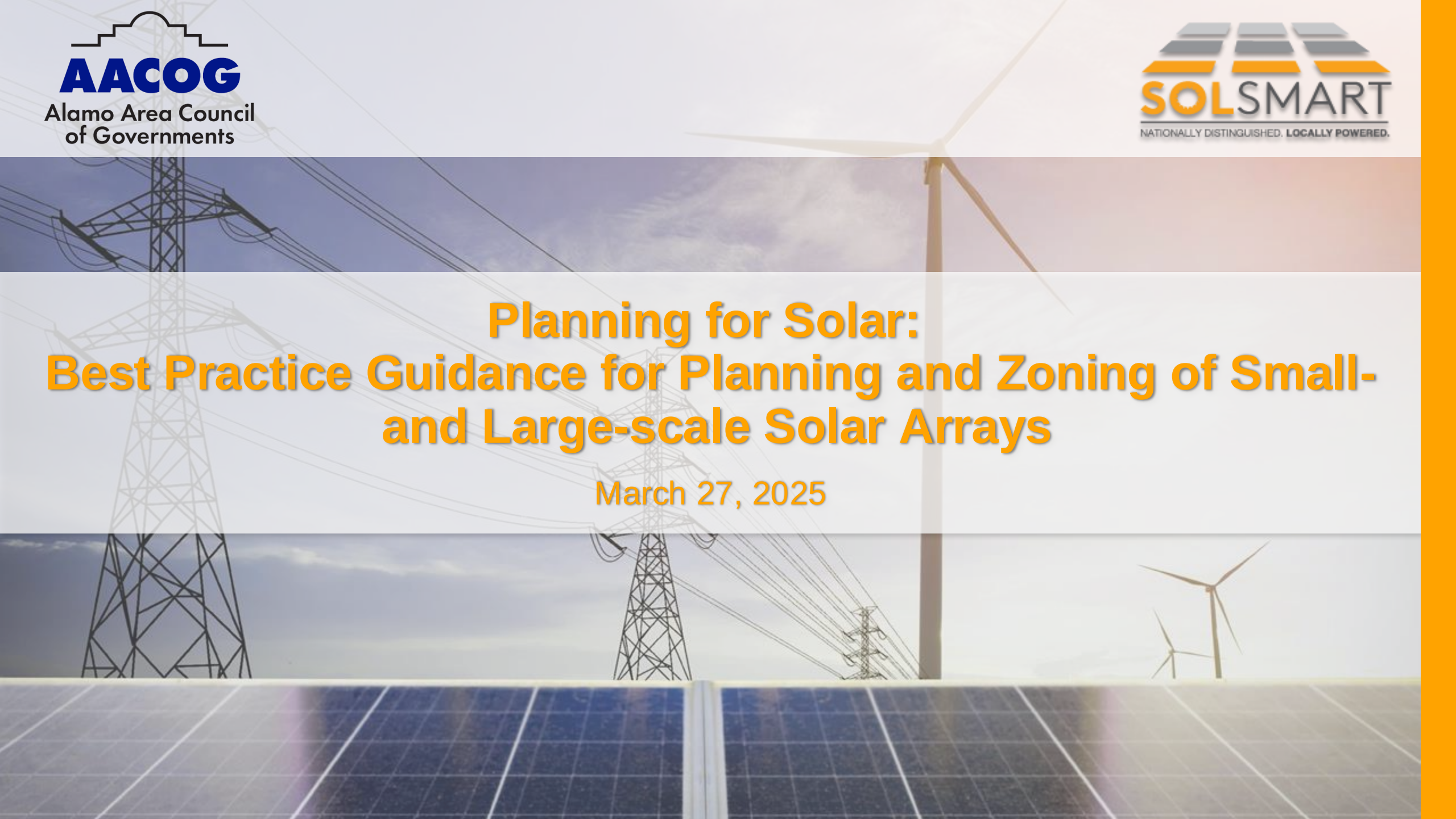

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Planning for Solar: Best Practice Guidance for Planning and Zoning of Small- and Large-scale Solar Arrays

March 27, 2025

Planning and Zoning Workshop- March 28th

- Planning and Zoning Fundamentals
- ETJ, Development Agreements, & Annexation
- Subdivision & Platting
- Food Truck On-Site
- Free breakfast

Acknowledgement and Disclaimer

- Acknowledgment: This material is based upon work supported by the Department of Energy, Office of Energy Efficiency and Renewable Energy (EERE), under Award Numbers DE-EE0009950 & DE-EE0009951.

- Disclaimer: This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

AICP Certification Maintenance (CM) Credits

- By attending today's session, you are eligible for 1.5 CM credits.
- If you are in person, please make sure to sign in on the attendance sheet.
- **CM Reference #9307632**

Agenda

- Welcome
- Cohort Progress and Session Overview
- Peer Check-In
- Integrating Solar Into Local Plans
- Zoning Best Practices for Small- and Large-scale Solar
- Next Steps

Who you'll hear from

Deb Perry
Clean Energy Program Director
ICMA

Lyle Hufstetler
Project Administrator
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Natural Resources Outreach Specialist
AACOG

Andrew Light
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Zach Greene
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Cohort Progress and Session Overview

Cohort structure & timeline

1-on-1 check-ins

Session #1: Setting the stage for solar development

Overview of regional and state energy context

February 27, 2025

Session 2: Planning for solar

Best practice guidance for planning and zoning of small and large-scale solar arrays

March 27, 2025

Session 3: Permitting & inspection for solar

Overview of best practices for permitting and inspecting solar arrays

April 24, 2025

Session 4: Community engagement & municipal operations

Guidance on how to support residents, businesses, and your own operations teams as they consider adopting solar

June 5, 2025

Session 5: Wrap up & next steps

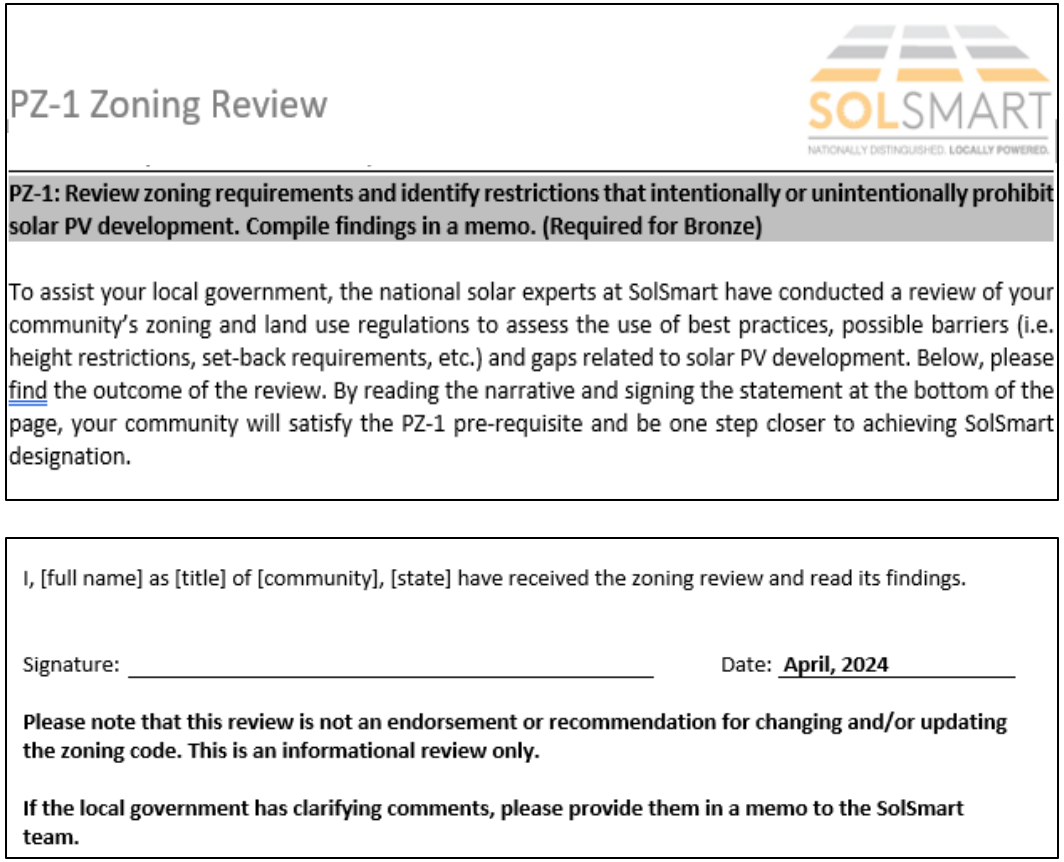
Address any outstanding questions and chart a pathway forward

July 9, 2025

Access to 1-on-1 technical assistance support

Session 2 overview

- This session is focused on SolSmart's “Planning and Zoning” category.
- Communities that attend today’s session (or watch the recording) will earn *PZ-18: Planning/zoning training (10pts)*.
  - For those watching the recording, please complete a verification memo and send it to andrew.light@wri.org.
- This session will also cover elements referenced in *PZ-1: Zoning review (Prerequisite).*
- As a reminder, your community will need to choose at least one more criteria to achieve in the Planning & Zoning category to reach the 20-point minimum for Bronze designation.



PZ-1 Zoning Review

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PZ-1: Review zoning requirements and identify restrictions that intentionally or unintentionally prohibit solar PV development. Compile findings in a memo. (Required for Bronze)

To assist your local government, the national solar experts at SolSmart have conducted a review of your community’s zoning and land use regulations to assess the use of best practices, possible barriers (i.e. height restrictions, set-back requirements, etc.) and gaps related to solar PV development. Below, please find the outcome of the review. By reading the narrative and signing the statement at the bottom of the page, your community will satisfy the PZ-1 pre-requisite and be one step closer to achieving SolSmart designation.

I, [full name] as [title] of [community], [state] have received the zoning review and read its findings.

Signature: _____ Date: **April, 2024**

Please note that this review is not an endorsement or recommendation for changing and/or updating the zoning code. This is an informational review only.

If the local government has clarifying comments, please provide them in a memo to the SolSmart team.

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Peer Check-in

Peer check-in prompts

Please share:

- Your name and community
- What conversations have you had in the planning department regarding solar and/or SolSmart?
- Do you see any opportunities or challenges related to enabling solar through your local plans and zoning ordinance?

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Integrating Solar Into Local Plans

Local governments have several levers to pull to affect the local solar market

- Municipal procurements
- Municipality-led (or supported) programs and projects
- Community engagement efforts
- **Local plans (e.g., comprehensive plans, climate action plans, etc.)**
- **Codes and ordinances (e.g., zoning code,** building code, tax code, etc.)

The way solar energy is included in local plans sets the stage for its development

"Good plans enable good solar development"

- Solar energy will increasingly be integrated into your community, so it's critical to address how this will occur through local planning processes.
- Plans lay the policy foundation for development regulations and programs.
- Establishing goals for solar in plans provides multiple benefits, such as more transparency and staff empowerment.
- Planning processes (should) include extensive community engagement, which provides an opportunity to get insight into resident perspectives.

Community engagement and participation is critical

Involve local stakeholders – such as residents and business owners – to develop your strategy:

- Where and how solar should be enabled in the community
- Benefits to prioritize (e.g., equity, cost stability, local generation, resilience, jobs, etc.)
- Gaps in current programs or financing that may make it hard for some stakeholders to take advantage of solar benefits
- The issues and concerns of your stakeholders

Public participation tools & methods

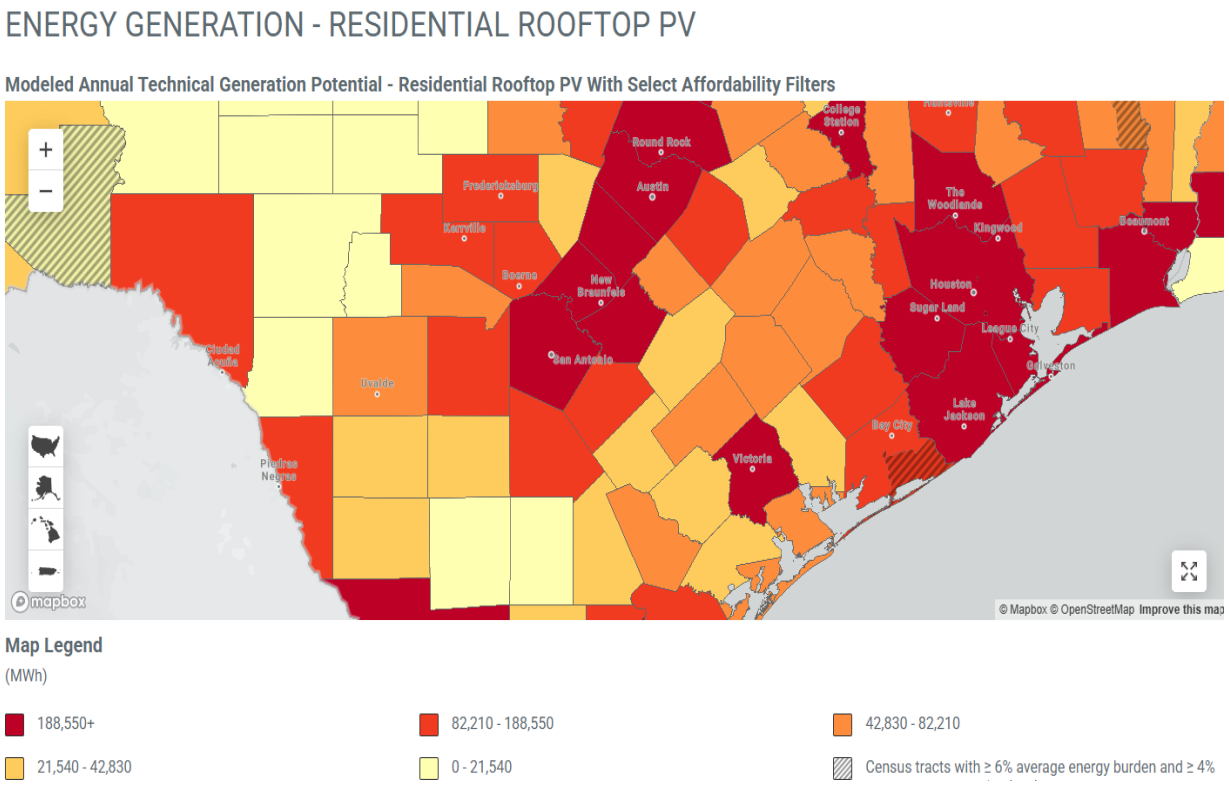
- In-person/online workshops
- In-person/online focus groups
- Printed/online surveys
- Interviews
- Neighborhood meetings
- Booths at community events
- Committees or task forces
- Project websites
- Social media

Core aspects of integrating solar into plans

- ✓ Identify and define solar resources
- ✓ Acknowledge solar development benefits and desired co-benefits
- ✓ Identify solar development opportunities and conflicts in the community
- ✓ Set solar development targets or goals

Assessing solar development potential

- Documenting development potential can help planning process participants understand the limitations on number, size, and types of projects the community could accommodate
  - Quality of local solar resource
  - Location and capacity of local power distribution and transmission network
  - On-site solar potential



Source: SLOPE: State and Local Planning for Energy

Develop solar goals for inclusion in local plans

Depending on your community priorities this might be:

- % of community energy demand met by solar
- % of municipal energy demand met by solar
- # of solar projects installed
- Types of solar projects installed, ex. community centers, brownfields, etc.
- Solar serving low-income residents

In addition to naming goals, consider how you will track and report your progress

Key questions to consider

- Do your zoning regulations align with the goals?
- Do your staff have the training they need to support the goals
- Do permitting rules and procedures align with the goals?
- Will you need to develop partnerships to realize the goals?
- How will you engage stakeholders?

Planning group discussion

Prompts:

- Is solar already referenced in any of your local plans?
- Has solar been discussed in planning processes? Have you encountered any challenges or opportunities related to solar during these processes?

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Zoning Best Practices for Small- and Large-scale Solar

Core elements of integrating solar into local zoning

- ✓ Explicitly recognize and address the different forms/uses of solar development (have definitions)
- ✓ Create by-right (or permitted) installation opportunities
- ✓ Set clear and predictable standards that balance solar resources and development with other resources and land uses
- ✓ Avoid unintentional barriers to solar
- ✓ Enable capture of desired local co-benefits (ex. Pollinator species)
- ✓ Consider the concerns you identified in planning and set appropriate conditions (ex. Historic resources)
- ✓ Maintain consistency with regional best practices

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Texas legislation requires localities to treat solar as a by-right accessory use

- "(b) A municipality may not prohibit or restrict the installation of a solar energy device by a residential or small commercial customer except to the extent:
  - (1) a property owner's association may prohibit the installation under Sections 202.010(d)(1) through (7), Property Code; or
  - (2) the interconnection guidelines and interconnection agreement of a municipally owned utility serving the customer's service area, the rules of the Public Utility Commission of Texas, or the protocols of an independent organization certified under Section 39.151, Utilities Code, limit the installation of solar energy devices due to reliability, power quality, or safety of the distribution system."

Photo by Watt A Lot on Unsplash

For more, see: Bill Text: TX SB398 | 2021-2022 | 87th Legislature | Enrolled | LegiScan

Defining energy systems as a land use

- Common approaches to defining solar energy systems as distinct land uses based on the following factors:
  - The relationship of the system to other structures
  - The relationship between the system and any other land uses on the same parcel
  - The size of the system

Roof of Oncor Electric building (Dallas, Texas)
Source: NCTCOG

Roof-Mounted SED in Hurst, Texas
Source: http://www.dfwsolartour.org

Ground Mounted Solar Panels as Art (Austin, Texas)
Source: NCTCOG

Solar Parking Canopies, Irving West Library (Irving, Texas)
Source: http://www.dfwsolartour.org

The relationship of solar to the site is critical

Use	Definition
Roof-mounted solar energy system	A solar energy system mounted on a rack that is fastened to or ballasted on a structure roof. Roof-mounted systems are accessory to the principal use. (Grow Solar Model Ordinances 2020)
Building-integrated solar energy system	A solar energy system that is an integral part of a principal or accessory building, rather than a separate mechanical device, replacing or substituting for an architectural or structural component of the building. (Grow Solar Model Ordinances 2020)
Ground-mounted solar energy system	A solar energy system mounted on a rack or pole that rests or is attached to the ground. Ground-mounted systems can be either accessory or principal uses. (Grow Solar Model Ordinances 2020)

Source: Lucas Braun / Wikimedia (CC BY-SA 3.0)

Source: Pollo / Wikimedia (CC BY 3.0)

Source: U.S. Department of Agriculture

Elements within the zoning code to address related to solar

- **Purpose and definitions**
- **Use cases**
- **Height allowances**
- **Aesthetic requirements**
- Roof coverage
- Glare
- Non-conforming uses
- **Historic and special-use districts**
- Setback requirements **(ground-mounted)**
- Lot coverage/impervious surfaces **(ground-mounted)**

Purpose & definitions

Best Practices:

- Clearly state your clean energy/solar goals as part of your zoning purpose statement
- Include solar and related energy terms in your definitions

Sample Definitions

1. **Solar energy system:** A device, array of devices, or structural design feature, the purpose of which is to provide for generation or storage of electricity from sunlight, or the collection, storage, and distribution of solar energy for space heating or cooling, daylight for interior lighting, or water heating.
2. **Solar photovoltaic system:** A solar energy system that converts solar energy directly into electricity, the primary components of which are solar panels, mounting devices, inverters, and wiring.
3. **Grid-connected solar energy system**: A solar photovoltaic system that is connected to an electric circuit served by an electric utility company.
4. **Roof-mounted solar energy system:** A solar photovoltaic system mounted on a rack that is ballasted on, or is attached to, the roof of a building or structure. Roof-mount systems are accessory to the primary use.
5. **Ground-mounted solar energy system (Accessory Use):** A solar photovoltaic system mounted on a rack or pole that is ballasted on, or is attached to, the ground and the system is accessory to the primary use.
6. **Ground-mounted solar energy system (Primary Use):** A solar photovoltaic system mounted on a rack or pole that is ballasted on, or is attached to, the ground and is the primary land use for the parcel(s) on which it is located. Primary use systems are permitted through a discretionary approval process.
7. **Community-scale solar energy system:** A solar photovoltaic system that qualifies for the [STATE COMMUNITY SOLAR PROGRAM NAME – if applicable].

Use cases

Best Practices:

- Make rooftop solar a permitted accessory use in all districts where buildings are allowed.
- Make ground-mount solar a permitted accessory use in most or all districts.

Table. Basic Example of Solar in a Use Chart

Type of District	Accessory Use Solar	Community-Scale	Utility-Scale
Residential	Permitted by right	Permitted with a discretionary use permit	Prohibited
Commercial	Permitted by right	Permitted by right	Permitted by right
Industrial, Agricultural, Utilities, and Rural	Permitted by right	Permitted by right	Permitted by right
Special Conservation and Historic	Permitted by right or with additional standards	Permitted with a discretionary use permit	Prohibited

Height allowances

Best Practice: Exempt roof-mounted solar energy systems on flat roofs from height limits or allow systems to exceed the maximum height by a fixed amount (5-10ft).

Tilted, Flat-Roof Mounted SED (Bastrop, Texas)

Source: https://www.energysage.com/project/7006/bastrop-solar-tour-rescheduled-for-nov-14-earth-sh/

Aesthetics

Best Practices:

- Exempt solar from rooftop equipment screening requirements
- Allow PV installations to be seen from public roadways
- Limit screening or aesthetic requirements to historic districts

Historic and special-use districts

Best Practice: Provide guidance about how systems can be installed while still preserving historic character

Place collectors to avoid obscuring significant features or adversely affecting the perception of the overall character of the property.

Source: Plano Downtown Heritage Resource District Design Standards

Ground-mount best practices

- **Setbacks & placement**: Provide guidance on the placement of ground-mount accessory solar if appropriate (for example, rear and side yards). Allow ground-mounted solar energy systems the ability to have a modest encroachment into the setback, similar to other accessory structures or mechanical systems.
- **Lot coverage/Impervious coverage:** Exempt ground-mounted systems from lot coverage/impervious surface calculations as long as the ground beneath the system is pervious (e.g., vegetated)

Learn more about these best practices through the Go Solar Texas and SolSmart guides

[Go Solar Texas Guidelines]

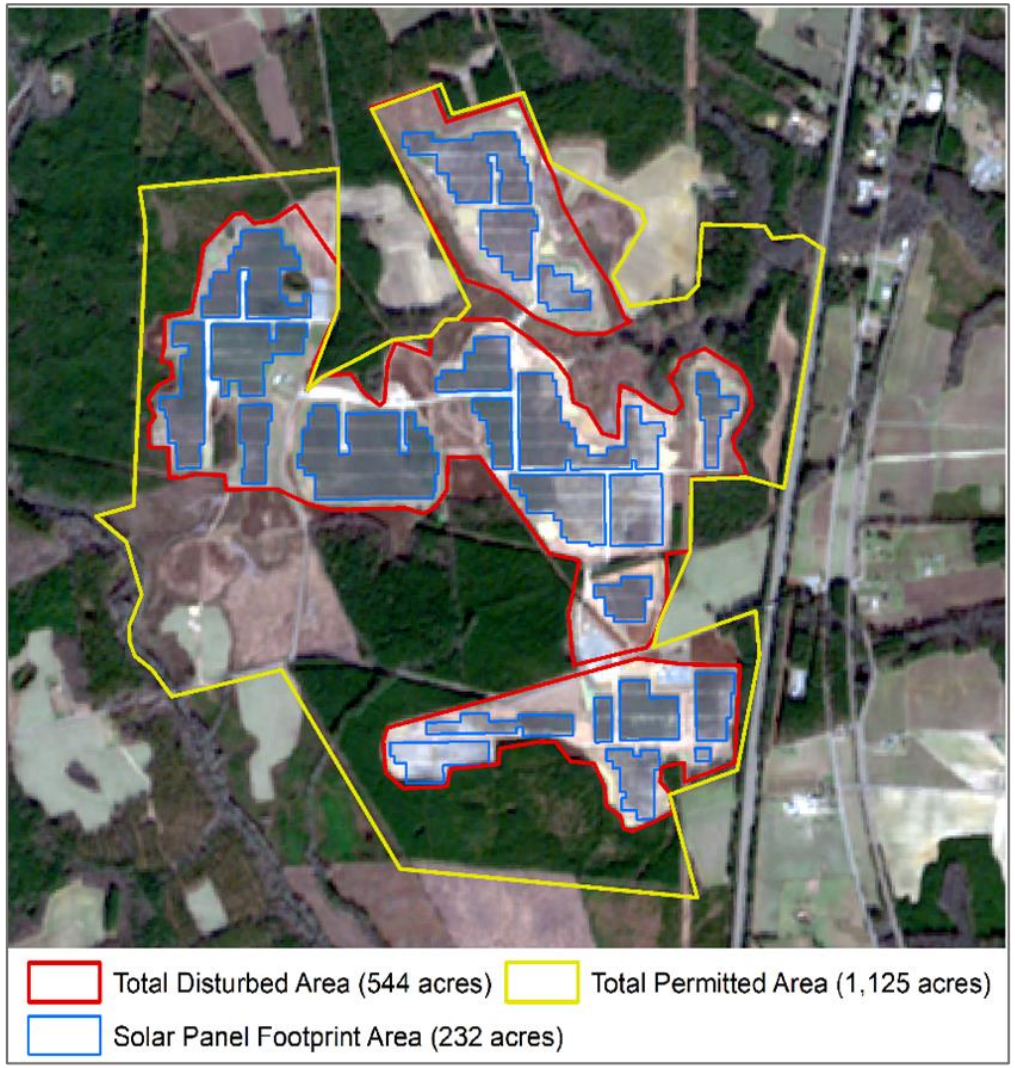
[SolSmart Zoning Guide]

Small-scale zoning group discussion

Prompts:

- Have you seen small-scale solar installed in your community and, if so, in what types of districts?
- Do you know of any zoning-specific challenges that have affected potential residential or commercial installations?
- What best practice elements do you see as potentially having local support? Opposition?

Large-scale zoning

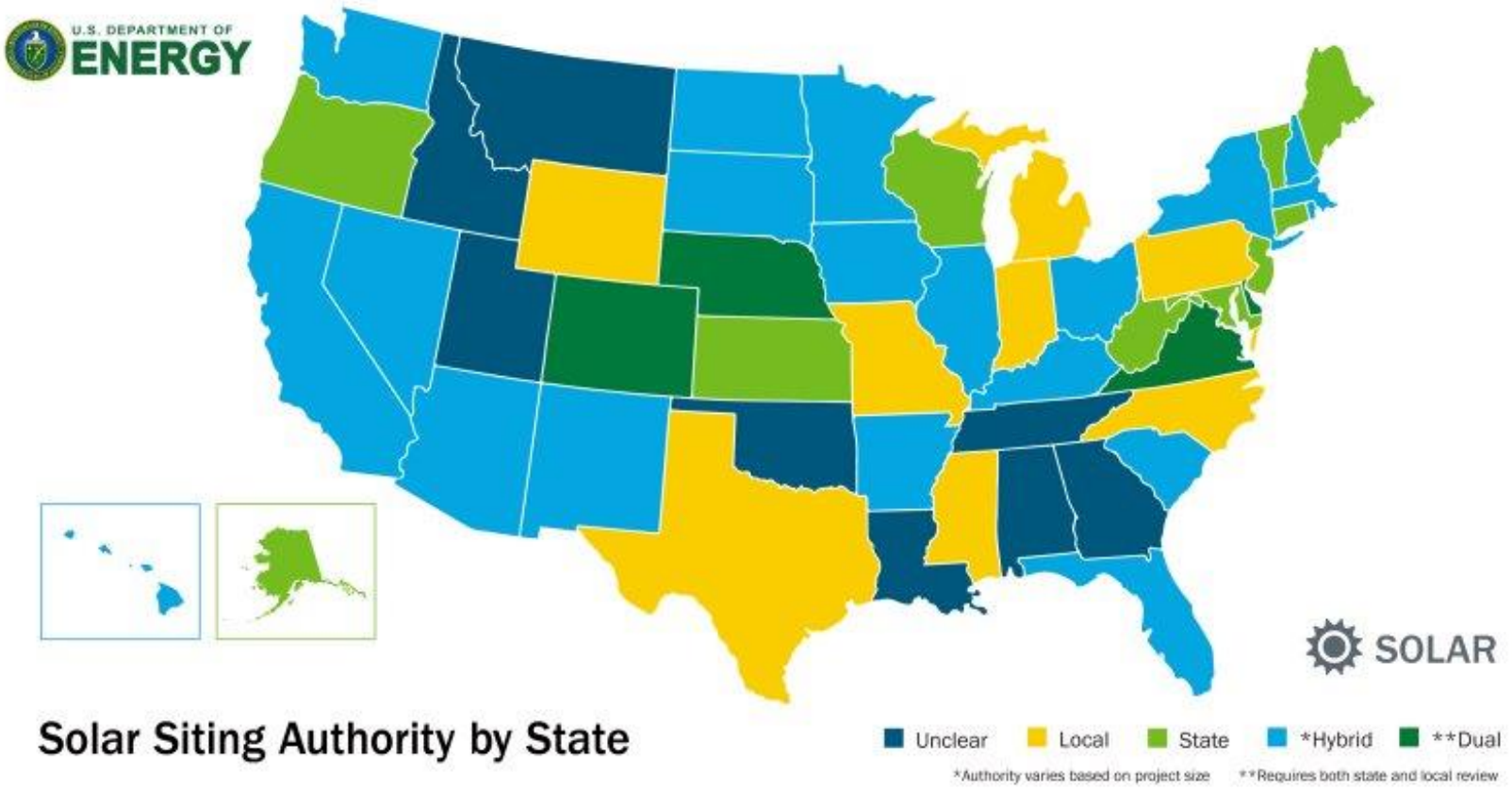


https://scholarscompass.vcu.edu/murp_capstone/41/

Large-scale solar's relationship to the grid

Characteristics	Community-Scale Solar	Utility-Scale Solar
Technology	PV	PV (or CSP)
Relationship to the Grid	Connects to the distribution network either behind or in front of the meter	Connects to the transmission network in front of the meter
Relationship to the Site	Typically ground mounted and the principal land use, but can be sited on large rooftops	Ground mounted and typically the principal land use
Relationship to Existing Land Use and Development Pattern	Fits into the established lot or block pattern of the surrounding area	May require lot mergers, street removal, or new roads for site access
Site Area	1–20 acres	>20 acres
Rated Capacity	250 kW–5 MW	>5 MW

Solar siting authority



For an interactive map, see: [Siting of Large-Scale Renewable Energy Projects | Department of Energy]

Zoning updates for large-scale solar

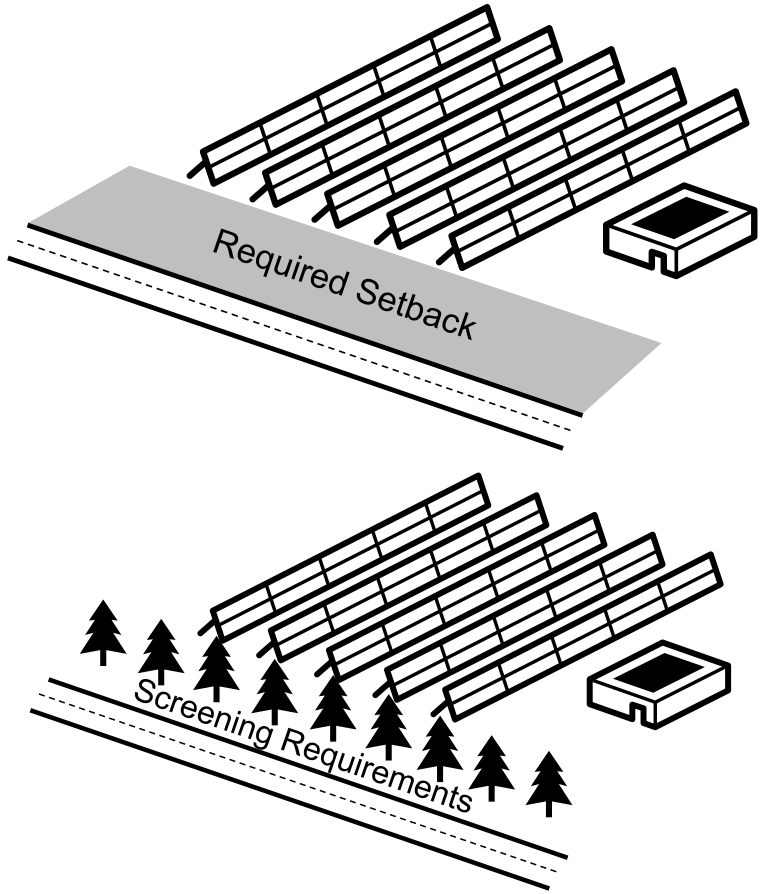
Zoning best practices for large-scale solar

Define terms	• Define large-scale solar as a unique land use (not an industrial land use), • Include storage in the definition of large-scale solar • Distinguish between small and large systems by area as needed
Enable development	Most large-scale solar will be a conditional or interim use in those districts where allowed, although small or community scale development can be a permitted use
Land use, not energy use	Performance or design standards should focus on land use impacts and benefits, not on energy use or performance
Recognize land use difference	• Exempt PV panels from coverage limits • Exempt PV panels from impervious surface standards if ground cover is suitably pervious (see co-benefits below)
Capture co-benefits	• Enable habitat-friendly ground cover to be installed, established, and maintained • Enable co-location of agricultural uses (sometimes in place of ground cover) • Enable water quality (surface and ground water) improvements
Screening requirements	• Look to existing screening requirements as a guide, consistency across land uses • Limit screening to residential districts or existing uses • Balance screening against larger setbacks, both are not necessary
Setback	• Look to existing setback distances as a guide • Balance setbacks with screening requirements (more screening, less setback) • Measure setbacks from array edge
Glare	Glare studies only needed if adjacent to an airport. On-airport solar will be appropriately regulated by FAA
Decommissioning	Require decommissioning to a reasonable standard and financial risk

Source: Brian Ross (GPI) presentation to Sustainable Jersey, 2022

Large-scale solar standards & site conditions

- Standards
  - Establish dimensional standards for ground-mounted systems (e.g., Setbacks, height limits, lot coverage)
  - Require a decommissioning plan
- Site conditions
  - Ground cover - encourage co-location with agriculture and/or pollinator-friendly plantings
  - Buffering or screening
  - Fencing, security, access, & parking
  - Impact on historic or cultural resources
  - Soil quality



Large-scale solar development considerations

- Current and future land use
  - Agriculture, Forestry
  - Residential use
  - Industrial zoned land
- Location within the community
- Transmission line proximity
- Visual impacts
- Cultural, Hist., Env. resources
- Wildlife corridors
- Stormwater, Erosion, Sediment
- Financial incentives
- Employment (Short/Long-Term)
- Fiscal impacts
- Property Values; Taxation
- Storage safety preparedness
- Landscaping
- Decommissioning

Establishing and communicating procedural standards

- Define application process and fees
- Develop materials that help developers prepare application packages, plan for public hearings, or begin scoping out a project
- Educational materials that can address large-scale solar development as a distinct project type include:
  - Fact sheets
  - Brochures
  - Guides
  - Web pages


Connecticut Department of Energy & Environmental Protection
79 Elm Street, Hartford, CT 06106

FACT SHEET

Information for Solar Developers

An Environmental Permitting Factsheet

This Factsheet provides information on the types of permits that may be required and the timing and sequencing of those permits to developers who are proposing to install solar energy generating facilities. Pre-application permit assistance, where applicants can meet with permit program staff to discuss a specific project, is available. To request a pre-application meeting, please complete the Pre-Application Questionnaire and submit it to DEEP.OPPD@ct.gov. This Factsheet should be used in conjunction with the DEEP Bureau of Energy and Technology Policy's Integrated Resource Plan Renewable Siting Recommendations.

Large-scale zoning group discussion

Prompts:

- Do you have parcels that could accommodate large-scale solar?
- Have large-scale solar installations been discussed in your community? If so, what has been the reception?

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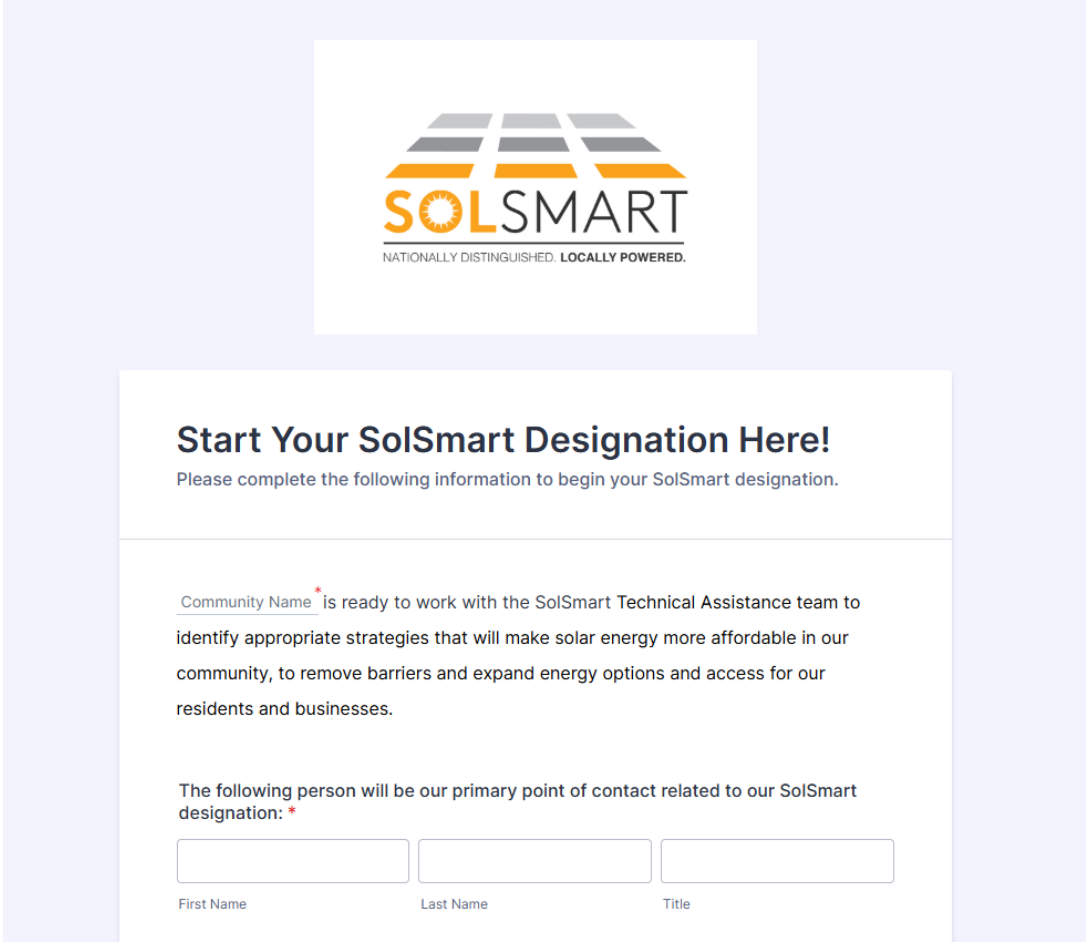
Next Steps

Next steps for communities interested in participating in the cohort and receiving designation

- A **"Solar Statement"** (PR-1) demonstrates your local government's commitment to pursuing SolSmart designation and provides more information on your community.
- All communities receiving technical assistance must submit a Solar Statement, and it's a prerequisite for designation at any tier.
- A Solar Statement is **not** a binding agreement, a memorandum of understanding or any other kind of legal document.
- You can access the Solar Statement form here: https://form.jotform.com/243034869946166



Supporting activities post workshop 2

1. Identify staff in the planning department who can support efforts to integrate solar into planning documents and the zoning ordinance.
2. If you've already received it, review the SolSmart zoning memo with your planning colleague(s). If you haven't received it, please complete the Solar Statement and it will be sent to you in about 2 weeks.
3. Discuss opportunities to enable small-scale solar as a by-right accessory use (if not already), either through a zoning determination letter or an update to the zoning ordinance.
4. Determine any upcoming plan revisions or new plans that may benefit from the inclusion of solar-specific language.

Workshop 3 overview

- Workshop 3 will be a Solar Permitting and Inspection discussion to help answer any questions staff may have after watching the "**Permitting and Inspection Training**". This will also serve as a cohort check-in and update.
- This session is **April 24th** so **we recommend having permitting and inspection staff watch the recording before then.**
- Your community will still receive credit for PI-2 and PI-3 from the recording after filling out the verification memo and send it to andrew.light@wri.org.

Thank You!

- If you **have questions about the cohort**, please reach out to Lyle Hufstetler (lhufstetler@aacog.gov) or Mariah Sanchez (msanchez@aacog.gov)
- If you have **questions about SolSmart or external TA**, please reach out to Andrew Light (Andrew.Light@wri.org)