diverse, community-led stakeholder committee and we are all at the table, actively working to bring all of our city’s communities into the clean energy economy. This is a big step for our city and an important one—the work we do today will help us turn over a more sustainable world to the next generation.”

— LEWIS REED

President of the St. Louis Board of Aldermen

standards for energy use, moving the city one step closer to its clean energy goals.

BUSINESSES ARE KEY PARTNERS IN ACHIEVING 100%

St. Louis’ commitment to 100% clean energy, along with that of locally based, 100% clean energy companies like Anheuser-Busch, is already driving change at the utility level, encouraging local electric utility Ameren to expand programs that would bring more clean energy online. Ameren recently rolled out a Renewable Choice Program that enables St. Louis (and any other cities in its service area, along with large industrial and commercial consumers)

City Stats

- Population: 308,626
- Electric Utility: Ameren
- Longtime “Coal Capital” home to Peabody and Arch coal

to receive up to 100% of their electricity from renewable sources. This program is the first of its kind in the state and sends a powerful signal that even in communities with long ties to coal, the benefits of clean energy are too great to ignore. President Reed noted:

“I was really pleased when Ameren announced they would participate in helping us achieve our clean energy goals. They have been building partnerships with wind farms across the state, looking into supplementing their use of fossil fuels. We are really early in this process, just at the beginning of our engagement, but we will get there.”



TABLE 1: NATIONAL SUMMARY OF COMMUNITY COMMITMENTS AND PLEDGES TO 100% RENEWABLE ELECTRICITY¹

	Potential CO2 emissions reduction by 2030 (million metric tons)	Number of cities	% of U.S. population	% of U.S. electricity consumption	Potential new renewable energy capacity (Megawatts)
Communities committed to 100% renewable electricity	106	82 cities, 9 counties, California, and Hawaii	14.6%	9.6%	72,000
Mayors in support of 100% renewable electricity	91	168 (203 total)	6.0%	5.3%	62,000

**Figures as of September 4, 2018*

Conclusion

Since the launch of the Sierra Club's Ready For 100 campaign, the number of cities & towns making commitments to 100% renewable energy has increased from 17 locales in 2016 to 82 cities and towns today, a fourfold increase in just two years. An additional nine counties, California, and Hawaii have also adopted commitments to transition to 100% renewable electricity.

The 10 cities profiled in this report demonstrate that there are many ways municipalities are beginning to transition to 100% clean energy. While the approach and specific steps may differ from city to city, the report showcases some emerging themes across the landscape:

- Through policies and regulations, cities are creating pathways to support the rapid development of renewable energy in their communities.** All of the cities profiled are taking steps to transition their municipal operations to 100% clean energy, and projects like Orlando's community-solar installation and Denton's utility-scale solar are part of a movement of cities deploying renewable energy projects that serve the entire community. These local steps show that a strong commitment can signal that Ready for 100 cities are open for clean energy business.
- Cities can ensure the transition to 100% renewable energy is just and equitable –in a number of ways.** Transitioning to 100% renewable energy is an unprecedented opportunity to address environmental and social justice challenges. Minneapolis is leading the way on piloting renewable energy programs that serve low-income communities, and Atlanta's 100% Clean Energy Plan provides that city with a clear set of priorities designed to ensure that the transition supports those that need it most first. Columbia, South Carolina's work to integrate renewable energy development with climate resiliency efforts such as wastewater treatment facility upgrades addresses two community needs with one action. From solar and efficiency programs that serve those who are most burdened by energy costs to the creation of new family-supporting-wage jobs in these communities,

cities are realizing demonstrable quality-of-life improvements by investing in clean energy.

- Utilities are increasingly #ReadyFor100.** Communities like Denton, TX, and Santa Barbara, CA, have achieved early success in pursuing their 100% clean energy goals by working with their municipal utilities or pursuing the formation of new Community Choice energy programs. Xcel Energy's agreement to meet Denver's 100% goal and Ameren's new Renewable Choice Program to enable municipal, industrial, and commercial consumers in their service territory to transition to 100% renewable energy, demonstrate that even investor-owned utilities will work with the communities they serve to pursue this goal. While these examples inspire hope and optimism, charts 1 and 2 illustrate how far we must still go to reach 100%. It is essential that other utilities follow the lead of these early actors and respond to communities demanding 100% renewable energy by updating their business models, retiring fossil-fuel generation, and building new clean energy.
- Leading States Are #ReadyFor100.** In California, Governor Jerry Brown recently signed SB100, a bill to transition the state to 100% renewable energy by 2045. Hawaii led the nation by adopting a 100% Renewable Portfolio Standard in 2015. In September, the District of Columbia will consider legislation that transitions DC to 100% renewable electricity by 2032, and similar bills have been introduced in Colorado, New Jersey, Massachusetts, Pennsylvania, Maryland, and Washington. By establishing the laws and policies necessary to move even the most reluctant actors toward 100% clean energy, these states are stepping up to join the cities, institutions, and businesses that have already begun the transition to 100% renewable energy.

CHART 1: ELECTRICITY SUPPLY BREAKDOWN FOR UTILITIES²

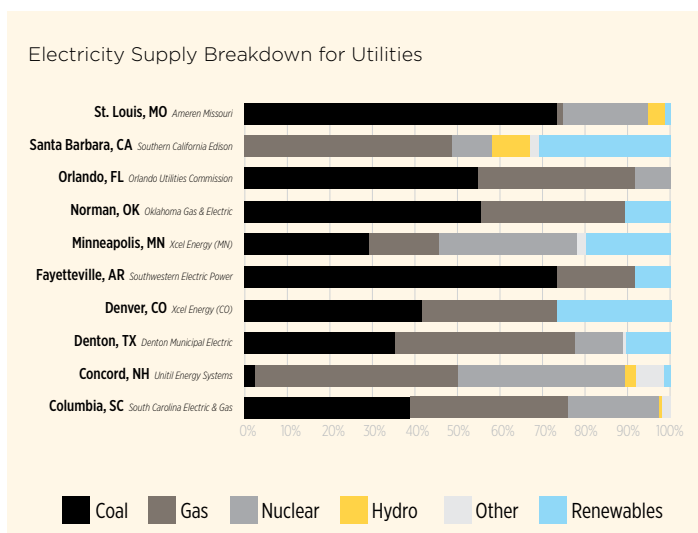
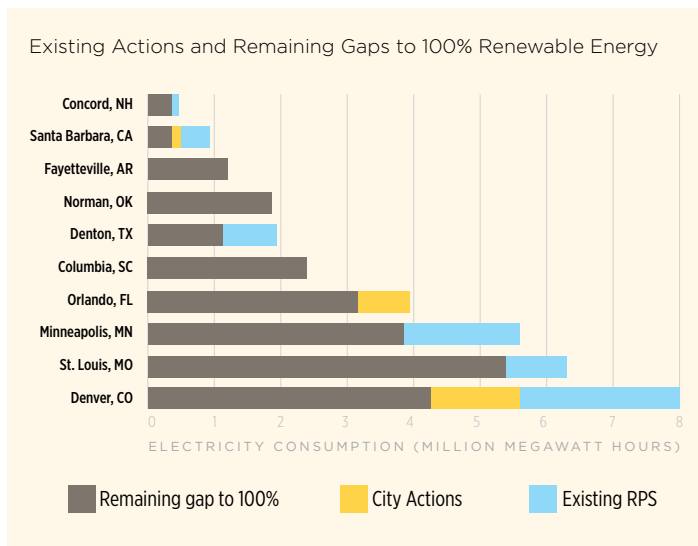


CHART 2: EXISTING ACTIONS AND REMAINING GAPS TO 100% RENEWABLE ENERGY³



1 See methodology in Appendix B. Mayors for 100% Clean Energy totals shown are additional to Committed Cities that have also signed onto Mayors for 100% Clean Energy (i.e. no double counting for cities in both groups)

2 Methodology detailed in Appendix B

3 Methodology detailed in Appendix B

APPENDIX A: 100% RENEWABLE ENERGY COMMUNITY COMMITMENTS

Community	State	Date of Commitment	Target Year	Population
Aspen	CO	May 1, 2007	Achieved in 2015	6,871
San Jose	CA	October 5, 2007	2050	1,035,317
Rock Port	MO	April 18, 2008	Achieved in 2008	1,227
Greensburg	KS	May 19, 2008	Achieved in 2013	771
Kodiak Island	AK	June 29, 2005	Achieved in 2012	6,191
San Francisco	CA	December 7, 2010	2030	13,889
Burlington	VT	July 26, 2012	Achieved in 2014	42,260
Georgetown	TX	February 28, 2015	Achieved in 2018	67,140
Palo Alto	CA	March 4, 2013	Achieved in 2017	67,024
Taos	NM	October 22, 2013	2030	5,763
Village of Questa	NM	January 7, 2014	2030	1,754
Village of Eagle Nest	NM	January 28, 2014	2030	257
Village of Taos Ski Valley	NM	February 4, 2014	2030	69
Town of Red River	NM	March 21, 2014	2030	477
Village of Angel Fire	NM	April 22, 2014	2030	1,113
East Hampton	NY	May 20, 2014	2020	22,009
San Diego	CA	December 15, 2015	2035	1,419,516
Del Mar	CA	June 6, 2016	2035	4,365
Salt Lake City	UT	July 12, 2016	2032	193,744
Park City	UT	October 11, 2016	2032	8,299
St. Petersburg	FL	November 21, 2016	2030	260,999
Boulder	CO	December 6, 2016	2030	108,090
Pueblo	CO	February 13, 2017	2035	110,291
Moab	UT	February 14, 2017	2032	5,242
Abita Springs	LA	March 21, 2017	2030	2,529
Madison	WI	March 21, 2017	2050	255,214
South Lake Tahoe	CA	April 18, 2017	2032	21,717
Cambridge	MA	April 24, 2017	2035	110,651
Atlanta	GA	May 1, 2017	2035	472,522
Southampton	NY	May 9, 2017	2025	58,119
Hanover	NH	May 9, 2017	2030	11,416
Portland	OR	June 1, 2017	2035	639,863
Santa Barbara	CA	June 6, 2017	2030	91,930
Monterey	CA	June 6, 2017	2040	28,454
Sarasota	FL	June 19, 2017	2045	56,610
Columbia	SC	June 20, 2017	2036	134,309
Edmonds	WA	June 27, 2017	2025	41,840
Ojai	CA	June 27, 2017	no date	7,585
Menlo Park	CA	July 18, 2017	2030	33,888
Solana Beach	CA	July 12, 2017	2035	13,449
Orlando	FL	August 8, 2017	2050	277,173

APPENDIX A: 100% RENEWABLE ENERGY COMMUNITY COMMITMENTS

Community	State	Date of Commitment	Target Year	Population
Nevada City	CA	August 9, 2017	2032	3,145
Nederland	CO	August 15, 2017	2030	1,534
Hillsborough	NC	September 11, 2017	2050	6,568
Phoenixville	PA	September 12, 2017	2035	16,885
West Chester	PA	September 20, 2017	2035	19,928
Chula Vista	CA	September 26, 2017	2035	267,172
St. Louis	MO	October 27, 2017	2035	311,404
Amherst	MA	November 8, 2017	no date	40,079
Breckenridge	CO	November 14, 2017	2035	4,896
Truckee	CA	November 28, 2017	2030	16,391
Goleta	CA	December 5, 2017	2030	30,850
Downington	PA	December 6, 2017	2035	7,905
Lafayette	CO	December 17, 2017	2030	28,261
Fayetteville	AR	January 2, 2018	2050	83,826
Longmont	CO	January 9, 2018	2030	92,858
Encinitas	CA	January 17, 2018	2030	63,131
St. Louis Park	MN	February 5, 2018	2030	48,747
Denton	TX	February 6, 2018	2019	133,808
Northampton	MA	January 4, 2018	no date	28,483
Cornish	NH	March 13, 2018	2030	1,616
La Mesa	CA	March 13, 2018	2035	59,948
Eau Claire	WI	March 13, 2018	2050	68,339
Plainfield	NH	March 17, 2018	2030	2,348
Blacksburg	VA	December 12, 2017	2050	45,038
Minneapolis	MN	April 27, 2018	2030	413,651
Clarkston	GA	May 1, 2018	2050	12,742
Kennett Township	PA	May 2, 2018	2035	8,205
Eureka	CA	May 1, 2018	2025	27,226
Windsor	MA	May 7, 2018	no date	871
Norman	OK	May 22, 2018	2050	122,180
Culver City	CA	February 26, 2018	2019	39,364
Berkeley	CA	June 12, 2018	2030	121,240
Concord	NH	July 9, 2018	2035	42,904
Denver	CO	July 17, 2018	2030	693,060
Middleton	WI	July 17, 2018	2040	17,442
Largo	FL	August 7, 2018	2025	83,065
Traverse City	MI	August 14, 2018	2040	15,479
New Brunswick	NJ	August 15, 2018	2035	56,910
Saint Paul	MN	August 15, 2018	2050	302,398
Spokane	WA	August 20, 2018	2030	215,973
Augusta	GA	September 4, 2018	2050	197,166

APPENDIX A: 100% RENEWABLE ENERGY COUNTY COMMITMENTS

Community	State	Date of Commitment	Target Year	Population
County of Taos	NM	October 15, 2013	2030	32,907
Multnomah County	OR	June 1, 2017	By 2035	790,294
Orange County	NC	September 5, 2017	2050	141,354
Summit County	UT	October 4, 2017	2032	39,633
Buncombe County	NC	December 5, 2017	2042	253,178
Whatcom County	WA	December 5, 2017	no date	212,284
Summit County	CO	February 13, 2018		30,257
Floyd County	VA	October 24, 2017	no date	15,651
Pueblo County	CO	April 23, 2018	2035	163,591

APPENDIX A: 100% RENEWABLE ENERGY STATEWIDE COMMITMENTS

State	Date of Commitment	Target Year	Population
California	September 10, 2018	2045	39,536,653
Hawaii	June 8, 2015	2045	1,427,538

APPENDIX B: SOURCES AND METHODOLOGY

Columbia, SC

When a Red State Mayor Goes Green, *CityLab*, 5/3/17

Columbia Moves Closer to 100% Renewable Energy, *South Carolina Public Radio*, 5/31/17

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Interview with Mary Pat Baldauf, City of Columbia Sustainability Facilitator

Columbia Becomes First South Carolina City To Commit To 100% Clean Energy, *Sierra Club*, 6/20/2017

10 Things That Only People From Columbia Will Understand, *Movoto*

City of Columbia Regional Parks

STAR Communities

The Historic South Carolina Floods of October 1-5, 2015, U.S. Department of Commerce

Concord, NH

Concord, New Hampshire Commits to Transition to 100 Percent Clean, Renewable Energy, *Sierra Club*, 7/9/2018

City of Concord Resolution: ADOPTING A GOAL OF 100% RENEWABLE ENERGY FOR THE CITY OF CONCORD

Editorial: A winning green goal for Concord, *Concord Monitor*, 05/09/2018

Interview with Robert Werner, Concord City Councilor

Denton, TX

Denton Poised To Become The Second 100% Renewable Energy City in Texas, *Sierra Club Lone Star Chapter*, 1/30/2018

Denton, Texas Adopts 100% Renewable Energy Goal, *Sierra Club*, 2/6/2018

The Texas town that banned fracking (and lost), *BBC News*, 6/16/2015

Despite natural gas boom, this Texas town is going 100% renewable, *Christian Science Monitor*, 6/14/2018

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Denver, Xcel Energy Sign Energy Future Partnership to Achieve Climate Goals, *City of Denver*, 2/28/2018

Interview with Jerry Tinianow, Chief Sustainability Officer, Department of Public Health and Environment, City and County of Denver

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Denver hints at new renewable energy projects with Xcel, *Denverite*, 4/13/2018

Colorado towns and cities are helping push utilities to embrace renewable energy, *Clean Cooperative*, 11/20/2017

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Denver Pledges 100% Renewable Electricity By 2030, *CleanTechnica*, 7/18/2018

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Fayetteville becomes first Arkansas city to commit to 100 percent clean, renewable energy, *Sierra Club*, 1/2/2018

Fayetteville commits to 100 percent clean, renewable energy, *Arkansas Times*, 1/3/2018

Fayetteville and University of Arkansas advocate for Oklahoma wind energy project, *Arkansas Times*, 4/19/2018

U of A and City of Fayetteville Join to Support Renewable Energy Project, *University of Arkansas*, 4/19/2018

City of Fayetteville Energy Action Plan

SWEPSCO's proposed 'Wind Catcher' project to bring billions in energy savings to customers, *Marshall News Messenger*, 7/8/2018

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Email statements from Peter Nierengarten, City of Fayetteville Sustainability Director

Minneapolis, MN

Minneapolis Commits To 100% Clean Energy, *Sierra Club*, 4/27/2018

Minneapolis sets goals for 100 percent renewable electricity, *City of Minneapolis*, 4/27/2018

City of Minneapolis 100% Clean Energy Resolution

Minneapolis Moves Towards Sustainability with 100 Percent Renewable Electricity Plan, *Twin Cities Business*, 4/28/2018

APPENDIX B: SOURCES AND METHODOLOGY

Norman, OK

Norman Becomes First Oklahoma City to Commit to 100 Percent Clean, Renewable Energy, *Sierra Club*, 5/22/2018

Norman becomes first city in Oklahoma to commit to clean energy, *Norman Transcript*, 5/23/2018

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Orlando, FL

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Orlando sets 2050 goal for completely renewable power, *Orlando Sentinel*, 8/9/2017

Orlando utility's CEO search is framed by solar hopes and climate worries, *Orlando Sentinel*, 11/17/2017

New solar farm gateway to Orlando's 2030 goal of becoming 100% renewable, *WKMG-TV*, 12/7/2017

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Santa Barbara, CA

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CCA By State, *Local Energy Aggregation Network (LEAN US)*

CCAs in California, *Local Energy Aggregation Network (LEAN US)*

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Aldermen pass resolution for St. Louis to pursue 100 percent clean energy by 2035, *St. Louis Post-Dispatch*, 10/27/2017

St. Louis pursues 100 percent clean energy, shrugs off coal opposition, *GreenBiz*, 11/29/2017

Join or die: How utilities are coping with 100% renewable energy goals, *Utility Dive*, 12/13/2017

New Ameren Renewable Choice Program rolls out, *Solar Industry Magazine*, 6/28/2018

Interview with St. Louis Alderman Lewis Reed.

Table 1: Impact Table Methodology:

Electricity consumption estimates (2013) for each city were taken from the National Renewable Energy Laboratory's (NREL) State and Local Energy Data (SLED) tool. Existing wind and solar electricity generation as well as legislated renewable portfolio standards were taken into account when estimating potential additional renewable energy generated by cities committing to move to 100% renewable energy. The emissions reduction potential of this additional renewable energy generation was estimated using state-specific emissions factors for fossil-fuel-based electricity, derived from EIA electric power sector carbon dioxide emissions (2014 reported and 2016 estimated) and net generation data sets. New renewable energy capacity was calculated using state-specific wind energy capacity factors. This calculation was performed for wind energy purely for illustrative purposes. The city commitments would lead to a mixture of new wind and solar capacity. Population data was taken from 2016 U.S. Census Bureau estimates.

Chart 1: Electricity Supply Resource Mix for Utilities Serving the Cities Profiled.

To determine the existing grid mix for the utilities serving the 10 cities, two methodologies were employed, one for regulated utilities (St. Louis, Santa Barbara, Orlando, Norman, Minneapolis, Fayetteville, Denver, Columbia) and one for utilities operating in deregulated markets with retail choice (Denton, Concord).

For regulated utilities, generation from both utility-owned assets and power purchase agreements and contracts were considered. Generation data from 2017 was primarily used, with 2016 data filling in where 2017 data was not yet reported. The "renewables" category includes wind and solar while "other" resources include primarily biomass and oil generation. For Santa Barbara, which is in the process of launching its Community Choice Aggregation program, data for the incumbent utility Southern California Edison is displayed.

For the utilities operating in deregulated markets with retail choice (in this case the Electric Reliability Council of Texas (ERCOT) and the Independent System Operator for New England (ISO)), the average grid mix for 2017 for each respective market was used to describe the current electricity supply, though individual retail electric suppliers may deviate from this average.

Chart 2: Existing Actions and Remaining Gap to Transition to 100% Renewable Electricity.

Estimates for city-wide electricity consumption were taken from NREL's State and Local Energy Data tool. For cities in states with existing renewable portfolio standards (RPS) in place, the percentage of that RPS was applied as an existing action toward meeting the eventual 100% goal. Publicly available data was used to estimate the effect of other actions that cities are currently taking to meet their targets. These include Santa Barbara's 2020 goal of ten 3-Megawatt solar installations, Denver's energy use reduction targets for residential and commercial buildings, Denton Municipal Electric's recent power purchase agreements (130 MW solar and 150 MW wind), Concord's planned 4-MW solar facility, and Orlando's 20% clean energy by 2020 goal. Goals for renewables powering city or municipal operations were not included, due to lack of estimates at the time of publication for how much electricity those operations use.

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