



Investigating City Commitments to 100% Renewable Energy: Local Transitions and Energy Democracy

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About

Authors

The authors of this report are master's students in the School for Environment and Sustainability (SEAS) at the University of Michigan. SEAS is dedicated to helping protect Earth's resources and the attainment of a more sustainable society. The students at SEAS complete 14-month master's capstones that are applied research projects directed toward addressing a research need or related problem of a professional organization. The authors, in partnership with the Institute for Local Self-Reliance and the Sierra Club, have compiled this report to fulfill the requirements of their master's capstone project. The students were also advised by SEAS Assistant Professor Dr. Tony Reames whose research explores the disparities in residential energy generation, consumption, and affordability, focusing on the production and persistence of inequality by race, class, and place.



Institute for Local Self-Reliance

The Institute for Local Self-Reliance (ILSR) is a 45-year-old non-profit organization that is working to provide innovative strategies and support for the pursuit of equitable local economies. ILSR's Energy Democracy Initiative supports communities across the country as we collectively build a more distributed, clean, and equitable energy system. The organization proposed this project as a master's project to the students in SEAS in early 2019. Since then, ILSR has provided resources and guidance for the students in pursuit of the research goals and has assisted with the distribution and communication of the project deliverables.



Sierra Club

The Sierra Club is a wide-reaching grassroots environmental organization that fights for the world's natural resources and for everyone's right to a healthy environment. The Ready for 100 campaign within the Sierra Club is a movement working to inspire local action on clean energy and climate action. The campaign works with mayors, CEOs, community leaders, and others to create networks of local leaders that can aid in the transition to a clean and equitable energy system. As of March 2020, 159 cities and 9 states have committed to 100% renewable energy through the campaign. The Ready for 100 team at the Sierra Club helped the SEAS project team with guidance on the project as well as distribution of project deliverables to key stakeholders.



Executive Summary

Greenhouse gas emissions are rising at an unprecedented rate and posing an immediate threat to human and ecosystem health. The largest source of greenhouse gas emissions is from human activities that include the burning of fossil fuels for electricity, heat, and transportation. Renewable energy serves as a viable solution to replace fossil fuel generation to create a healthier environment. Increasing awareness of both the necessity and opportunity surrounding renewable energy development is resulting in climate action at the municipal-level. Cities are physically formed around energy infrastructure, and therefore they have the ability to be powerful change agents in transformative energy policy and enact worldwide action.

A number of United States (U.S.) cities are proposing and implementing bold sustainable solutions in order to combat the social, environmental, and economic impacts of climate change. Cities of all sizes around the country are taking control by pledging to reach community-wide goals of 100% renewable energy. However, many of these cities are unsure of how to meet these commitments. Although the renewable energy potential throughout the U.S. is strong, cities are facing other types of challenges that are hindering their ability to progress swiftly to meet the commitment.

The Institute for Local Self-Reliance, in partnership with a student-led team at the University of Michigan's School for Environment and Sustainability, wants to enable progress toward local and equitable 100% renewable energy access and use by compiling recommendations and resources for achieving an energy transition that incorporates energy democracy. In this report, energy democracy refers to the implementation of participatory forms of energy governance and civic ownership. ILSR and the team also partnered with the Sierra Club through their Ready for 100 campaign to fully assess 100% renewable energy commitments across U.S. cities. The goal of this report is to utilize qualitative and quantitative data through a national survey and case studies to help understand the mechanisms that will best enable cities and their decision-makers to equitably transition to 100% renewable energy.

Understanding Unique Pathways to 100%

A broad national survey was used to assess general trends across city commitments throughout the country. Questions on the survey were developed with eight key mechanisms and tools in mind - Commitment Origin & Strength, Data Access, Finance, Municipality & Utility Structure, Policy, Resource Assessment, Social, and Technology. Survey questionnaires were sent to a total of 941 contacts (569 city officials and 372 community leaders) with 108 total surveys completed. Select results from the national survey are outlined below:

- **Top drivers for commitment:** climate change concerns; care for the local environment; potential for financial savings
- **Top barriers to progress:** lack of funding; lack of support from the utility; lack of expertise
- **Most helpful data resources that were not available:** peer network of municipal sustainability staff; online database(s) of city renewable energy practices; metrics to evaluate renewable energy initiatives
- **Top sources of funding for programs:** local taxes and fees; state and federal funding
- **Top methods for engaging the community on energy policy:** meeting with representatives from the community; public hearings; workshops; social media; lobbying and legislation; engaging in regulatory proceedings and other administrative actions
- **Top city building initiatives:** LED lighting; green building certification; public electric vehicle charging stations; on-site renewables
- **Most common ways to reduce energy burden:** partnering with representative and community-based groups from low-income communities; providing community education and workshops
- **Most common efficiency programs:** energy auditing; weatherization

In addition to the national survey, in-depth case studies were developed to explore the mechanisms of transition in greater detail. The case studies were oriented around three cities that are currently working towards this goal of a transition to 100% renewable energy. In-person interviews were conducted with local city officials as well as local community activists, which provided an understanding of the various perspectives involved in the transition. An overview of the case study cities and key takeaways from each follow:



TRAVERSE CITY, MI

Population: 15,651

Racial Demographics: 92.7% White, 1.9% Black, 1.9% Native American, 1.5% Hispanic/Latino, 0.5% Asian, 2.5% Two or More Races

Utility Type: Municipal: Traverse City Light & Power

Renewable Energy Commitment: 100% renewable electricity community-wide by 2040

Key Takeaways:

- Having a municipal utility provides significant avenues for energy democracy and making a 100% renewable energy commitment, but the composition of the board and staff is important.
- Building grassroots community support can create more favorable conditions for a city to make and sustain a 100% renewable energy commitment.
- Being bold and making a 100% renewable energy commitment even without a dedicated plan or funding can play a significant role in making progress on renewable energy, and an interim goal can help make the final goal feel more tangible.



PORTLAND, OR

Population: 653,115

Racial Demographics: 77.10% White, 5.8% Black, 8.1% Asian, 9.7% Hispanic/Latino

Utility Type: Investor-owned utilities: Portland General Electric, Pacific Power, Northwest Natural

Renewable Energy Commitment: 100% renewable electricity community-wide by 2035, 100% renewable energy (all sectors, including transportation, heating, and industry) by 2050

Key Takeaways:

- Having a significant progressive presence that uses grassroots movements is beneficial in achieving energy goals; even so, many bureaucrats in the city react to pressure rather than understanding the movement behind the pressure.
- Energy democracy is important to the city of Portland, illustrated by the overwhelming support of the Portland Clean Energy Fund; however, there is a long way to go to improve public input in utility processes.
- Having a solid relationship with the investor-owned utility is key to achieving the commitment.
- Addressing greenhouse gas emissions within the transportation sector has been a significant challenge due to rapid development and increasing population.



COLUMBIA, SC

Population: 133,114

Racial Demographics: 51% White, 42% Black, 4.3% Hispanic/Latino, 2.2% Asian, 0.25% Native American, 0.30% Pacific Islander

Utility Type: Investor-owned utility: Dominion Energy; State-owned utility supplying cooperatives: Santee Cooper

Renewable Energy Commitment: 100% renewable electricity community-wide by 2036

Key Takeaways:

- Having public support for the transition can bring about necessary resources for a just and fruitful process.
- Communication across various stakeholders and interest groups should be prioritized for fostering innovative and inclusive paths forward.
- As a capital city, or larger cities in general, leverage your state lawmakers to push for helpful policy mechanisms like a statewide renewable portfolio standard.
- Empower the implementers, like city staff, to make decisions and broach stakeholders.

Obstacles Throughout Transition

The cities surveyed and interviewed have been working diligently to move forward in this transition; nevertheless, barriers to achieving 100% renewable energy spanned from lack of expertise and resources to difficulty in siting renewable energy projects. Many of these challenges stem from issues with communicating across all stakeholder groups—city officials, residents, environmental experts, justice experts, state officials, and utilities—which prevents the sharing of knowledge and ideas to develop a path forward. Lack of communication between various entities also can hinder opportunities for funding of renewable energy projects.

However, barriers exist beyond technological and financial systems. While it seems like energy democracy issues are at least moderately important to cities, allowing the public into the decision-making process is difficult given the complex and detailed nature of energy policy and traditional investor-owned utility structures. In addition, many city governments are not doing enough to ensure energy burden is reduced for low-income community members. The majority of survey respondents said they either do not think or do not know if their city is adequately addressing the disproportionate burden of the transition on these community members. The social aspect of the transition to 100% renewable energy is often neglected unless the city benefits directly. Overlooking these social mechanisms of the transition may harm the outcome of and support for the goal.



Recommendations

Following survey and interview data collection, project findings and actionable recommendations were developed for use by local officials and advocates to address barriers.

GENERAL RECOMMENDATIONS FOR CITIES

- 1. Build partnerships, coalitions, and relationships externally and within the city** to work together, partner on projects, and share resources, stories, and knowledge.
- 2. Ensure disproportionate energy burden on citizens is being adequately addressed** by engaging marginalized communities and investing in efficiency and clean energy programs directed towards these communities.
- 3. Engage with other cities that have similar commitments** to build a network of peers for sharing best practices, data, and metrics.
- 4. Collaborate with community-based organizations and national non-profits** that can provide additional perspectives and resources to help with the planning and decision-making process.
- 5. Assess the use and allocation of local taxes and fees from the city** and supplement with the state, federal, and fundraising opportunities (e.g. grants) in order to procure funding for implementing programs and technologies.
- 6. Advocate for renewable energy policies and funding mechanisms** at the state and federal level.
- 7. Empower citizens to have voices within the energy system** through education and awareness campaigns, engagement in energy policy and regulation issues, and support of community-based organizations.
- 8. Hire dedicated staff and foster connections with other cities**, particularly among dedicated staff, to maximize expertise in the transition.
- 9. Designate a team or person entrusted to champion the initialization** and maintain communication within the local government to ensure that all departments are on the same page.
- 10. Develop an interim goal** to help motivate staffers towards the transition to 100%.
- 11. Partner with neighboring cities on energy projects**, whether they have made the commitment or not - cities and residents tend to support renewable energy initiatives and could be willing to work with you.

RECOMMENDATIONS FOR CITIES CONTEMPLATING A 100% RENEWABLE COMMITMENT

- 1. Increase engagement within the city** in order to mobilize the public to advocate for change.
- 2. Track energy usage in municipal buildings and build a greenhouse gas inventory** as a way of making future planning easier if your city wants to have a rough idea of where to begin before making the commitment.
- 3. Communicate with your state's energy office**, if possible, to see what resources are available to you for easing the planning process.
- 4. Formalize the commitment** even if there is not a fully-developed plan in place - the commitment will help to inform the policies and choices that are made within the community going forward.

Introduction

Rising greenhouse gas (GHG) emissions pose an immediate threat to human and ecosystem health in today's society. A recent report published by the Intergovernmental Panel on Climate Change (IPCC) states that global carbon dioxide emissions will need to be reduced by 45% from 2010 levels by 2030 and reach net-zero emissions around 2050 to limit global warming to 1.5°C. This will reduce the risk of long-lasting or irreversible changes and also give people and ecosystems more room to adapt.¹ The largest source of GHG emissions is from human activities that include the burning of fossil fuels for electricity, heat, and transportation.² If the United States (U.S.) continues to burn fossil fuels as an energy source, there will be detrimental effects on the planet. Renewable energy sources like wind and solar provide a sustainable, zero emission solution to U.S. reliance on fossil fuels, making them vital tools in mitigating climate change.³

Increasing awareness of both the necessity and opportunity surrounding renewable energy development and climate change is catalyzing city-level climate action. Cities are physically formed around energy infrastructure and therefore have the ability to be dynamic change agents in transformative energy policy. Many city leaders have become cognizant of the importance of transitioning to renewable energy and moving away from fossil fuel sources; however, the path for each city to follow is an individual discovery.⁴ Each city in the U.S. is unique, with different population sizes, geographic locations, diversity, and other characteristics. Cities may therefore follow unique plans to implement more renewable energy.

There are a number of U.S. cities making and implementing ambitious commitments to transition to 100% renewable energy (Figure 1); however, many of these cities are unsure of how to meet their commitments. Some of these commitments are just for 100% renewable electricity while others are for 100% renewable energy, which covers the entire energy sector, including electricity, transportation, heating, and industry. Some commitments are just for municipal buildings only, which just includes city owned and operated buildings, while others are community-wide, which includes the entire city. Of the 159 cities that have made a commitment through Sierra Club's Ready for 100 program, only six have reached their goal, and many have made little headway.⁵

Consequently, the Institute for Local Self-Reliance wants to enable progress toward a local and equitable 100% renewable energy system. This project compiles recommendations and resources outlining practices that can help city decision-makers prioritize equitable and local clean energy investments. Incorporating energy democracy into these commitments can be both a means and an end in this transition. Energy democracy refers to the implementation of participatory forms of energy governance and civic ownership.^{6,7}

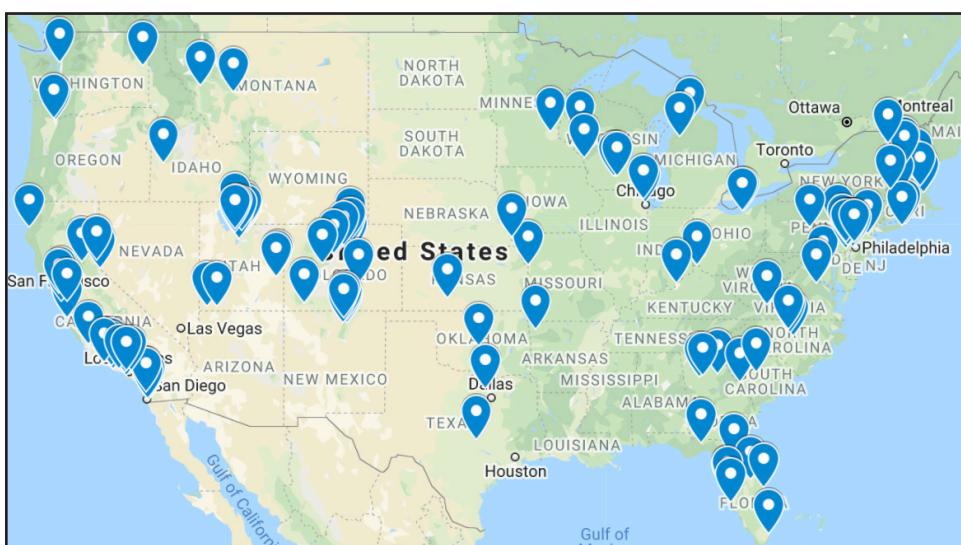


Figure 1. Cities in Contiguous U.S. That Have Made the Ready For 100 Commitment as of March 2020

In other words, it is an energy system that is democratic, where decisions are made by the users of energy. It is also a social movement involved in advancing renewable energy transitions away from a fossil-fuel dominant regime.⁸ Implementing energy democracy in a transformation to renewable energy in cities may be the optimal way to ensure an equitable transition away from a system dominated by fossil fuels to one powered by 100% renewable energy.

Background

Renewable energy and energy conservation measures have the potential to meet the increasing energy demands of the U.S.. Electricity accounts for almost 40% of total U.S. energy consumption, which is more than the consumption of transportation, industrial, residential, and commercial sectors. As such, it's evident why many 100% renewable energy commitments specifically focus on the electricity sector.⁹ Some studies suggest that the main barriers to transitioning to a 100% renewable energy future are not technical and economic, but rather social and political. According to a study performed by Jacobson et al., converting 53 U.S. and Canadian cities to 100% renewable energy using existing technologies is technically and economically feasible, but reducing these barriers will require education, effective policies, political will, and individual actions to transition their homes and lives to 100% renewable energy.¹⁰

The U.S. has immense wind and solar resources. Areas such as the Great Plains region have high wind concentration (Figure 2), while the Southwest boasts high solar concentration (Figure 3). The estimated onshore wind energy potential is 50 million gigawatt hours (GWh) of electricity annually, and the estimated offshore wind energy potential is 15 million GWh of electricity annually. Solar energy potential is estimated to be 56 million GWh of electricity generated annually.¹¹ In 2018, the U.S. consumed a total of 3.95 million GWh of electricity.¹² Thus, the combined solar and wind renewable energy potential could supply the U.S.' electricity needs by more than 30 times per year.

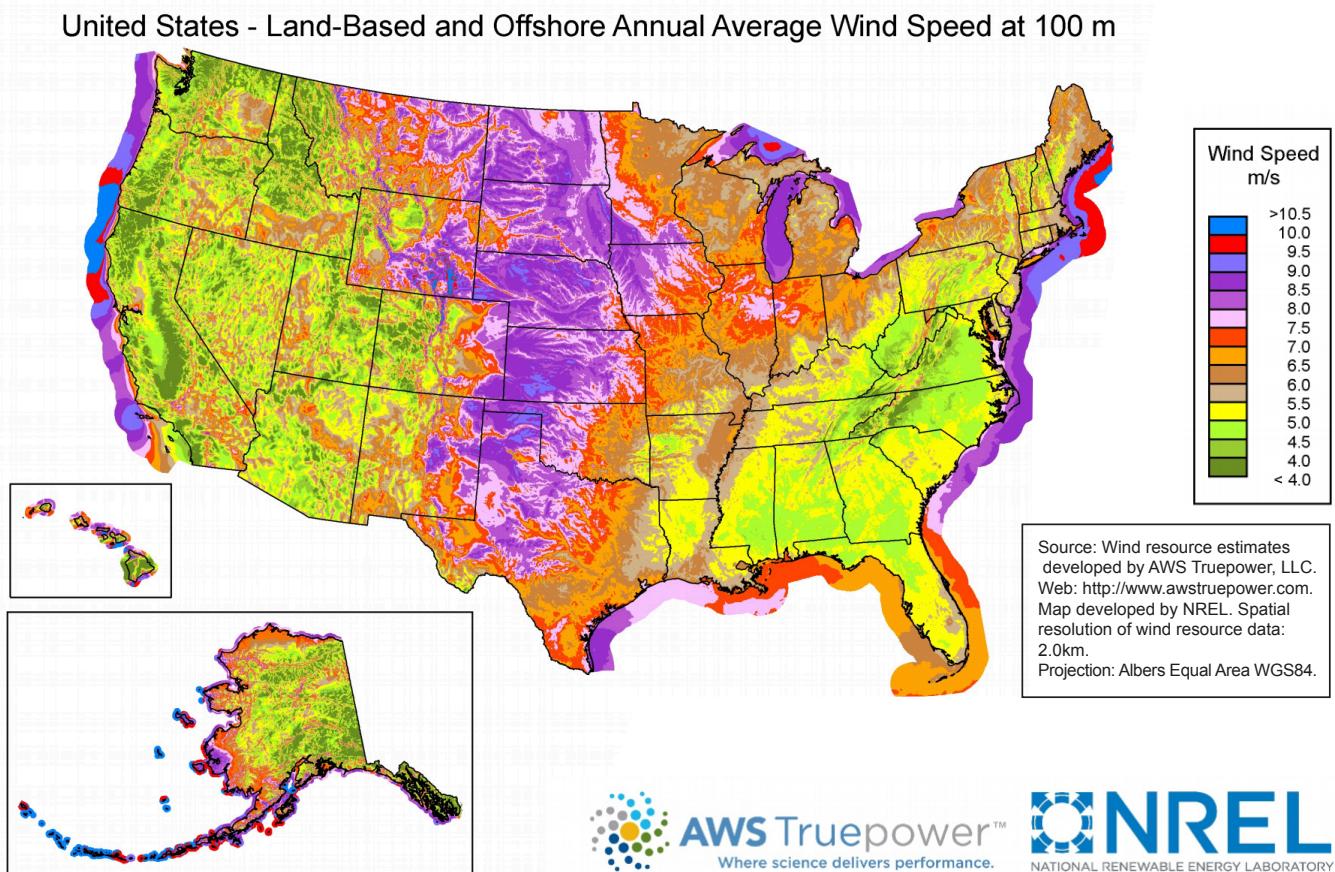


Figure 2. United States Onshore and Offshore Wind Resources¹³

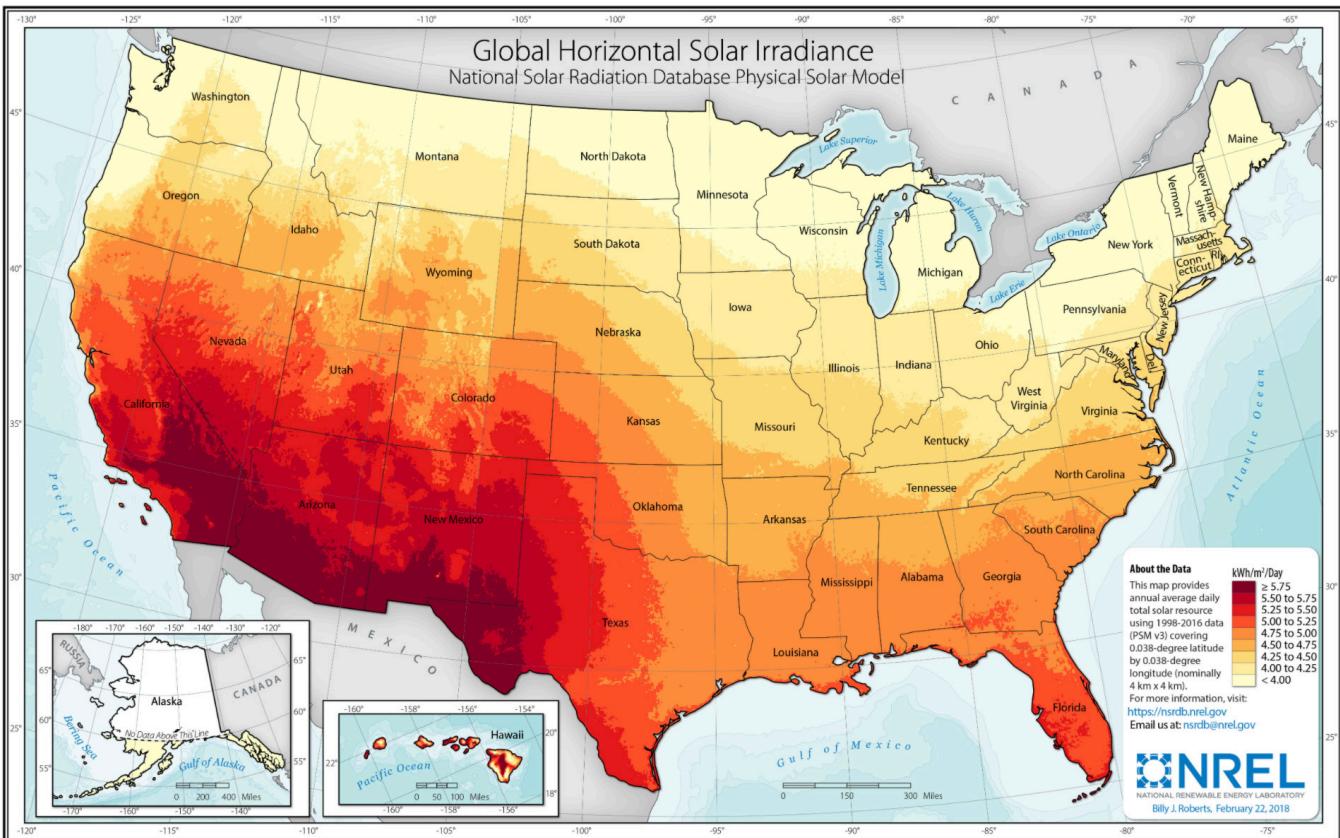


Figure 3. United States Solar Resources¹⁴

LOCAL CONSIDERATIONS FOR RENEWABLE ENERGY INTEGRATION

As cities aim to transition to 100% renewable energy, energy systems have to meet two major challenges:

1. Integrating largely intermittent resources into the current energy system and,
2. Transforming the transportation and heating sectors, specifically space and water heating, to electric designs.¹⁵

Overarching these two major issues, cities and their utility company(s) face the task of integrating renewable energy onto the electrical grid. Safety and reliability is a pillar of electrical grid service. These are ensured through regulatory requirements for grid reliability and requirements for reverse power generation supply.¹⁶ While some of these challenges may be best approached at a state or regional level, local commitments benefit from considering a tailored range of solutions for communities.

In analyzing 100% renewable energy systems, energy savings and efficient conversion technologies are essential elements to consider.¹⁷ Energy efficiency upgrades may prove to be an important aspect of transitioning cities to 100% renewable energy. Reducing consumption is another way to aid in this transition.

A sustainability assessment of renewable energy generation is crucial when deciding upon the amount of renewable resources to be used. Assessments should take into account financial impacts, life cycle impacts on the environment, and societal impacts. Robust policies are necessary for increasing renewable energy deployment in the U.S. to reach 100% renewable energy. It is necessary to assess efficacy, efficiency, equity, and feasibility of these renewable energy policies.¹⁸

ENABLING COLLABORATION TO ENHANCE ENERGY DEMOCRACY

Energy utilities are a critical part of energy systems. Cities may have one or multiple utility companies that provide their energy services. These utility types may include: investor-owned, public, or non-profit cooperative. While investor-owned utilities (IOUs) only make up 6% of the total number of utilities in the United States, they provide power to 68% of customers.¹⁹ And unlike the other two types, IOUs are driven to generate profit for their shareholders. Therefore a promising mechanism for incorporating more democratic control of energy is changing ownership, either through municipalization (owned by the public) or starting cooperatives (owned by members).

The energy democracy movement is gaining steam as many communities throughout the world "have initiated campaigns to take back their power from investor-owned utilities and create publicly owned and operated utilities."²⁰ Energy democracy aims to not only transition to renewable energy, but to do so in a just way, solving the inequities that presently exist and giving communities actual control of energy. In fact, customers of publicly owned energy systems pay 12% less per kilowatt hour of electricity on average than customers of IOUs.²¹ With that being said, publicly owned energy systems currently have a slightly smaller percentage of energy generating capacity from wind, solar, and geothermal sources than IOUs (2% and 4%, respectively), although both are small on an absolute basis. However, the structural potential for actual democratic control is there. While transitioning to 100% renewable energy systems and to just and democratic control of energy systems may act synergistically, moving them forward is a process that will be difficult and will likely vary significantly based on the specific conditions of a given place.



Objectives

The overall impact of this report is to help cities bring renewable energy access and decision making back to the local level as efficiently and equitably as possible. Conceptually speaking, cities have at their disposal a multitude of tools, cultures, and stories that result in different processes for achieving total reliance on renewable energy while incorporating energy democracy. This report is intended to make information on the mechanisms of transition easily accessible for cities within transition and those that are considering making a similar commitment. The project team explored the different mechanisms that cities are using to ultimately achieve their goals while implementing and maintaining energy democracy. Comprehension of these mechanisms revolve around a national survey of Ready for 100 cities and case studies of three cities with a diversity of different attributes, being Traverse City, MI, Portland, OR, and Columbia, SC. The survey is meant to tackle broad questions on transition dynamics while the case studies allow for a more accurate sampling of the potential options for cities to choose from to meet their commitment that best fit within the cultures and constraints of resources that various cities would have.

Transition in Action

Insights From Across the Country

The national survey data collection focused on surveying local city leadership and community leaders from around the country in cities that have pledged to go to 100% renewable energy. The use of a national quantitative survey helped begin to broadly understand motivations, timelines, and proposed or aspired pathways to 100% renewable energy. The survey was developed for two groups: city government officials (i.e sustainability task force leaders or personnel and elected officials) and non-governmental sustainability leaders (i.e. local organizations involved with the city's clean energy initiative). The survey was developed with the objectives of the study in mind and distributed to community and government leaders with the assistance of ILSR and the Sierra Club. Table 1 identifies the key mechanisms and tools by which we aimed to assess cities within their transitions.

Responses from the survey provide on-the-ground insight on the barriers cities are facing and the efforts being practiced for achieving their 100% renewable energy goal. These responses are used to discuss and guide recommendations for other cities.

A total of 941 contacts were sent the survey. Contacts were comprised of 569 city officials and 372 community leaders. Responses were collected from 108 completed surveys, resulting in a 11.5% response rate. Percentages in these summaries indicate the fraction of respondents that selected a particular response. Given that survey participants received different questions based on their professional role, not all percentages reflect using the complete number of 108 respondents.

Figure 4 demonstrates both from where surveys were received and potentially received responses from survey respondents. Respondents were not required to give their geographic locations, and as such there are states listed where respondents were potentially reporting from.

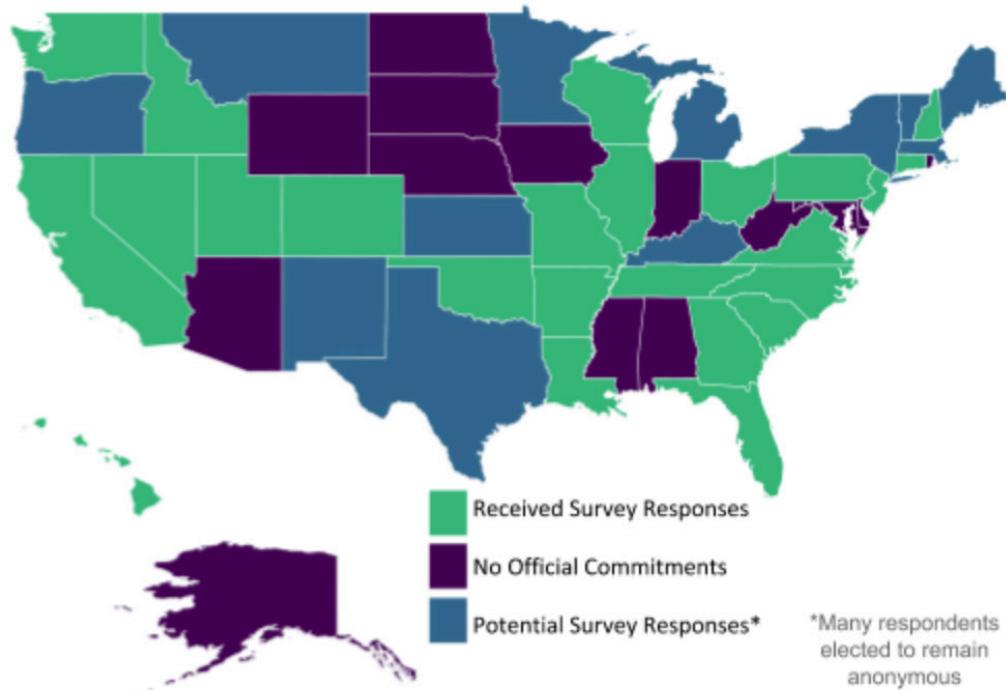


Figure 4. Survey Responses by State

Table 1. Topics and parameters used as a basis for the survey questionnaire.

Topic	Parameter
Commitment Origin & Strength	Internal government decision, external citizen call to action, commitment deadline, motivation with government, citizens, experts
Data Access	Energy management tools, data collection services
Finance	Special loans, grants, or tax breaks specific to renewable energy or the infrastructure needed for renewable energy deployment
Municipality & Utility Structure	Department organization and number of directly involved staff members, ownership of city utilities (i.e. Private, Municipal, Cooperative, or some mixture thereof)
Policy	Current or proposed policies related to renewable energy development or procurement at the city and state regional level
Resource Assessment	Available energy resources (i.e. annual solar availability, brownfield space), local utility structure, local energy expertise
Social	Past or present energy justice work, community attitudes towards renewable energy, availability of energy programs, socioeconomic status
Technology	Trending energy technologies, energy consumption sectors being prioritized

COMMITMENT ORIGIN & STRENGTH

Motivation for making a renewable energy commitment can stem from different environmental, social, economic, and political drivers. Different drivers may have the potential to influence the types of efforts and overall path a city takes to achieve their goals. Similarly, the extent to which such efforts are supported politically and socially may impact overall speed and progress toward the goal. As such, questions related to the commitment origin and strength were asked to get a better understanding of the foundation of these local renewable energy transitions.

The top three drivers for making a commitment were, in order of most common (Figure 5):

- **Concern for climate change**
- **Concern for the local environment**
- **Potential for financial savings**

Priorities for the commitment were identified by respondents as climate action (84%), environmental quality (39%) and increased resilience to extreme weather or other natural hazards (37%).

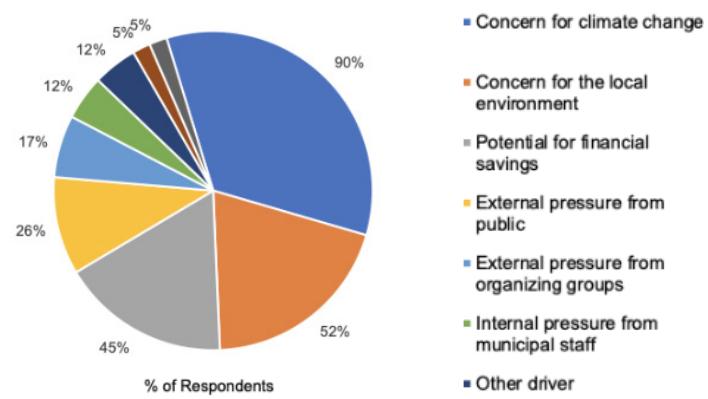


Figure 5. Top Commitment Drivers

In comparison, the top three barriers towards making progress on the commitment based on the number of respondents were, in order of most common (Figure 6):

- **Lack of funding**
- **Lack of support from the utility**
- **Lack of expertise**

Overall, respondents indicated that residents feel at least positively, if not very positively, about the commitment (76%).

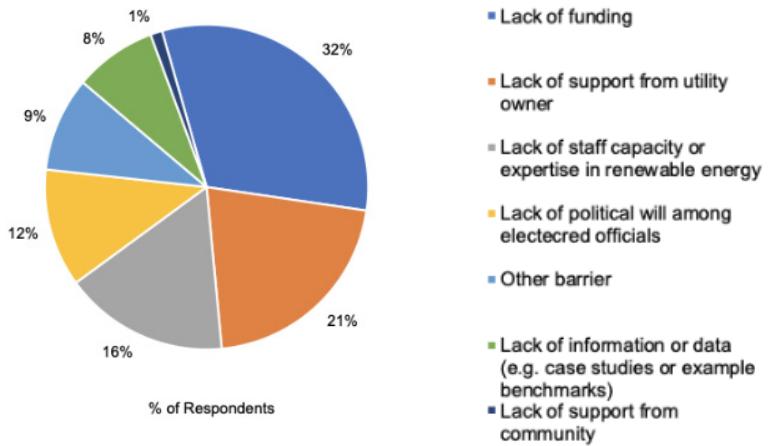


Figure 6. Top Barriers to Achieving Commitment

DATA ACCESS

Access to reliable and current data allows cities to make decisions with quantitative backing. It also allows for a source of trackable and shareable information. Questions asked in regard to data access were intended to highlight how and where data was being collected and whether or not such data was accessible to the public.

In particular, questions relating to the use of GHG inventories and energy tracking practices were asked. Over half (51.7%) of respondents indicated that their city has conducted or continues to conduct a GHG inventory, which can serve as a baseline for assessing impact or change. Additionally, the majority (76.7%) of respondents indicated that their city or organization tracks energy usage in their municipal buildings. However, tracking energy in commercial or residential buildings is much less common. GHG inventory data was almost unanimously reported to be publicly accessible (92.5%), while the accessibility of municipal energy data was mixed.

Respondents indicated that some of the top resources their city uses to access information to help guide the planning and implementation necessary for reaching their goal include other cities, towns, or counties that have made similar commitments (71%), recommendations from city-facilitated forces (54%), and national non-profits (54%). When asked to think about resources they did not have but would be helpful, they highlighted having a peer network of municipal sustainability staff, online database(s) of city renewable energy practices, and metrics to evaluate renewable energy initiatives.

FINANCIAL

Planning and implementing energy initiatives can be costly. As such, funding was assumed to play a central role in the success of planning and implementing energy initiatives. Respondents were asked about funding sources and challenges.

Local taxes and fees were the most commonly reported source for procuring funding for implementing programs and technological developments (67%). State and federal funding are the next most utilized sources albeit to a less common extent (31% and 26%, respectively). When asked what would be the most helpful types of funding support, responses highlighted support for planning and implementation, and technical and/or legal assistance.

MUNICIPALITY & UTILITY STRUCTURE

Cities and utilities can each be uniquely structured. How local government departments are organized, the number of staff members directly involved with planning and implementing initiatives, and the ownership type of utilities (i.e. Private, Public, Co-op) varies greatly across the country. Questions were asked to better understand any structural and process related trends between cities, utilities, and their commitments.

Regardless of city size, the majority of respondents indicated that their city had five or fewer staff working directly on energy topics (e.g. sustainability officer, energy efficiency program officer, clean energy task force)(Figure 7). To guide planning and implementation, cities of all sizes commonly access information from other cities, towns, and counties that have made similar commitments.

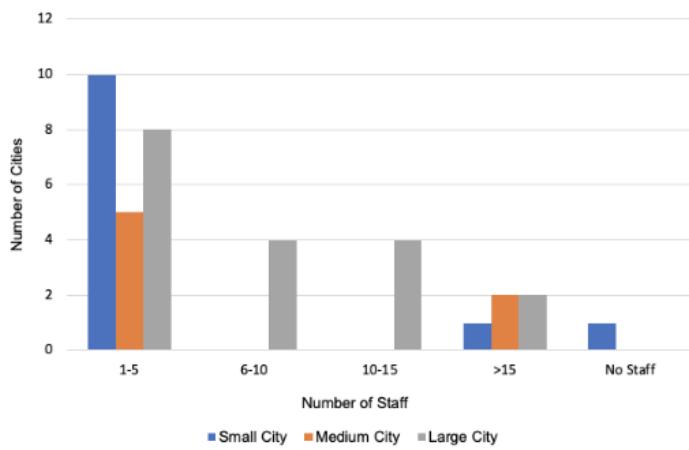


Figure 7. Staff Dedicated to Energy Topics by City Size

POLICY

Current or proposed policies related to renewable energy development or procurement at the city, state, or regional level establish the legal and political means by which cities can achieve their commitment. Trends in what types of policies are explored or passed were assumed to indicate the ease or effectiveness in which they could be implemented or progress a city's energy transition. Policy questions were asked to gain insight on such trends.

Responses demonstrated that there is no distinct method for engaging the community in energy policy-making. Engagement is sought through a variety of methods including meetings with representatives from the community groups, connecting with elected or appointed officials, public hearings, workshops, and social media. Community organizations tend to advocate for renewable energy policies regularly through lobbying and legislation (31%), engaging in regulatory proceedings and other administrative actions (27%), other means (29%).

Specifically related to energy policy, over 50% of respondents indicated that their city passed mandates, carve-outs, or policies related to electric vehicles (75%), green building codes (61%), or energy efficiency programs (58%). Finally, a combined 39% of respondents indicated that their city has plans to or is interested in changing the utilities that provide energy services to its residents.

RESOURCE ASSESSMENT

Assessing local energy potential can provide an understanding about the options and resources a city has available. This information is essential for making key decisions within city governments about which energy sources or technologies to pursue. The intention of asking resource assessment questions was to highlight the low-hanging fruit within the transition.

Distributed solar (79%), utility-scale solar (40%), and wind (27%) are the most widely assessed local energy resources. Battery storage, geothermal, hydropower, and biomass were also explored but to a lesser extent.

Over a third of respondents (38%) indicated that their city interacted with other city governments to share best practices related to their goal while developing their own commitment, 30% indicated before the formal commitment was made, and 26% indicated during the implementation process. Only 4% of respondents indicated that they did not have any such interaction during those phases.

Working with a variety of stakeholders, most closely with community-based organizations and the public at large, such as through public meetings or focus groups, is practiced when developing and/or implementing programs supporting the energy transition. City-facilitated task forces and national nonprofits are also engaged though to a lesser extent. Finally, the majority of respondents are working on these commitments in IOU territories, followed by municipal-owned utilities (31%).

SOCIAL

Making a renewable energy commitment is more than a technological transition; it is also a social transition. The survey asked questions to highlight past or present energy justice work, community attitudes towards renewable energy, availability of energy programs, and consideration of socioeconomic status within communities. These questions help paint a picture about how broader societal needs and issues are being considered in the city's transition to renewable energy.

What does your local government consider as the top energy equity issue in their city?

- “Financial burden on seniors and low-income residents”
- “Not yet considering energy equity”
- “Equal participation in decision making”

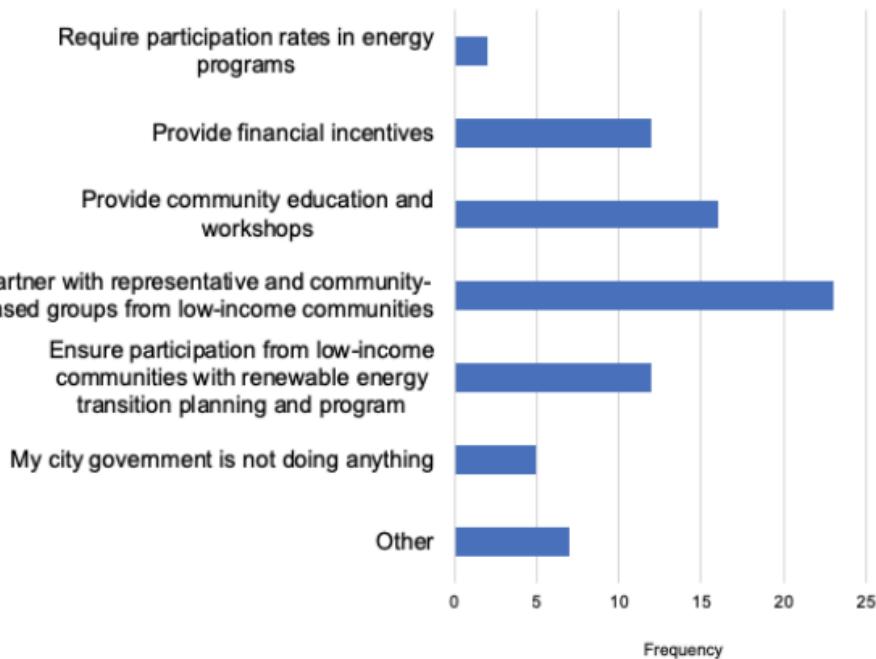


Figure 8. City Efforts of Reducing Energy Burden

Most respondents indicated their city or organization has implemented education and awareness campaigns to promote conservation and efficiency within the community (70%). The two most commonly offered energy conservation or efficiency programs by cities are energy auditing (54%) and weatherization (44%). 68% of respondents said their city government was ensuring that energy efficiency upgrades and access to any other technological methods used to meet the commitment are or will be accessible to low-income communities and communities of colors.

The most common ways that cities ensure that energy burden is reduced is by partnering with representative and community-based groups from low-income communities (62%) and providing community education and workshops (43%)(Figure 8). However, 14% of respondents said their city government is not doing anything to ensure energy burden is reduced for these community members. While the majority of respondents said that energy democracy issues are at least moderately important to their community, more than half of respondents said they either do not think (53%) or do not know (41%) if their city is adequately addressing the disproportionate burden of the transition on these community members.

TECHNOLOGY

Renewable energy is a rapidly growing industry with new technologies emerging frequently. As these technologies become publicly available and affordable, it is likely that cities will utilize them to achieve necessary emissions reductions across various sectors. Thus, questions were asked to better understand the use of various technologies by cities and the sectors they prioritize for energy transformation.

More than half of respondents said that initiatives which have been explored or implemented within municipal buildings include, in order of most common (Figure 9):

- **LED lighting**
- **Green building certification**
- **Public EV charging stations**
- **On-site renewables**

When considering the building, power generation, transportation, or waste management sectors, respondents ranked power generation as the top sector to prioritize (55%), followed by buildings (30%). Within the transportation sector, more than half of respondents (67%) indicated that their city has a plan to create or expand public transportation.

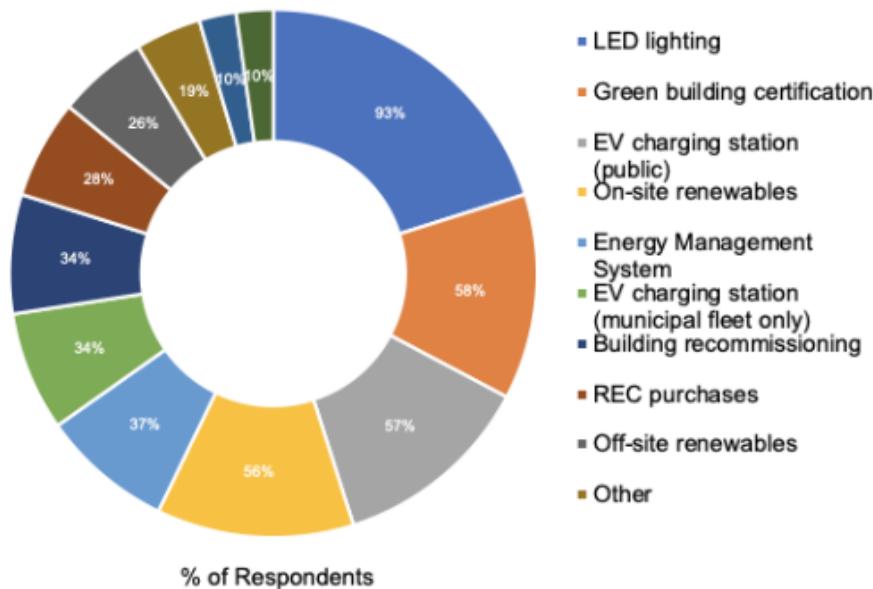


Figure 9. Municipal Building Initiatives

Perspectives From Select Cities

Case studies for three Ready for 100 cities were developed to serve as examples of paths from which other cities could learn. Case study locations were determined using specific selection criteria involving the population size of the city, geography, diversity, and ownership of utilities. Traverse City, MI, Portland, OR, and Columbia, SC were identified as cities within their transitions from which useful and wide-ranging recommendations could be compiled.

In each city, interviews were conducted with local government officials and community organizers that were involved with the commitment and transition. Analysis and synthesis of the information collected used inductive coding to understand the general themes that propagated from the data. Trends that existed between the three cities included motivation, investment, timelines, methods, and barriers. This information was used to develop recommendations for current and future pledged cities to use and build upon. Synthesis of the case study data is presented in the sections that follow. Figure 10 demonstrates the locations of our case studies.

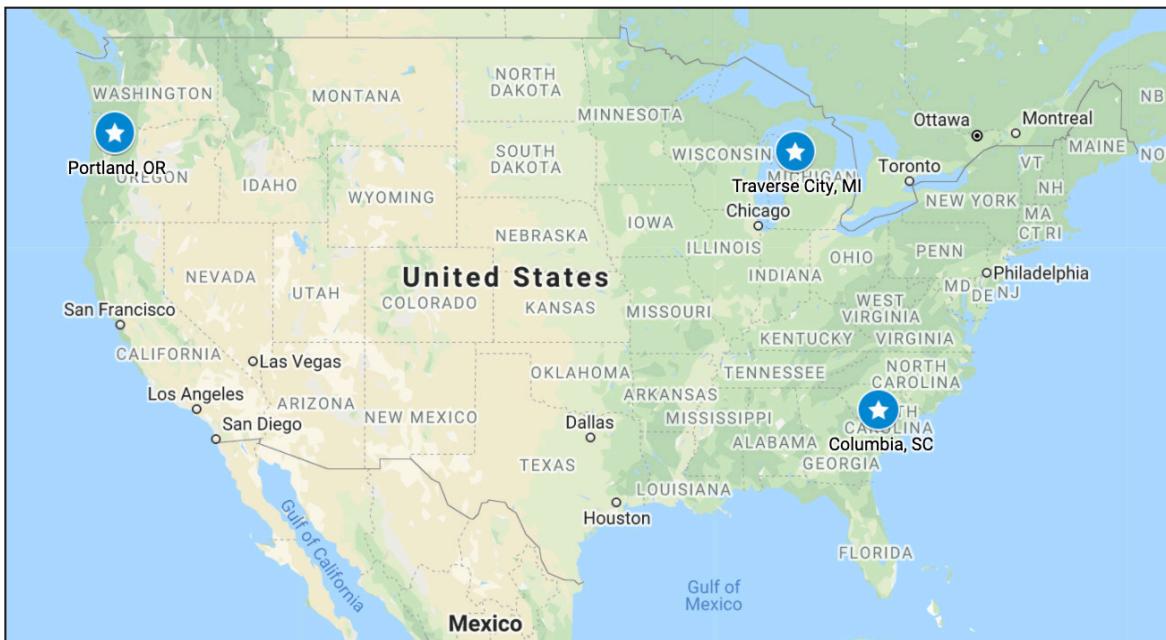


Figure 10. Locations of In-depth Case Studies

Case Study: Leveraging Public Utility Ownership

ENERGY TRANSITION IN TRAVERSE CITY, MI

- **Population:** 15,651
- **Racial Demographics:** 92.7% White, 1.9% Black, 1.9% Native American, 1.5% Hispanic/Latino, 0.5% Asian, 2.5% Two or More Races
- **Utility Type:** Municipal utility: Traverse City Light & Power
- **Renewable Energy Commitment:** 100% renewable electricity community-wide by 2040

Traverse City is a small city in the northern part of Michigan's Lower Peninsula in an area colonized from the Ojibwe and Ottawa indigenous peoples. It has a municipal electric utility called Traverse City Light & Power (TCLP), which has existed for over 100 years. TCLP is a department of the city with its own governing board, the members of which are appointed by the mayor.

In 2016, a group of community members who had long entertained the idea of a 100% renewable energy commitment decided to get serious and finally make it happen. To build community support and buy-in, they put in significant organizing work, met with elected officials, got petition signatures, wrote letters to the editor in the local paper, and held public informational events. They found that highlighting examples of other cities that had made a 100% renewable energy commitment were helpful in persuading people, particularly Grand Rapids, MI and Burlington, VT, which is a similar city and has not only made the commitment but has actually reached their 100% renewable goal. During this time, the city also hired a new city manager who was supportive of this goal and organized to fill a vacant seat on the TCLP board, which shifted the balance of power in their favor.

As an interim step, these community organizers wrote a resolution for 100% renewable energy for city operations and got it passed in December 2016. The city reached this goal at the end of 2019 via opting in to the TCLP "green rate," which is a voluntary small premium that goes into energy efficiency projects on behalf of the city. After the city operations commitment was passed, the push for a community-wide commitment continued, with organizers continuing to advocate for it, including speaking in favor at TCLP meetings. Finally in August of 2018, TCLP made the commitment to community-wide 100% renewable energy by 2040, with an interim goal of 40% renewable energy by 2025. As part of this commitment, they have a goal of reducing energy demand by 10% via energy efficiency measures.

CHALLENGES AND BARRIERS

One barrier Traverse City is facing in making progress toward their commitment is siting for wind and solar. Traverse City is small in area and there are not many places to build within city limits. For one solar array project, they had to get zoning laws changed. Additionally, TCLP is trying to partner with other utilities on large-scale projects in other areas of the state and sometimes running into community resistance fueled in part by misinformation campaigns from outside parties.

Another barrier they are facing is that they have significant existing power purchase agreements in fossil fuels. TCLP has found that people who work for power purchase suppliers like Midcontinent Independent System Operator (MISO) often still operate under an "old school" mindset about how power is produced, centering around fossil fuels like natural gas.

While having a municipal utility has been helpful for energy democracy, TCLP could still do more when it comes to democratic participation and outreach. Adding staff and/or board members who are dedicated to and interested in that work could help. The city tried to build a biomass plant several years ago without soliciting much public input or participation beforehand and was met with significant backlash. This resulted in the plant being canceled which was a learning experience for them on the importance of building public support and good communication.



A 600kW wind turbine installed in 1996 by TCLP

POINTS OF SUCCESS

Having a municipal utility has been helpful for Traverse City in making a 100% renewable energy commitment and also allows for more democratic energy control and public participation. TCLP is a city department governed by an eight person board that is appointed by the mayor, including the city manager in an ex-officio (non-voting) capacity. TCLP is generally very open and accessible to the public because it is a municipal utility. They have public commentary at meetings (which are deliberately held in the evenings), all of their information is publicly available, and they put an informational newsletter in with customers' utility bills. Public participation builds confidence from the public in what they do, and the TCLP board actively engages with the community.

"We are so fortunate, I feel, to have our own little utility that answers to our ratepayers and is part of the city."

-Tim Werner, City Commissioner and TCLP board member

The public in Traverse City generally cares about environmental issues and has been overwhelmingly supportive of the commitment. This may be in part due to the extensive, years-long community organizing efforts that have gone into it. The business community and the local Chamber of Commerce have generally been supportive or neutral, which helps them avoid a common area of opposition for renewable energy. City officials emphasized the increasingly favorable economic conditions of renewables being a significant factor in selling the commitment to people. TCLP has not had to raise rates, which undoubtedly helps maintain support.

The 100% renewable energy commitment has been helpful in making progress on renewable energy. According to city officials, TCLP has gone forward with several solar projects because of it. Also, people came "out of the woodwork" with opportunities once they set the commitment, and they have partnered in several upcoming wind and solar projects.²²

KEY TAKEAWAYS

- Having a municipal utility provides significant avenues for energy democracy and making a 100% renewable energy commitment, but the composition of the board and staff is important
 - Building grassroots community support can create more favorable conditions for a city to make and sustain a 100% renewable energy commitment
 - Being bold and making a 100% renewable energy commitment even without a dedicated plan or funding can play a significant role in making progress on renewable energy, and an interim goal with it can help make the goal feel more tangible
-

"Having a municipal utility is about as democratic as it gets when it comes to owning your own power. There's this tiny board and you can influence who gets appointed and elected. They listen to the community. There are opportunities every month to show up in person and make public comment, and you can email them directly. I know every municipal utility isn't as responsive as ours is right now, but we've come so far from where we were five or 10 years ago because we've worked to change the makeup of the board."

-Kate Madigan, Michigan Climate Action Network

Case Study: The Power of Local Activism

ENERGY TRANSITION IN PORTLAND, OR

- **Population:** 653,115
- **Racial Demographics:** 77.1% White, 5.8% Black, 8.1% Asian, 9.7% Hispanic/Latino
- **Utility Type:** Investor-owned utilities: Portland General Electric, Pacific Power, Northwest Natural
- **Renewable Energy Commitment:** 100% renewable electricity community-wide by 2035, 100% renewable energy (all sectors, including transportation, heating, and industry) by 2050

This commitment was announced on June 1, 2017, the same day that Donald Trump withdrew the United States from the Paris climate agreement. Portland is the first city in the Northwest to establish this renewable energy goal.²³ City hall pushed for this commitment, particularly the policy staff in the mayor's office, as well as young local activists. Portland is also home to 45,000 Native Americans, so the city promises to work in partnership with the tribal communities that live there.²⁴

CHALLENGES AND BARRIERS

Though Portland is generally thought of as "green" and progressive, the city is facing some challenges in reaching their renewable commitment. Rapid development and increasing population makes addressing the transportation sector of the commitment increasingly difficult, with the largest issue being the reduction of automobile emissions from an increasing number of vehicles on the road. The structure of the City Commission in Portland leads to equity issues and slow-moving decision-making since each commissioner is charged with oversight of different aspects of the city, making the conversation about the commitment inefficient. Also, decentralized city management leads to little consensus among segments of the city government. Generally, policy change has had little effect on decreasing emissions.

There is a disconnect between politicians and grassroots organizing; many bureaucrats just react to pressure rather than understanding the movement behind the pressure. The city's relationships with Pacific Power and Northwest Natural are not very engaged because they are rarely on the same page regarding energy decisions. Attempting to work with these IOUs creates bottlenecks due to miscommunication and lack of participation. There is uncertainty about how things will end up towards the end of the transition. Overall, the commitment has not been taken as seriously as it could, and the city has been slow in making progress.



POINTS OF SUCCESS

Historically, Portland has had a lot of environmental advocacy and prides itself on this facet of their energy transition. The city has seen a lot of public involvement with considerable amounts of grassroots organizing. The community generally cares about environmental issues and is motivated to act, encompassing a lot of movement energy. As a state, Oregon has many small to medium nonprofits that add a lot of expertise in the environment, energy, and environmental justice space that can be brought to the local level. People tend to turn to Portland for advice or inspiration in this realm, and they are always connected to the national conversation. There is a wealth of youth climate activists that mobilize in Portland and an immense amount of retired experts with a large depth of knowledge.

"There's an appetite for big things right now, and this is a city that historically has had a lot of environmental activism here."

-Nick Caleb, Center for Sustainable Economy

The Portland Clean Energy Fund (PCEF) was a ballot measure that came about by a large grassroots effort and passed overwhelmingly with 65% of the vote. PCEF represents Oregon's first-ever environmental initiative created and led by

communities of color. It is estimated to raise \$54-71 million in revenues each year to fund a variety of environmental programs including renewable projects, energy efficiency efforts, workforce development, and green infrastructure. The program is funded via a tax on large businesses.²⁵ PCEF will also assist residents with energy efficiency upgrades, home weatherization, rooftop solar, and local food production. The passing of PCEF had such massive waves of public support that large businesses and utilities didn't even campaign against it, setting the stage for public support of the incorporation of energy democracy into Portland's commitment.

“A partnership with the community I think is probably one of the most crucial parts of this [process].”

-John Wasiutynski, Multnomah County Office of Sustainability

Although relationships with Pacific Power and Northwest Natural have been strained, the city has a fairly solid and engaging relationship with Portland General Electric (PGE) and has been working with them on how to help the city reach its goals. The utility understands that it will be easier to work together to reach this goal than to fight it. Passing the commitment actually influenced PGE to make a change on their own and cease adding any new gas capacity. They have been very brand focused and want to be seen as a “green utility.” PGE has proposed a voluntary green tariff that would be available to large business and municipal customers, allowing them to purchase renewable power directly from new solar, wind, or other renewable energy facilities. Originally in 2016, PGE said they would not allow this, but are now listening to customers who seek options to support new, local renewable energy. Also, the costs will not be shifted to non-participating customers.²⁶

Communication with non-governmental organizations (NGOs) on how to address low and moderate income communities is in progress, such as building out community solar and billing programs. The city also has relationships with several community and nonprofit partners that have various programs established to help reduce energy burden on communities and barriers to clean energy infrastructure. Many of these nonprofits and community organizations are supported by public purpose charges on energy bills and big business surcharges. The city has been looking beyond federal help to assist with energy efficiency upgrades for low-income communities.

PURSUING ENERGY DEMOCRACY

The city of Portland is trying to broaden participation around energy issues, but progress has been slow. According to them, this is because they are making extensive efforts to get public input and participation, even putting the community in a leadership role, particularly on developing the policies for the Zero Cities Project, which is supposed to be a roadmap of building policies to get to net zero by 2050. The city's IOUs have not taken much public input, which causes issues in terms of public participation. However, the 100% renewable energy commitment includes a stipulation that by 2035, community-based organizations will own 2% of the renewable energy, and by 2050, they'll own 10%. The city is working on community solar to meet those minimums. PCEF is intended to be very democratic, shifting from city council to community control after initial appointments. Overall, energy democracy is important to the city, which is made clear by the overwhelming support of PCEF.



KEY TAKEAWAYS

- Having a significant progressive presence that uses grassroots movements to achieve energy goals is helpful
- Energy democracy is important, but there is a long way to go
- Engaging in a solid relationship with your IOU is key to achieving the commitment
- Better address GHG emissions within the transportation sector

Case Study: Public Engagement for Progress

ENERGY TRANSITION IN COLUMBIA, SC

- **Population:** 133,114
- **Racial Demographics:** 51% White, 42% Black, 4.3% Hispanic/Latino, 2.2% Asian, 0.25% Native American, 0.30% Pacific Islander
- **Utility Type:** Investor-owned utility: Dominion Energy; State-owned utility supplying cooperatives: Santee Cooper
- **Renewable Energy Commitment:** 100% renewable electricity community-wide by 2036

In 2017, Mayor Benjamin of Columbia, South Carolina, made a mayoral proclamation to encourage the City Council to pass a resolution that would commit Columbia to operate with 100% renewable energy. Shortly after demonstrating his support, the City Council unanimously approved of a community-wide goal of transition to 100% clean and renewable energy by 2036.

One month after making this commitment, the energy sector was shaken to its core when unexpectedly, after around ten years of planning and construction, a nuclear plant construction project, known as V.C. Summer, was abandoned by the two major energy utility companies of South Carolina—Santee Cooper and what was, at the time, South Carolina Electric and Gas (SCE&G)—after sinking \$9 billion and steadily raising the electricity rates of South Carolina residents.²⁷ After halting construction, a year-long fight to determine who would be paying the billions of dollars for the failed plant began, and ultimately SCE&G was bought by neighboring Dominion Energy. With the cases being brought to courts, the state House and Senate, and the public service commission as the continued context within which Columbia began their planning process for their renewable transition, residents and experts were actively engaged in the energy sector despite a blossoming mistrust of the local utilities.



CHALLENGES AND BARRIERS

During their transition process, Columbia has run into a number of barriers that have slowed their progress to reaching 100%. Having a commitment that originated from the Mayor and City Council, Columbia lacks the major public support and coalitions that could ultimately bring in local and external resources and expertise that would greatly assist the city in overcoming challenges, like limited funding and city staffing/expertise in energy and the environment. The city staff assigned to manage the project lack the power to make big decisions, the assistance from fellow city officials, as well as the needed expertise to create and implement a plan for reaching their goal, leaving them feeling overwhelmed and unsure of where to even start. Without the proper foundation of an empowered city staff, communication across all stakeholder groups—city officials, residents, environmental experts, justice experts, state officials, and utilities—is near non-existent, preventing the sharing of knowledge and ideas to develop a path forward.

“It’s difficult to envision what you have never heard of.”

-Penny Cothran, Sierra Club

Being a city in the south, Columbia has also needed to tread carefully when addressing environmental issues and using specific terminology, like “climate change”, which have been so politicized, making the motivation of resources and the

public more difficult in support of the transition. In addition, as a state capital and home to a number of universities and places of worship, Columbia lacks tax revenue from 70% of the organizations within its boundaries; therefore, little funding from taxes is available to help assist with the transition.

POINTS OF SUCCESS

While it may seem unfortunate to have little tax revenue coming in for the transition, there are some advantages to being the state capital. Columbia has available to them quick access to state resources, considering the offices of most of South Carolina's departments are housed within the city. A prime example of this being the Energy Office, which has a plethora of different funding opportunities and expertise regarding efficiency, renewable energy, and the complex local energy sector that Columbia can take advantage of in making this transition more manageable.

Resulting from the recent nuclear project abandonment, the public has been more aware about the energy sector and the problems of the current system. Columbia has the opportunity to leverage this awareness to advocate for the renewable transition, garnering public support and increase the city's ability to renegotiate with the utilities as a path forward for Columbia partnering with their utility on renewable energy projects.

"We speak to building a community that everyone wants to live in and we've been able to find some unanimity of purpose as a result of it."

-Mayor Stephen Benjamin of Columbia, SC²⁸

Having a local chapter of the Sierra Club within the city is a huge asset considering the organization has assisted many cities throughout their transition process. Local organizers are willing and able to aid the city staff in the planning process. With these organizations willing to help and public support within reach, Columbia has the potential capacity to keep pushing forward until they reach their goal.

PURSUING ENERGY DEMOCRACY

Columbia's energy sector, made more complex in the aftermath of the failed nuclear power plant project, is a mixture of co-ops that receive most of their energy from Santee Cooper, and Dominion Energy, an investor-owned utility. While co-ops offer their users a more democratic decision-making process, most of the city is still powered through Dominion, making the pursuit toward energy democracy more challenging.

Residents have very little capacity for interacting with Dominion, unless they are experts in the energy sector or are active within local chapters of environmental organizations and signing petitions for the Public Service Commission (PSC). Even further, confusing policies and laws surrounding distributed energy sources, particularly solar, create a series of hurdles for residents considering solar installation on their homes and ensuring quality and longevity of those panels. However, despite these limitations, the South Carolina Energy Office and local Sierra Club chapter are aware of these difficulties and are attempting to assist the city's residents in this process.



Columbia Metropolitan Airport's 1.38 MW solar array, installed in 2017, can be seen from your airplane window



“It’s a tough thing to be resilient, but it’s a necessary thing to be resilient. We have to bounce back because what choice do we have? And we know there are communities that are being prioritized in the resiliency and certain communities that are not.”

-Penny Cothran, Sierra Club

KEY TAKEAWAYS

- Having public support for the transition can bring about necessary resources for a just and fruitful process
- Communication across various stakeholders and interest groups should be prioritized for fostering innovative and inclusive paths forward
- As a capital city, or for larger cities, leverage your state lawmakers to push for helpful policy mechanisms like a statewide renewable portfolio standard
- Empower the implementers, like city staff, to make decisions and broach stakeholders

Recommendations

The data from the survey and case studies have provided numerous insights into the strategies pursued and barriers faced throughout the local transition to 100% renewable energy. Cities working through this transition have largely faced barriers through staffing and subject matter expertise, funding resources, state policies, and utility structure. Some successful endeavors have been able to harness the power of citizen lobbying and grassroots organization in order to assist with these challenges and further clean energy goals. Cities have also advocated for clean energy policies on the state and regional level to pressure utilities to collaborate on the transition process. On the whole, expertise from community organizations and other Ready for 100 cities seems to be the most valuable resource to turn to, especially at the beginning of the transition. Many cities have even turned to outside consultants to develop plans for getting to 100% which can be done if the resources are available.

This report offers a series of recommendations based on the above findings to help cities within the transition reach 100% renewable energy. General recommendations for cities within the transition are listed below.

- 1. Build partnerships, coalitions, and relationships** externally and within the city to work together, partner on projects, and share resources, stories, and knowledge.
- 2. Ensure disproportionate energy burden on citizens is being adequately addressed** by engaging marginalized communities and investing in efficiency and clean energy programs directed towards these communities.
- 3. Engage with other cities** that have similar commitments to build a network of peers for sharing best practices, data, and metrics.
- 4. Collaborate with community-based organizations and national non-profits** that can provide additional perspectives and resources to help with the planning and decision-making process.
- 5. Assess the use and allocation of local taxes and fees** from the city and supplement with state, federal, and other fundraising opportunities (e.g. grants) in order to procure funding for implementing programs and technologies.
- 6. Advocate for renewable energy policies and funding mechanisms** at the state and federal level.
- 7. Empower citizens to have voices within the energy system** through education and awareness campaigns, engagement in energy policy and regulation issues, and support of community-based organizations.
- 8. Hire dedicated staff and foster connections with other cities**, particularly among dedicated staff, to maximize expertise in the transition.
- 9. Designate a team or person entrusted to champion the initialization** and maintain communication within the local government to ensure that all departments are on the same page.
- 10. Develop an interim goal** to help motivate staffers towards the transition to 100%.
- 11. Partner with neighboring cities on energy projects**, whether they have made the commitment or not - cities and residents tend to support renewable energy initiatives and could be willing to work with you.

Following are also more specific recommendations for cities looking to increase community engagement, community groups and organizers within transitioning cities, cities with investor-owned utilities, and those cities hoping to make a commitment.

Increasing Engagement and Equity

Although many cities find that energy democracy and equity are important to consider, prioritizing these issues within renewable energy transitions appears to be difficult for most cities. Energy democracy and equity issues go hand in hand; only when energy democracy is addressed can energy burden be reduced. The first step to solving equity issues is to recognize and understand the problems that frontline communities bear.

“Acknowledge inequities exist.”

-Survey Respondent



Energy equity can be addressed with engagement of these frontline communities throughout all decision-making bodies and processes. When given a voice, these communities can help enable solutions that will meet their needs. Cities can invest in these communities through energy efficiency projects, job training programs, clean energy funding assistance, and public transportation. Instead of overlooking the issues of marginalized communities, cities can prioritize this work to assist in building a more equitable transition for all.

For Community Groups and Organizers

Community organizations, experts, and advocates should consider focusing their efforts on some areas where cities need help most: funding, technological expertise, legal expertise, access to data, public support. Consistent communication between local organizations and the city staff working in plan implementation will help to determine where the needs are greatest. Combining efforts for energy democracy and 100% renewable energy with electoral campaigns can build popular support, get renewable energy-friendly politicians in office, and ensure the incorporation of energy democracy throughout the planning and implementation process by holding elected officials accountable on their campaign promises.

“Our local IOU is regulated by the Public Utilities Commission to provide the cheapest electricity possible regardless of carbon impact. We’re working to transition the grid toward cleaner sources through engagement at the state and regional level, not through a utility.”

-Survey Respondent

For Cities with Investor-Owned Utilities

Many cities have suggested renewable portfolio standards or other mandates, municipalization, community choice energy, and public pressure as methods for incentivizing the initial commitment by utilities. If the state requires integrated resource plans (IRP) from utilities, cities can be active in the stakeholder process. Even just passing a commitment can encourage utilities to change and work alongside the city, especially if they are brand focused. The utility's desire to be an engaged partner in the transition can be amplified if multiple committed cities in the area work together to put pressure on the utility. In addition, cities can try renegotiating the city-utility franchise agreement, with a goal of getting projects that involve a community benefits agreement with frontline communities within the city. Lastly, as municipal utilities allow for greater energy democracy and aid in the renewable energy transition, the threat of municipalization may help to push an IOU to act even if the city does not follow through. Unfortunately, some IOUs may only comply if necessary, so working to expand state-level renewable energy and emissions standards can be an important practice to undertake.

For Cities Contemplating Committing to the Transition

Over half of the survey respondents noted that concern for their local environment or climate change drove their city to make their commitment. Cities can consider increasing community engagement in order to mobilize the public to advocate for change and focus on these areas of concern in order to garner public support for the transition. One helpful tool for beginning the process of plan-making for the transition is a baseline of energy usage within the city. Cities can begin tracking energy usage in municipal buildings as a way of making future planning easier if they want to have a rough idea of where to begin before making the commitment. Similarly, a publicly available GHG inventory is a commonly used tool for establishing a baseline. Lastly, cities can communicate with the state's energy office to see what resources are available for easing the process of creating or determining this baseline.

“Just do it!”

-Mayor Jim Caruthers of Traverse City, MI

Conclusion

Within the U.S., nine states, thirteen counties, and over 150 cities and counting have made Sierra Club's Ready for 100 commitment.²⁹ In order to accomplish these ambitious goals, local governments and communities are working towards comprehensive and structural change. Along with such change comes various challenges, and cities undergoing the transition can learn from each other to implement effective policies and programs that incorporate a just and equitable transition for all. Empowering citizens to have voices within the energy system can increase engagement in energy policy and regulation issues, easing the transition to 100% renewable energy. This report serves as a compilation of survey and interview data from Ready for 100 cities around the country that can be used to help cities transition or plan for a transition to 100% renewable energy.

*For additional resources, such as links to the survey/case study questions, please visit
<https://urbanenergyjusticelab.com/localenergy>.*

Bibliography

1. Intergovernmental Panel on Climate Change. (2018). Summary for Policymakers of IPCC Species Report on Global Warming of 1.5oC approved by governments. Retrieved from https://www.ipcc.ch/news_and_events/pr_181008_P48_spm.shtml
2. Environmental Protection Agency. (2018). Sources of Greenhouse Gas Emissions. Retrieved from <https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions>
3. Long, N & Steinberger, K. (2016). Renewable Energy is Key to Fighting Climate Change. Natural Resources Defense Council. Retrieved from <https://www.nrdc.org/experts/noah-long/renewable-energy-key-fighting-climate-change>
4. Droege, P. (2018). *Urban Energy Transition: Renewable Strategies for Cities and Regions.* <https://doi.org/10.1016/B978-0-08-102074-6.00001-2>
5. Sierra Club. (2020). *100% Commitment in Cities, Counties, and States.* Retrieved from <https://www.sierraclub.org/ready-for-100/commitments>
6. Becker, S., & Naumann, M. (2017). *Energy democracy: Mapping the debate on energy alternatives.* *Geography Compass*, 11(8). <https://doi.org/10.1111/gec3.12321>
7. Szulecki, K. (2018). Conceptualizing energy democracy. *Environmental Politics*, 27:1, 21-41. <https://doi.org/10.1080/09644016.2017.1387294>
8. Burke, M.J., & Stephens, J. C. (2017). Energy democracy: Goals and policy instruments for sociotechnical transitions. *Energy Research & Social Science*, 33, 35-48.<https://doi.org/10.1016/j.erss.2017.09.024>
9. Energy Information Administration. (2017). U.S. Energy Facts Explained. Retrieved from https://www.eia.gov/energyexplained/?page=us_energy_home
10. Jacobson, M. Z., Cameron, M.A., Hennessy, E. M., Petkov, I., Meyer, C. B., Gambhir, T. K.,...Delucchi, M. A. (2018). 100% clean and renewable Wind, Water, and Sunlight (WWS) all-sector energy roadmaps for 53 towns and cities in North America. *Sustainable Cities and Society*, 42, 22-37. <https://doi.org/10.1016/j.scs.2018.06.031>
11. Osmani, A., Zhang, J., Gonela, V., & Awudu, I. (2013). Electricity generation from renewables in the United States: Resource potential, current usage, technical status, challenges, strategies, policies, and future directions. *Renewable and Sustainable Energy Reviews*, 24, 454-472. <https://doi.org/10.1016/j.rser.2013.03.011>
12. U.S. Energy Information Administration - EIA - Independent Statistics and Analysis. (n.d.). Retrieved March 31, 2020, from <https://www.eia.gov/energyexplained/electricituse-of-electricity.php>
13. Energy.gov. (2020). United States - Land Based and Offshore Annual Average Wind Speed at 100m. Retrieved from https://www.energy.gov/sites/prod/files/2013/12/f5/wind_speed_map_hi-res.pdf
14. National Renewable Energy Laboratory. (2020). Solar Resource Data, Tools, and Maps. Retrieved from <https://www.nrel.gov/gis/assets/images/solar-annual-ghi-2018-usa-scale-01.jpg>
15. Mathiesen, B.V., Lund, H., & Karlsson, K. (2010). 100% Renewable energy systems, climate mitigation and economic growth. *Applied Energy*, 88(2), 488-501.<https://doi.org/10.1016/j.apenergy.2010.03.001>
16. Osmani, A., Zhang, J., Gonela, V., & Awudu, I. (2013). Electricity generation from renewables in the United States: Resource potential, current usage, technical status, challenges, strategies, policies, and future directions. *Renewable and Sustainable Energy Reviews*, 24, 454-472. <https://doi.org/10.1016/j.rser.2013.03.011>
17. Mathiesen, B.V., Lund, H., & Karlsson, K. (2010). 100% Renewable energy systems, climate mitigation and economic growth. *Applied Energy*, 88(2), 488-501. <https://doi.org/10.1016/j.apenergy.2010.03.001>
18. Osmani, A., Zhang, J., Gonela, V., & Awudu, I. (2013). Electricity generation from renewables in the United States: Resource potential, current usage, technical status, challenges, strategies, policies, and future directions. *Renewable and Sustainable Energy Reviews*, 24, 454-472. <https://doi.org/10.1016/j.rser.2013.03.011>
19. American Public Power Association (2018). Stats and Facts. Retrieved from <https://www.publicpower.org/public-power/stats-and-facts>
20. Bozuwa, J (2019). Energy democracy: taking back power. The Next System Project. Retrieved from <https://thenextsystem.org/learn/stories/energy-democracy-taking-back-power>

21. American Public Power Association (2018). Public Power 2018 Statistical Report. Retrieved from <https://www.publicpower.org/system/files/documents/2018-Public-Power-Statistical-Report-Updated.pdf>
22. Werner, T. (2019). Forum: Renewable energy moves forward. Traverse City Record Eagle. Retrieved from https://www.record-eagle.com/opinion/forum-renewable-energy-moves-forward/article_9d076b3d-e8b5-508f-8196-efd3cd542822.html
23. Levy, S. & Gross, M. (2017). Portland, Oregon and Multnomah County Approve 100% Renewable Energy Commitment. Sierra Club. Retrieved from <https://www.sierraclub.org/ready-for-100/portland-oregon-and-multnomah-county-approve-100-renewable-energy-commitment>
24. City of Portland. (2017). Resolution No. 37289. Retrieved from <https://www.portlandoregon.gov/auditor/article/642811>
25. Portland.gov. (2019). About the Portland Clean Energy Community Benefits Fund. Retrieved from <https://beta.portland.gov/bps/cleanenergy/about-portland-clean-energy-community-benefits-fund>
26. Walton, R. (2018). Portland General Electric proposes voluntary green tariff for munis, large customers. Utility Dive. Retrieved from <https://www.utilitydive.com/news/portland-general-electric-proposes-voluntary-green-tariff-for-munis-large/521452/>
27. Creese, Alex. (2020). The Failed V.C. Summer Nuclear Project: A Timeline. Retrieved from <https://www.chooseenergy.com/news/article/failed-v-c-summer-nuclear-project-timeline>
28. Voices of 100%: South Carolina City Tries Green Energy in a Red State - Episode 86 of Local Energy Rules Podcast. (2019). Retrieved from <https://ilsr.org/columbia-south-carolina-voices-of-100-podcast/>
29. Sierra Club. (2020). 100% Commitment in Cities, Counties, and States. Retrieved from <https://www.sierraclub.org/ready-for-100/commitments>