American Cities Climate Challenge

Rocky Mountain Institute

CASE STUDY:

CINCINNATI'S PATH TO A 100 MW SOLAR DEAL

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EXECUTIVE SUMMARY

By the end of 2021, the largest city-led solar installation east of the Mississippi will be located outside Cincinnati, Ohio. The City of Cincinnati has negotiated agreements to purchase the electricity generated by a 100 MW solar farm that will be located 40 miles east of the city. This case study outlines the steps the city followed to execute this transaction and provides a variety of key takeaways.

The impetus for this project came from Cincinnati Mayor John Cranley, who had the original vision for the project in the fall of 2017. As was the case in many US cities, this was partly in response to the decision by the United States to withdraw from the Paris Agreement. The mayor grasped the potential opportunity and set a goal of powering all city operations with solar power by the end of 2024, a key step toward a longer-term goal of powering the entire city with renewable energy by 2050 that was initiated when the mayor signed on to the Sierra Club's Ready for 100 campaign.

The concept of a large renewable energy project built upon a strong foundation of analysis and community support. In July 2017 Mayor Cranley and the City Council had passed a motion to update the Green Cincinnati Plan. This plan, which was developed in partnership with the local businesses, universities, and the broader community, provided updated estimates of various strategies' carbon reduction potential and a pathway for a more sustainable, equitable, and resilient future.

However, the project had to overcome significant institutional inertia early on. Although several key city staff supported the project—including the city manager, assistant city manager, and the Office of Environment and Sustainability—there were internal concerns to overcome. City officials were concerned that pursuing a large solar purchase might increase the city's energy costs, disrupt ongoing operations, take time away from other priorities, and might not ultimately be successful.

As a result, it was vital that the mayor—along with other key city political leaders—continued to support the project and maintain their bold vision throughout this initial phase. Cities without this top-down leadership may need to dedicate time at the beginning of the process to building consensus around the city's priorities and establishing goals.

KEY TAKEAWAY

Having senior-level city leadership fully on board and committed to the vision for a renewable energy project is a critical component to success.

As discussed in the American Cities Climate Challenge Renewables Accelerator's Procurement Guidance, the first step to operationalizing the mayor's renewable energy goal was to understand the available options and select a strategy. This involved investigating Ohio's energy markets and regulatory environment to determine which strategies were available, a process for which the Renewables Accelerator team has developed a specialized tool. Key city staff, including individuals from the budget, finance, sustainability, and facilities teams, began researching the issues involved in purchasing large on- or off-site solar installations. There was a lot to learn.

During this period, city staff debated whether or not Cincinnati could achieve its goal by installing on-site solar at city facilities. The project team reviewed many potential sites for rooftop solar, but ultimately concluded that the available roof space was insufficient for the city to meet its goal.

The city also investigated installing ground-mounted solar systems at two city-owned properties: Center Hill Landfill and Lunken Airport. However, these sites proved to be uneconomical, as the available land could not support enough solar modules to achieve the necessary economies of scale.

As a result, the City ultimately decided to focus on signing a contract with an off-site solar project.

During this phase of reviewing options, the city team had to overcome two key obstacles:

1. **Insufficient knowledge:** Many of the city staff lacked important knowledge and had to learn about energy market fundamentals and the available solar options. To address this, the Office of Environment and Sustainability and the Greater Cincinnati Waterworks team, which had significant expertise in local energy markets, led an effort to train city staff on energy projects. City staff also attended training events provided by the Renewables Accelerator team—which includes Rocky Mountain Institute, World Resources Institute, and the Urban Sustainability Directors Network—as discussed in a short video on the city's efforts.

2. **Ongoing reservations:** Some individuals within the city government continued to have reservations about the project. One key question was how the project would impact the city from a budget perspective. The core team conducted detailed analysis and scenario planning to ensure that the project could be budget-neutral; however, skepticism that solar energy could be cost effective remained.

Ultimately, it was important to come to a collective realization that the team did not need to know everything to keep moving forward.

Overall, this process of identifying a strategy and aligning internal staff took significant time and there were moments when it seemed like the project might not happen. However, the team's ongoing efforts, combined with the pressure from city leadership, kept things moving forward.

KEY TAKEAWAY

Getting buy-in and bringing along city departments—even those that are initially skeptical—can be time-consuming but will pay long-term dividends. During this process, recognize that it is not necessary to answer every question at this early stage; it's more important to keep moving ahead.

Leveraged Technical Assistance Available to the City

A variety of external partners assisted the city in moving the project along. A key development that propelled the project forward out of the conceptual stage was getting outside technical assistance.

Cincinnati received a Bloomberg Philanthropies' American Cities Climate Challenge (ACCC) grant award to participate in a climate action acceleration program that provided access to new resources and technical support from a range of partner organizations. These resources included a grant-funded team member to facilitate the development and passage of high-impact policies, training for senior leadership to assist with implementation of their proposed climate plans, and citizen engagement support to maximize community buy-in.

Cincinnati was now fully committed to the project internally, but the grant award provided the momentum, expert advice, and technical support needed to advance the project. Not every city is going to have access to this particular program, but they should seek out external support from outside resources, including assistance from federal agencies, consultants, universities, philanthropies, and others. A compendium of resources to support city efforts can be found at the ACCC Renewables Accelerator's website, www.cityrenewables.org.

KEY TAKEAWAY

Reaching out to partners and technical advisors can help fill-in gaps for city personnel, who may already be stretched thin and managing competing priorities.

Prioritize Initiatives: Short-List and Prioritize Specific Renewable Energy Initiatives | Late 2018 and Early 2019

Learn more here about this stage of a renewable energy procurement process

Working with both internal and external partners, Cincinnati next began laying out the project details.

Engaging with Duke Energy:

A key step in this phase was for the city to meet with Duke Energy—the local utility—to discuss how it would engage on the project, and how much of the solar purchase could be located behind the meter. Staff of the City's Office of Environment and Sustainability (OES) felt that engaging the main utility in a respectful and open manner was important, even if utility staff did not necessarily see eye-to-eye with the project team or agree with all of the team's objectives.

Aligning Internally at the City on the Types of Transactions of Pursue:

At the same time, the city debated how to structure the overall transaction and researched a variety of approaches. A key question was whether to pursue a traditional power purchase agreement (PPA) or a virtual PPA. The team also considered what requirements to impose regarding the project's location.

During this phase, the team also discussed how much of the city's renewable goal should be met with on-site versus off-site solar. This phase involved many iterations of planning and was a challenging part of the process, where things felt uncertain at times.

KEY TAKEAWAY

Engaging the main city utility is one component of an overall municipal renewables strategy and the City of Cincinnati determined that transparency with the utility was wise. This was especially true on the distribution side, even if the utility did not agree on all the intended project outcomes. It was even more important to get internal alignment on the type of project to pursue.
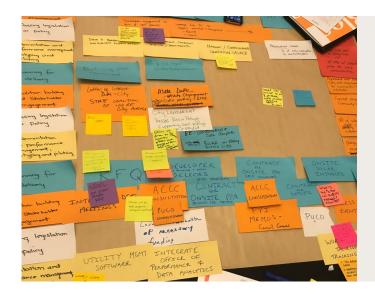
As the project began to advance in 2019 and early 2020, a number of new and different parties became involved and expressed their opinions on the project. This included Hecate Energy/Creekwood Energy (the developer and consultant team that was awarded the contract), Calfee (lawyers), Lykins Energy (technical advisor on the local market), RINA (energy consultants), Dynegy (retail electricity provider), the Renewables Accelerator (a technical consultant), and a variety of others.

With these external partners joining the effort, the project team grew substantially. The larger group added capacity to accelerate the work and provided necessary technical expertise. In particular, these outside parties brought financial expertise, legal insights, and energy pricing capabilities that the city did not possess internally but were essential. The Renewables Accelerator team developed an economic model—the Solar and Wind Off-site PPA Economic Calculator (SWOPEC)—to assist the city in evaluating the economics of the PPA under various future energy market scenarios. The project may not have ultimately been completed without these outside resources and technical support.

However, including these external parties also made coordination more complicated and challenging for the core city team. These partners did not always agree on an approach and, at times, provided feedback in an indirect or roundabout manner. As a result, city staff had to adapt and continue to play a central role of aligning the parties, seeking resolutions, and pushing the process forward.

KEY TAKEAWAY

Putting a broad and skilled team together is a must, but they may not always agree on everything. These dynamics have to be carefully managed by the city team leads.

The procurement process was complicated and reflected an internal debate within the city regarding whether to focus the search on identifying the best companies or the ideal project(s). The city started by issuing an RFP to identify potential projects, but after some internal discussion decided to release an RFQ to focus more on the various respondents' qualifications and ability to meet the city's goals. Finally, the procurement office shifted back to an RFP when it determined that the actual project was more important. In retrospect, the shift between RFQ and RFP had relatively little impact, as the overall scope of the project was sufficiently broad and flexible.

The Renewables Accelerator's Off-site PPA RFP Template provides a framework to help cities develop this type of solicitation.

During this process, the city also refined and crystalized its project requirements. First, it combined two smaller subprojects—a 35 MW project for the city's direct energy needs and a 65 MW project backing the city's energy aggregation program for local residents and businesses—into one 100 MW power purchase agreement. Furthermore, while the original RFP had indicated that the city preferred renewable energy projects that were geographically "close," in the final RFP the city defined "close" more precisely as being within 100 miles of Cincinnati City Hall.

The city ultimately used the following criteria and weightings to evaluate the various project proposals:

	On-site solar	Ground-mount solar at the city airport and landfill	Off-site
Project Labor Agreement (PLA)	20%	20%	20%
Economic Inclusion	10%	10%	10%
PPA Terms	20%	20%	20%
Technical Strength of the Application	20%	20%	15%
Financial Strength of the Bidder	10%	10%	10%
Experience and References	15%	15%	15%
Other Advantages to the City	5%	5%	5%
Geographic Proximity*	N/A	N/A	5%

These were weighted based on the City Council's priorities of good wages and inclusion balanced against the overall ability of the selected firm to succeed at a given price.

Altogether, the city received fifteen responses to the final RFP. Respondents included both local firms and large national and multinational firms, and each of the proposals had strengths and weaknesses. City staff shortlisted four finalists and interviewed each extensively. The final selection involved lengthy internal deliberation as well as a great deal of input from elected officials. Politics and personal relationships had to be carefully navigated during this phase. Nevertheless, the procurement process did advance relatively quickly—in a matter of months—from beginning to end.

Michael Forrester, the city's energy manager, explained that the City of Cincinnati always maintained the goal of buying a long-term hedge on its energy bills: "Our overall goals were to utilize money we already spend…and choose where we're getting our electricity from. Overall, as energy markets rise, we have locked in our price."

KEY TAKEAWAY

Collecting and integrating feedback from the market to revise and shape a final procurement package takes more time, but it also provides benefits and should produce a better final project.

||||||| Evaluate and Sign | Fall 2019
Learn more here about this stage of a renewable energy procurement process.

Before the contract award was made by the city manager, the city council inserted itself into the project for the first time in a significant manner by presenting a requirement that became an important factor in project finalization. Via city ordinance, the council mandated that the city could only enter into an agreement with a partner that had a project-labor agreement (PLA), although it was not prescriptive on the actual terms of such an agreement. While this ordinance was well within the City Council's authority to enact, it was an obstacle that had to be navigated and ultimately slowed the overall process by four to six weeks.

Following the city council's action, the city team engaged in extensive negotiation with the labor unions on the hiring and workforce components. Transparency,

The Renewables Accelerator's Off-site Pitch Deck provides city staff with a template and tool kit to highlight these benefits and effectively propose large-scale renewable energy projects to key stakeholders.

On the City Council PLA Ordinance

"I will say that it was unexpected and it did slow us down probably by 4–6 weeks but it wasn't the PLA requirement in itself, it was that it was added at the last minute after the procurement document were fully written. The PLA requirement was inserted by ordinance which also required a certain amount of determining how we were going to incorporate that into the document and administer the requirement. I do not think it would have been an issue if we knew earlier on. The take-away is that if there are city priorities that need to be accounted for, those should be fully flushed out as soon as possible so they can be incorporated at the beginning."

- Michael Forrester, cincinnati energy manager

flexibility, and open-mindedness with the union partners was essential throughout these discussions. Ultimately the administration achieved compliance with this requirement. In conjunction with Cincinnati State (a local technical and community college) and IBEW Local 212, the city will implement a workforce skill and hiring program or project labor agreement aimed at putting Cincinnati residents to work on the project.

While addressing these last-minute requirements on location and workforce was time consuming, ultimately the team was able to garner support for the project from all of the elected leaders of the city—all nine members of city council and the mayor. The city leaders supported the project for a variety of different reasons. Some wanted to be associated with an innovative project, some were motivated by the environmental aspects of the project, some were motivated by saving money, and some welcomed the positive attention the project garnered.

Very few projects in Cincinnati (or any city government) get universal buy-in, but this one did. That allowed the city's deal team to move more quickly without fear of political repercussions.

KEY TAKEAWAY

Elected officials across the political and ideological spectrum may have different motivations for supporting a project like this, but that is inevitable and can be helpful. Building support across the ideological spectrum can require an upfront investment of time but can greatly simplify and accelerate a renewable energy project's final approval.

Monitor and Share | Early 2020
Learn more here about this stage of a renewable energy procurement process

The power purchase agreement was finally signed and executed by the city in October 2019 and construction began in June 2020. This agreement signified a culmination of over three years of efforts and contributions by city staff and partner organizations. The 35 megawatt array is scheduled to go into service and begin serving city facilities in December 2021. The additional 65 megawatt service to benefit residents through the aggregation program is also expected to be operational by December 2021.

This project has been recognized at the state level as a success. "This kind of bold forward thinking is exactly what it's going to take to make sure Ohio doesn't fall behind," said Ohio Environmental Council Executive Director Heather Taylor-Miesle.

The city ultimately expects the transaction to provide financial returns on top of the ancillary benefits to the local community, including local jobs and improved air quality. As Mayor John Cranley explained, these savings largely resulted from the city's ability to execute a large purchase: "The real energy savings comes from the massive array, 100MW to begin with… it's probably a $40 million project, but once you get bigger and better, the price comes down."

Despite all the challenges, the project team at the City of Cincinnati always kept moving forward. According to City Energy Manager Michael Forrester, the most important elements to keep things on track were having: 1) the alignment of city leaders and 2) a direct pathway from people working on the project to city leadership. He noted that it is also essential to do things the "right way from a technical perspective" and not cut corners just for the sake of speed.

KEY TAKEAWAY

Speed and political momentum are certainly important but pausing at key moments to do things the right way, get relevant technical support, and test assumptions will likely produce better long-term outcomes.