Removing Permitting Barriers to Home Energy Production in Arizona

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Executive Summary

Installing residential solar and battery systems is a key way to help Arizona families save money on record-high electricity bills while also creating a more resilient electrical grid and promoting energy independence.

Many local governments in Arizona, however, create unnecessary hurdles to solar adoption by employing inefficient, outdated, and burdensome methods for permitting, leading to uncertain timelines, delays, and increased expenses for homeowners looking to go solar. Cumbersome permitting processes also increase costs to local governments and impede economic development in Arizona.

As a result of these problems, fewer families are able to go solar than otherwise would. In Arizona, around 19 percent of residential solar projects that begin the permitting process in areas without instant permitting are canceled prior to completion,[1] largely due to permitting barriers.[2] Families who do install solar will likely end up paying more as the result of unnecessary bureaucratic processes. The Solar Energy Industries Association (SEIA) estimates that permitting and other bureaucratic costs add $6,000 to $7,000 to the typical U.S. residential solar system.[3] These hurdles slow the growth of an industry that is now valued at $21.3 billion across residential, commercial, and utility-scale sectors in Arizona[4] and seen around 30 percent job growth in recent years.[5]

They also result in delays and increased costs for unrelated industries that require permits of their own, which are themselves delayed by solar permit backlogs. Getting simple projects out of the queue will free up resources and allow the state to focus on building other things, like new homes – critical in a state where household growth has outpaced new housing growth by nearly 10 percentage points, the second highest supply gap of any state in the country.[6]

Cutting unnecessary red tape in local solar permitting through the use of instant permitting and remote inspections will allow more Arizonans to reap the benefits of rooftop solar power while relieving administrative burdens for local governments and reducing permitting backlogs for other industries, such as new housing construction.

> ***These hurdles slow the growth of an industry that is now valued at $21.3 billion across residential, commercial, and utility-scale sectors in Arizona and seen around 30 percent job growth in recent years.***

This report looks at some of the common problems facing residential solar and battery storage permitting in Arizona, as reported by representatives from the companies now installing solar across the state. These problems include:

- **Inefficiencies and backlogs within local governments.** The cities and counties that process these permits manually are themselves burdened by slow and complicated review processes for solar projects, the bulk of which are fairly standard and would be better suited to an automated system. As the volume of prospective solar projects has increased, so has government agencies' workload, wasting staff time and tax dollars.

- **Long permitting timelines.** It takes an average of 14 days to obtain a residential solar permit in Arizona, and in some locations the wait is much longer.[7] In Yavapai County, for instance, the average is 44 days; in the town of Sahuarita, it is 30 days. More complicated projects can take much longer. Lengthy timelines raise costs and discourage homeowners from installing solar. SEIA estimates that a one week delay in system installation due to permitting, inspection and interconnection processes increases the client cancelation rate by 10 percent.[8] Delays also increase costs for unrelated industries that also require permits, such as new housing construction.

- **Cumbersome submission processes.** Many local governments in Arizona do not offer an online portal for solar permit application submissions, relying instead on slower and less reliable alternatives like email, mail, and in-person visits. These options tend to increase the time solar installers spend assembling an application and lengthen the subsequent wait times, raising costs for customers. In-person requirements can drive installers out of a market altogether.

- **Widely varying code requirements.** Building codes can vary based on which version of the national code a town, city, or county has chosen to adopt and whether or not it has amended that code. Unique regional factors like historic districts and floodplains can generate additional requirements within the same locality. Since most installers in the state work across multiple regions, they face a plethora of shifting standards and requirements, all of which take staff time to learn and adapt to, raising costs.

- **Onerous and unnecessary requirements.** Some local governments complicate the permitting process with requirements not critical to the safety of the system in question. The Town of Sahuarita, for example, requires installers to submit a structural engineering report with an engineering stamp for all residential solar installations, even the most standard, despite a state provision discouraging this practice.[9] The requirement can add $500 to $700 to any project installed in this town.

- **Poor communications protocols.** Permitting departments often do not communicate clearly throughout the application and inspection processes, aggravating many of the other problems that arise. Poor communication channels, opaque tracking systems, and understaffing can all extend timelines, add costs, and increase frustration.

Removing solar permitting barriers in Arizona has already been proven to encourage adoption and drive construction. Eight local governments in the state have recently removed permitting barriers, mostly by adopting instant permitting, and the results have been striking.[10] In the two years after Tucson and Pima County began issuing instant residential solar permits, the number of families going solar annually in that county increased by 140 percent.[11] Instant home solar permits have saved Tucson and Pima County over 10,000 hours of staff time.[12]

Policy Recommendations

Reducing the time and the cost involved in moving a solar project through the permitting process, from application through inspection, is critical to expanding residential solar access in Arizona. Two easily scalable, common-sense solutions will eliminate permitting barriers altogether for a sizable portion of the state's residential solar installations and should be adopted by local governments in Arizona.

Instant Permitting. One of the most effective ways to remove permitting barriers to families installing solar is to issue permits instantly for code-compliant systems. Local governments can either adopt an instant permitting platform themselves or, in areas that allow qualified third parties to review permit applications, the third party can adopt it. These platforms ask the installer a series of questions to verify that the solar system's design is up to code and then approve the permit application automatically, allowing installation to begin. If there is a mistake with the submission, the installer can correct it immediately and resubmit, rather than waiting days or weeks for a second review. While these platforms serve to make the permitting process instant, they do not impact the parallel process of obtaining utility approval for a system.

Most residential rooftop photovoltaic (PV) systems and/or battery storage systems installed on single family homes or duplexes are eligible for instant permitting.[13] Removing these projects from the traditional permitting queue clears the way for more technically complex systems to be reviewed manually. To maximize efficiency and clear space for the projects that do need manual review, local governments should automate as many project types as possible.

The most common instant permitting platform is SolarAPP+ (Solar Automated Permitting Platform), which was developed by the Department of Energy's (DOE) National Renewable Energy Laboratory (NREL) beginning in 2019 and is now being run by a nonprofit, the SolarAPP+ Foundation.[14] Since SolarAPP+ launched in 2021, more than 250 local governments in 13 states across the country[15] have signed up for the platform.[16]

In the two years after Tucson and Pima County began issuing instant residential solar permits, the number of families going solar annually in that county increased by 140 percent.

Remote Inspections. Once a residential solar project is permitted and constructed, installers should have the option for a remote inspection, either via photos or recorded videos. Because many inspectors do not climb onto a residence's roof at all, remote inspections that include photographs or video from the roof can be more thorough. The local government or a qualified and licensed third party should be able to conduct the inspection. Such inspections eliminate the need for the installer to make an additional trip to the job site at a later date and wait, frequently for hours, for the inspector to arrive. The National Fire Protection Association (NFPA) has created a standard for remote inspections and the International Code Council (ICC) has created recommended best practices.[17] Additionally, governments should require no more than one inspection per project unless the project fails its first inspection.

Introduction

In recent years, increasingly high electricity bills have placed heavy burdens on families across Arizona. An increase in hot summer days combined with an aggressive series of utility rate hikes has resulted in air conditioners running more and at higher cost. In 2024, Phoenix faced a record 113 consecutive days of temperatures at or above 100°F.[18] Meanwhile, over the past two years, Arizona Public Service has increased electricity rates faster than in the previous nine years.[19] For the years 2021 through 2023, Tucson Electric Power increased rates almost as fast as the previous 22 years combined.[20]

In 2023, Arizona had the second highest electricity bills in the western United States.[21] Today, families in even modest homes can have electricity bills of $500 per month or more.[22] Reports have surfaced of residents choosing between paying electricity bills and buying food, as well as seeking part-time jobs or moving out of state as a result of the high bills.[23]

Installing residential solar systems is one of the most effective ways for Arizona residents to save money on record-high electricity bills while also creating a more resilient electrical grid and promoting energy independence. A rooftop array of solar panels can significantly reduce a family's energy bills by providing low-cost power to air conditioners on hot summer days. When paired with a home battery system, rooftop solar allows families to power their homes even when the grid is down, lessening their reliance on monopoly utilities.

Arizona has vast untapped rooftop solar potential. The state enjoys more than 300 days of sunshine per year, making it the sunniest state in the country.[24] Yet only one in seven homes in Arizona has rooftop solar.[25]

A major barrier to residential solar adoption is permitting. Typically, homeowners who wish to install a solar system first need to obtain a permit from the local building department. Many local governments in Arizona, however, employ inefficient, outdated, and burdensome methods for permitting, resulting in unnecessary delays and increased costs for homeowners as well as increased costs to local governments and reduced economic development in Arizona. In extreme cases, the hurdles created by a city or county's permitting process may lead solar installers to abandon a market entirely, putting solar out of reach for all of its residents.

Image Source: Net Zero Solar

Removing permitting barriers can increase solar adoption by allowing for faster installations, cutting the price tag of a solar system by thousands of dollars and increasing customer satisfaction. More efficient processes also benefit local building departments as staff can shift their attention to more complex projects, such as new housing. Allowing homes to receive solar permits instantly could remove around 37,000 solar installations a year in Arizona from the permitting queue, allowing building departments to permit other construction projects more quickly.[26]

In 2023, Arizona had the second highest electricity bills in the western United States.

An Overview of Solar Permitting in Arizona

There are two phases to the traditional permit approval process for a residential solar system in Arizona, for governments not employing instant permitting. First, the installer contracted to build the system submits plans to the city or county in which the property is located for review (generally to the building department or whatever department manages building permits). In Arizona, building codes are adopted at the local level, which means every town, city, or county determines which version of the national code it will adopt.[27] Most local governments also have their own clerical processes and requirements, and these can vary widely from locality to locality.

When a plan is found to not meet the code or fails to fulfill some other requirement, the authorizing department will send it back to the installer for revision. This back-and-forth can be time consuming and drive up costs, both for staff time and fees for resubmission. In some cases, a permit application will be passed among multiple reviewers or departments for review of different aspects of the plan (electrical, structural, fire, etc.). Some smaller governments outsource the plan review process to a third party. When the system is approved by reviewers and the installer pays the permitting fees, the government issues the permit. Turnaround times for this portion of the process range from a day to several months. The average is 14 days.[28]

After receiving the permit, the installer is cleared to build the system, which typically takes only a day or two. Then, in the second phase of the approval process, the installer must coordinate with the local government again to schedule an inspection. The role of the inspector is to confirm that the installation conforms with the plan and meets building codes. The inspection timeline generally ranges from two or three days to two weeks. The average is 11 days.[29]

Image Source: Net Zero Solar

For cities and counties that employ instant permitting, the plan review phase is automated. In that case, the installer submits information pertaining to the system to an on line portal, which is built to contain all the codes and standards required by the governmental body. If some item in the plan is out of compliance, the app instantly informs the installer and gives them the opportunity to revise and resubmit. When a submission is compliant, the installer receives approval immediately. With instant permitting, the inspection is generally completed virtually, with the installer providing photographs and video that can be reviewed remotely.

In addition to obtaining a permit and system approval from the local government, the installer will need to go through a parallel process with the local utility to obtain approval for its interconnection with the electrical grid.

Common Permitting Problems

Solar installers in Arizona typically operate in several counties at a time and must therefore coordinate with many different governmental bodies to obtain permits for their customers. Some local governments, such as Phoenix, Tucson, and Pima County, employ instant permitting. Others, like Gilbert and Mesa, do not require a permit at all.

The governments employing traditional permitting practices – the focus here – all have their own processes, requirements, and preferences, which can make the landscape very difficult to navigate. These specifications are often highly detailed and differ widely, which adds to the time and cost homeowners face for their solar installations. Learning to manage these systems takes time, as does preparing the plans to meet highly detailed specifications.

The following section details some of the most common problems impacting the ability of installers to provide solar to families in the state efficiently and affordably.

Inefficiency and Backlogs Increase Costs for Governments

Inefficient and outdated permitting procedures are a burden for the cities and counties that process solar permits manually, given that the bulk of these permits are not very complicated and would be better suited to an automated system. As the volume of solar projects has increased, so has these governments' workload.

In mid-2020, Carla Blackwell, director of development services for Pima County, was tasked with overseeing the processing of solar and other permits for the county.[30] She soon found she had a problem, however: The permits kept rolling in even as lockdown set in and government workers headed home.

"As things were shutting down, it became apparent in the state of Arizona that construction was not going to shut down – in fact if anything it was speeding up, as more people moved into their homes," recalls Blackwell. "It seemed like everybody wanted to start their improvement projects." There was no way for workers in Pima County and its largest city, Tucson, to process all these applications from home.

It was around this time that Pima County adopted SolarAPP+, becoming one of the platform's first pilot projects. "Thank goodness that we did," she says, "because that then lifted off of both the city and the county a huge amount of workload. The solar installers could run their plans through that software, get approval documents, and then just come to us to pull an automatic permit so that we can then do inspections."

Several officials contacted for this report agreed that manually approving every solar permit that comes through is a waste of staff time and tax dollars. Most of these projects are standard, in which case there is little that manual review can bring to the process that an app could not accomplish much more quickly and with a lower risk of human error or variability. In the absence of instant permitting, the volume of solar applications can clog the system, slowing solar and non-solar permitting alike and drawing resources away from more complicated projects, like new housing development, where staff attention is sorely needed.

"The home builders in our community were grateful for SolarAPP+," says Blackwell, "because that cleared the solar permits out of the queue so that their home building permits would get the time and attention and a quicker turnaround."

Long Permitting Timelines

One of the biggest obstacles to residential solar adoption in Arizona, many installers say, is the time it takes to obtain a permit. The statewide average is 14 days, though individual cities and counties vary widely, according to Ohm Analytics, a private firm that gathers data on solar permitting from a variety of sources including local governments and solar installers.[31] Among those governments employing traditional permitting, some have an average wait time of only two or three days (Cochise County and the City of Chandler, for example). In Yavapai County, by contrast, the average permitting time is 44 days. In the town of Sahuarita, it is 30 days; in Apache Junction, 27 days. Complicated projects – those at the upper end of these averages – can take even longer. In Yavapai County, the slowest 10 percent of solar projects take more than 88 days to be approved.[32] In Sahuarita, this segment takes more than 101 days. In the city of Nogales, the permit time for one project reviewed by Ohm Analytics was 69 days.[33]

The city of Coolidge in Pinal County "has been a really tough one for us," says one Tempe-based solar installer,[34] in part because the city sends plans to a third-party review company, which adds time. She estimates that it takes an average of three months to get a permit approved by the city.

Delays can occur in any phase of the permit process: the initial review of a permit application, the review of any revisions or corrections required by the permitting authority, or even after the permit has been approved if the installer needs to make changes to the plan.

Slow and unpredictable permitting timelines are more than an inconvenience. They make it difficult for solar installers to accurately schedule projects for installation and set expectations with customers. Delays frustrate customers and often lead to cancellations. A delay of a single week has been found to increases the client cancelation rate by 10 percent, according to SEIA estimates.[35]

All of these factors increase the costs of a solar installation and ultimately deter the adoption of solar. Delays also result in increased costs for unrelated industries that require permits of their own, such as new housing construction, which suffer from the backlog.

Cumbersome Submission Processes

Many local governments in Arizona do not offer an online portal for solar permit application submissions, relying instead on slower and less reliable alternatives. These options tend to increase the time installers must spend on an application and lengthen the wait times, raising costs for customers.

Some governments require applications to be submitted by email, others through the mail. Some require installers to appear in person. The City of Carefree, says one installer based in Chandler, is

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an extreme example: "They require us to fill out the application in the office." (A Carefree building official confirmed this policy.[36])

In addition to raising costs, cumbersome submission requirements like these can make a significant difference in an installer's ability to service certain regions. In a state as large as Arizona, the requirement to appear in person can add hours of staff time – an often prohibitive obstacle. "There are still some smaller areas where we have to mail in everything," says the Tempe-based installer, because the drive to drop the permit off would take hours. When installers do agree to make this kind of drive, that staff time will drive up the cost of the system.

In some cases, the in-person requirement can push installers out of a particular region altogether. One Tucson-based installer says that his company turns down installation requests from Bisbee, a town in the far southeastern corner of the state where there are no local solar providers. Bisbee only accepts permit applications in person and, because it is a historic mining town with older buildings, the plan review process can be complicated, often requiring revisions. When multiple visits are necessary to push a permit through, the result is no longer cost-effective. (An official from the City of Bisbee confirms that the city only accepts applications in person, though it is currently developing a process for electronic applications.[37] Revisions, she says, are accepted over email.)

Widely Varying Code Requirements

In Arizona, building codes are adopted locally, which means they can vary based on which version of the national code a town, city, or county has chosen to adopt and whether or not it has amended that code.[38] Since most solar installers in the state work across multiple regions, they have to understand the requirements of the code being applied in each individual city and town.

Unique regional factors like historic districts and floodplains can generate additional requirements within the same locality. In the city of Scottsdale, for instance, installing solar on a house with a Historic Property Zoning Designation requires submission of a pre-application, prior to the permit application, for a historic property review,[39] which adds five to 15 business days to the process just to set up a meeting. Solar permit applications in Scottsdale also require information about native plants affected by the installation and sightlines from neighboring properties.[40]

Additionally, the same code requirements can be interpreted differently – even within the same locality. The plan reviewer may see it one way, the inspector another. This variability makes it difficult to know what to include in an application and anticipate whether a particular application will pass review.


Image Source: Net Zero Solar

Given all of these variables, reliable guidance is critical – yet often lacking. The City of Sierra Vista, for example, requires a structural engineer in certain cases. According to one installer who performs work in the city, however, it gives no indication in advance of when or why it will add this requirement. "It's a surprise," he says. "You get through to submitting a permit, and then it's like, 'Hey, we need structural engineering.' I've got to eat that cost, or I've got to raise my prices for everybody in the City of Sierra Vista."

A Sierra Vista building inspector explained that he generally requires a structural engineer for solar panels being installed on a flat roof "because you don't know whether it's equipped to handle the load"[41] and will sometimes require it on a pitched roof, especially if the solar panels are significantly elevated, due to the threat of strong wind. But no information could be identified online spelling out these or any other permit considerations specific to residential solar installations.[42]

In addition to frustrating installers, permitting variability hampers the growth of solar in the state by increasing compliance costs and extending timelines.

Onerous and Unnecessary Requirements

Some local governments complicate the permitting process with requirements not critical to health and safety. The Town of Sahuarita, for example, requires installers to submit a structural engineering report with an engineering stamp for all residential solar installations. Because the houses in Sahuarita are relatively new, however, and fall within a limited range of architectural templates employed by the city's several master-planned communities, rooftop solar installations there are generally straightforward, says the Tucson-based installer. The engineering challenges are minimal, as he sees it, making a structural engineering report unnecessary.

The requirement is also arguably contrary to state law, which explicitly prohibits a municipality from requiring a stamp from a professional engineer for a solar photovoltaic system unless it is "deemed necessary."[43] When it is considered necessary (which presumably should not be in all cases), the city is required to provide the applicant with a written explanation of why. A permitting technician in Sahuarita confirmed that an engineering stamp is indeed required for all solar systems but offered no explanation of why, nor could he point us to any kind of written policy.[44]

Requiring an engineering stamp, the installer says, poses "a big problem" for solar development in Sahuarita. He estimates that the additional labor added by the requirement to hire a structural engineer compels him to price Sahuarita systems $500 to $700 higher than systems in neighboring cities. This increase covers the cost of hiring an engineer as well as additional labor on his part – because "I have to have myself or one of my personnel go crawl around inside an attic and take pictures for my structural engineer," even though these end up being nearly identical photos since the houses are overwhelmingly similar.

"You get through to submitting a permit, and then it's like, 'Hey, we need structural engineering.' I've got to eat that cost, or I've got to raise my prices for everybody in the City of Sierra Vista."

Poor Communication Protocol

Permitting departments often do not communicate clearly throughout the application and inspection process, aggravating many of the other problems that arise. Poor communication protocols, opaque tracking systems, and understaffing can all extend timelines, add costs, and increase homeowner frustration.

It is not always clear what information an installer needs to include in a permit application, and the level of guidance available online varies considerably from department to department. The building inspector in Sierra Vista says he actually prefers not to include too much detail on the city's website because there can always be exceptions to the rules – "though if anybody calls," he says, "I will give them the general information."[45]

Faced with uncertainty over requirements, an installer is forced to choose between submitting an application with the minimum stated requirements, risking that it will be rejected as incomplete (causing delays), and trying to anticipate requirements by including more than was asked for and risking superfluous additions (wasting time, as well as potentially irritating plan reviewers).

When a town or county lacks an online portal, there is often no clear system for tracking the status of an application once it has been submitted. In some cases, the government fails to notify an installer when a permit application has been approved. This is a recurring problem in the city of Nogales, says one installer who works in the city. "If we submit revisions one day and they issue the permit the next day, we're not checking on that permit for another week, usually," she says. When she does hear back, the information is often out of date: "They'll tell us something that we've already completed three weeks ago."

Cutting unnecessary red tape in local solar permitting through the use of instant permitting and remote inspections is critical to expanding residential solar adoption in Arizona.

An installer who works in both Arizona and California shared a similar complaint. “Having to follow up and ask, you know, every week, hey, is the permit done?” is a recurring problem, he says. “We have quite a backlog, and that just makes it that much more difficult.”

Coordinating with inspectors in the field also presents communication challenges for installers. In the city of Yuma, the Chandler-based solar provider says, installers are required to meet city inspectors on the job site – but the city provides no way for installers to contact the inspectors to find out when they are arriving. “So, then we get stuck having to send a tech to sit on site for six, seven, eight hours” waiting for the inspector, she says, resulting in added time and cost. “We’ve even had instances where the inspector never shows up. And when you reach out and find out why, they’re like, ‘Oh, they rolled it to the next day.’”

Inadequate guidance and unreliable tracking and notification channels can wreak havoc on an installer’s scheduling and make it difficult to manage customer expectations. All of these communications problems result in delays and longer timelines, increasing costs.

Conclusion

In Tucson and Pima County, instant permitting has allowed installers to provide more scheduling certainty to their clients and reduce customer cancellations. It has also saved substantial staff time on planning and review, translating into reduced costs and more capacity for plan reviewers to spend their time on other, more complicated types of permits. “It lifted a huge amount of workload off both the city and the county,” says Carla Blackwell, director of development services for Pima County.[46]

Instant permitting has also eased the way in Phoenix. When that city first adopted SolarAPP+ in 2022, says Jason Blakley, the city’s assistant director of planning and development, “we were getting on average about 800 applications a month for residential solar systems, and we just couldn’t keep up with the demand, regardless of how many staff members we threw at it.”[47] Now, with 40 percent of those applications going through SolarAPP+, the city has been able to dedicate its staff to the remaining projects, enabling them to get approval times for permits down to between three and five days.

Cutting unnecessary red tape in local solar permitting through the use of instant permitting and remote inspections is critical to expanding residential solar adoption in Arizona. It will allow more Arizonans to reap the benefits of rooftop solar power while reducing administrative burdens for local governments. It will support the growth of an industry that’s brought tens of billions of dollars in investment and consistent job growth to the state and help clear the way for the growth of unrelated industries, like new home constructions, now delayed by backlogs in solar permitting.

Methodology

For this report, we conducted video and phone interviews with representatives from seven solar companies whose residential photovoltaic operations cover the majority of geographical regions in Arizona. The individuals we spoke with were typically those most familiar with that organization's permitting practices – either the CEO, sales director, project manager, or permitting manager. We also reached out to representatives from each of the local government entities that were discussed in our conversations with solar installers and interviewed the five who responded, including a city operations director, permit technicians, and other inspection and permitting officials. Interviews took place from October through December 2024.

Image Source: Net Zero Solar

Endnotes

1 The national cancellation average is 22 percent. (Jesse Cruce, et al., "Evaluating the Impact of Residential Solar Contract Cancellations in the United States," National Renewable Energy Laboratory, January 2022, https://www.nrel.gov/docs/fy22osti/80626.pdf, page 17.) A sample of six jurisdictions in Arizona without instant permitting analyzed by Ohm Analytics (https://cleancode.ohmanalytics.com) has an average cancellation rate of 16 percent. Because the available sample size in Arizona is relatively small, we estimate the total state cancellation rate by taking the average of the available state rate and the national rate ((16 +22) / 2 = 19).

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13 SolarAPP+, "Eligibility Checklist," https://gosolarapp.org/jurisdictions/learn_more. Symbium, "What types of solar energy systems are eligible for an instant permit on Symbium?," https://symbium.com/faq/rooftop_solar_ess/what-types-of-solar-energy-systems-are-eligible-for-an-instant-permit-on-symbium.

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23 Kevin Reagan, "'Horrendous' electric bills prompt Arizona residents to call for action," 12 News,

September 6, 2024. Jeanne Whalen, "Arizona Voters at Breaking Point Over Cost of Electricity," The Wall Street Journal, October 8, 2024.

24 "Arizona Office of Tourism Launches 'Sunshine to Share' Social Media Campaign" (press release), Arizona Office of Tourism, no date. World Population Review, "Sunniest States 2024," https://worldpopulationreview.com/state-rankings/sunniest-states. Also see: Current Results, "Average Annual Sunshine by State," https://www.currentresults.com/Weather/US/average-annual-state-sunshine.php.

25 David Feldman, et al., "Spring 2024 Solar Industry Update," National Renewable Energy Laboratory, May 14, 2024, slide 36. https://www.nrel.gov/docs/fy24osti/90042.pdf.

26 According to data from Ohm Analytics, 37,000 residential solar projects were installed in Arizona in 2023. Note, some of these residential projects have already been taken out of the permitting queue due to instant permitting or jurisdictions that do not require residential solar permits.

27 International Code Council, "Arizona," https://www.iccsafe.org/advocacy/adoptions-map/arizona/.

28 Excludes jurisdictions that have adopted instant permitting (including Phoenix, Tucson, and Pima County) as well as Gilbert and Mesa, which require no permitting for solar. Data for averages compiled by Ohm Analytics.

29 Data for averages compiled by Ohm Analytics.

30 Microsoft Teams interview with Carla Blackwell, Director of Development Services, Pima County, October 25, 2024.

31 Excludes jurisdictions that have adopted instant permitting (including Phoenix, Tucson and Pima County) as well as Gilbert and Mesa, which require no permitting for solar. Data for averages compiled by Ohm Analytics.

32 Data for averages compiled by Ohm Analytics.

33 Data for averages compiled by Ohm Analytics.

34 All interviews for this report were conducted either by phone or video between October and December 2024.

35 "Soft Solar Costs," Solar Energy Industries Association," June 2019. https://seia.org/wp-content/uploads/2019/05/Solar-Soft-Costs-Factsheet-1.pdf

36 Email from John Gunn, Building Official, Town of Carefree, December 11, 2024.

37 Phone interview with Amanda Bramel, Administrative Assistant, City of Bisbee Community Development Department, December 16, 2024.

38 International Code Council, "Arizona," https://www.iccsafe.org/advocacy/adoptions-map/arizona/.

39 Residential Solar Plan Review/Permit Submittal Guidelines, City of Scottsdale Green Building Program, Updated July 2024. https://www.scottsdaleaz.gov/docs/default-source/scottsdaleaz/planning---develpment/forms/residential-solar-plan-review-quality-submittal-guidelines.pdf?sfvrsn=6e6378bf_2. (The link is available here, under "Your Home": https://www.sierravistaaz.gov/our-city/departments/community-development/building-permits/permit-types.)

40 Residential Solar Plan Review/Permit Submittal Guidelines, City of Scottsdale Green Building Program, Updated July 2024. https://www.scottsdaleaz.gov/docs/default-source/scottsdaleaz/planning---develpment/forms/residential-solar-plan-review-quality-submittal-guidelines.pdf?sfvrsn=6e6378bf_2.

41 Phone interview with Jonathan Kramer, City of Sierra Vista, December 10, 2024.

42 The application itself is a general building permit application, applicable to a range of projects – plumbing, sewage systems, new carports, pools, sheds, water heaters, etc. – and says nothing about engineering requirements. City of Sierra Vista, "Building Permits," https://www.sierravistaaz.gov/our-city/departments/community-development/building-permits. Building Permit Application For General Contractors – Residential & Commercial, City of Sierra Vista, no date. https://www.sierravistaaz.gov/home/showpublisheddocument/9271/638314255337100000.

43 The full provision reads: "A municipality shall not require a stamp from a professional engineer for a solar photovoltaic system unless an engineering stamp is deemed necessary. If an engineering stamp is deemed necessary, the municipality shall provide the permittee a written explanation of why the engineering stamp is necessary." The same provision applies at the county level. For the city level, see: AZ Rev Stat § 9-468 (2023). For the county level, see: AZ Rev Stat § 11-323 (2023).

44 Phone interview with Andrew Salcido, Senior Permit Technician in the Department of Community Development, Town of Sahuarita, December 17, 2024.

45 Phone interview with Jonathan Kramer, Building Official, City of Sierra Vista, December 10, 2024.

46 Microsoft Teams interview with Carla Blackwell, Director of Development Services, Pima County, October 25, 2024.

47 Webex interview with Jason Blakley, Assistant Director of Planning and Development, City of Phoenix, November 15, 2024.

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