

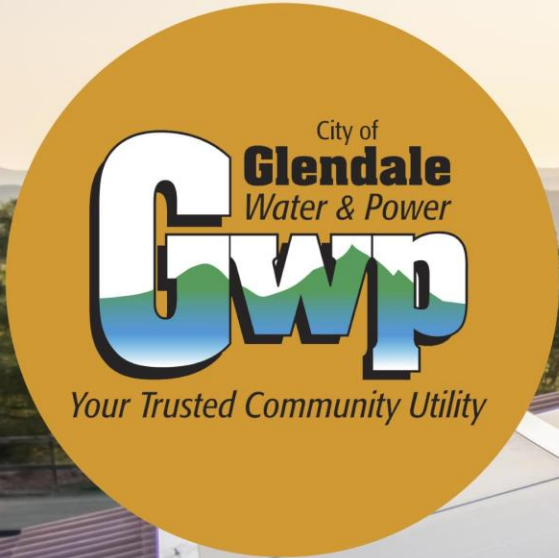
Recording Reminder

This meeting is being recorded to properly capture your input. The recording of this meeting will not be shared or posted online.

The meeting will start promptly at 6:00pm



Energy+Environmental Economics

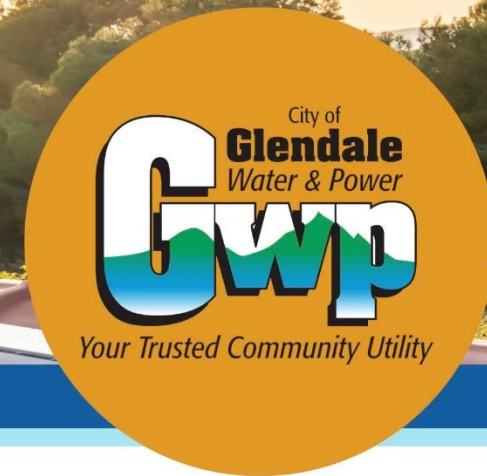


Community Meeting

Glendale Water and Power's Plan to Increase Solar Adoption and Develop Additional Distributed Energy Resources



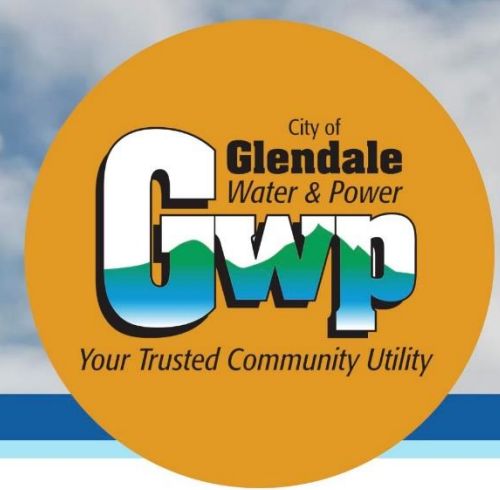
Monday, March 11th, 2024



Welcome and Introduction

- **Introduction of meeting presenters and facilitators**
- **Welcome remarks**
- **Meeting objectives:**
 - Provide residents and business owners with information about the plan
 - Gather feedback from residents and business owners on what would help them be responsive to renewable energy programs
 - Gather information from residents and business owners about their barriers to distributed energy resource (DER) adoption
 - Understand other areas of concern

*DER: Distributed Energy Resources



Meeting Agenda



Presentation on Project Overview and Introduction to Distributed Energy Resources (30 minutes)



Discussion Stations (60 minutes)

- Understanding Barriers to DER Adoption
- Equity and Environmental Justice
- Affordability and Cost Shifts
- Commercial and Industrial DER Adoption

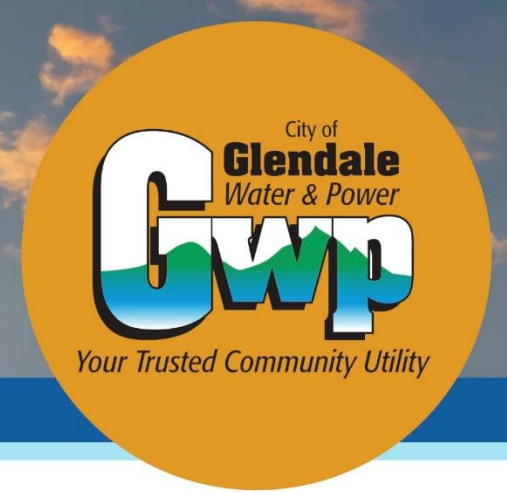


Q&A (10-15 minutes)



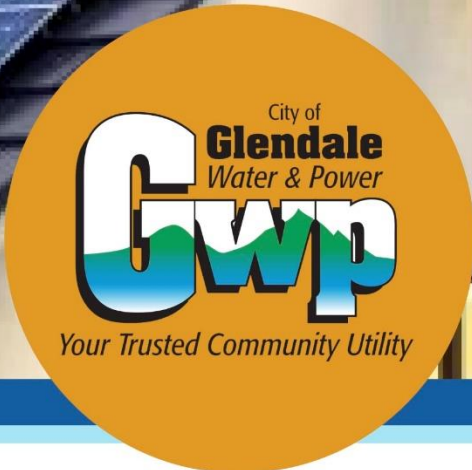
Closing Remarks and Future Engagement (10 minutes)

*DER: Distributed Energy Resources



Webinar Participation Guidelines

- During the Discussion Station portion of the meeting, if you wish to speak, use the raise hand function and one of our panelists will unmute you.
- During the Discussion Station portion of the meeting, you will be able to freely move from station to station.
- During the Q&A portion of the meeting, please use the Q&A function at the bottom of your screen.



Team Members



Energy+Environmental Economics



Eric Cutter
Partner & Project Lead - E3
eric@ethree.com



Jun Zhang
Project Manager - E3
jun.zhang@ethree.com



Hannah Platter
Environmental Justice Lead - E3
hannah.platter@ethree.com



Max DeLoach
Market Analyst – Willdan
mdeloach@willdan.com

Tommie Rae Mills
Associate Sales & Partnership Manager – Willdan
tmills@willdan.com

Jonathan Baty
Primary Engineer – Willdan
jbaty@willdan.com

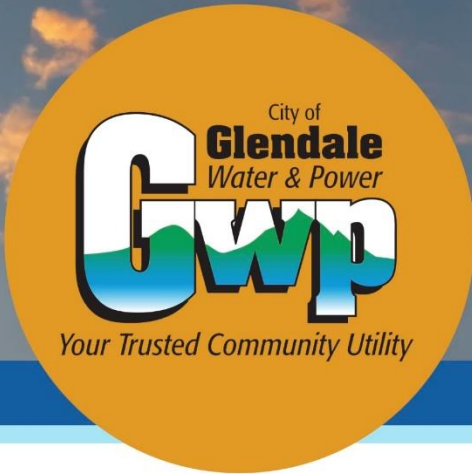
Irina Oscal
Program Manager – Willdan
ioscal@willdan.com



Community Outreach and Event Support

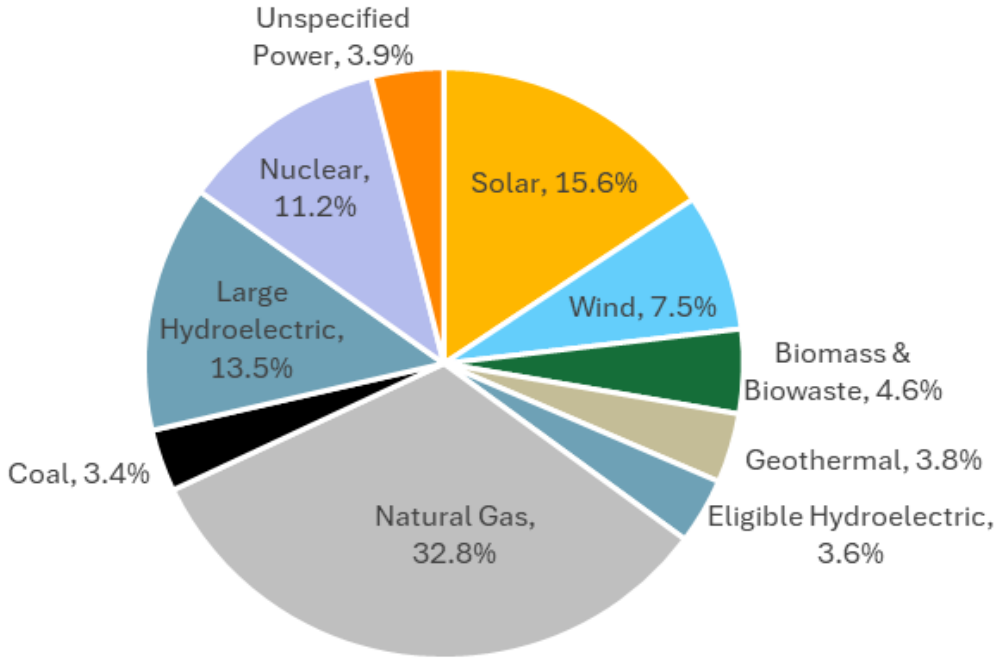
Rick Taylor
Partner – Dakota Communications
rick@dakcomm.com

Jad Hagekhalil
Account Manager – Dakota Communications
jad@dakcomm.com



Glendale Water and Power

- Glendale Water and Power (GWP) is a municipal utility that serves the community of Glendale, California, including over 34,000 water and 90,000 electric customers
- GWP’s vision is to deliver reliable, high quality, environmentally sensitive, and sustainable water and power services to customers in a caring and cost-competitive manner
- GWP helps residents and businesses manage energy costs at home and at work through different Customer Programs, Residential Water and Energy Efficiency Programs, and Business Programs
- In Fiscal Year 2022/2023, 35.2% of Glendale’s power supply came from eligible renewable resources*, and almost 60% from clean energy resources when including nuclear and large hydroelectric
- GWP continues pursuing the goal of integrating the maximum amount of renewable, zero-carbon, and/or low-carbon energy and minimizing the amount of fossil fuel generation in GWP’s portfolio



Source: GWP Power Content Label, <https://www.glendaleca.gov/government/departments/glendale-water-and-power/about-us/power-content-label>

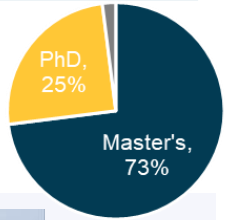
*Eligible renewable resources include solar, wind, biomass and biowaste, geothermal, and eligible hydroelectric.

About E3

120+ full-time consultants

30 years of deep expertise

Engineering, Economics,
Mathematics, Public Policy...



San Francisco



New York



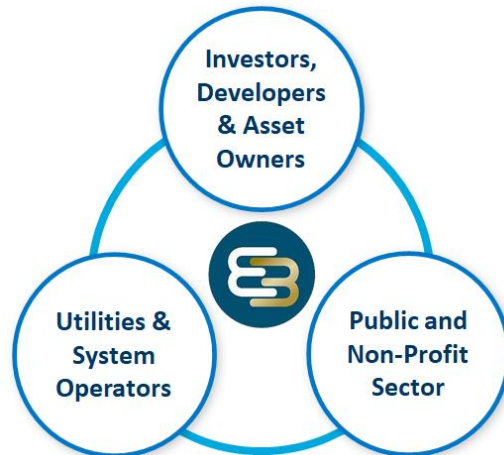
Boston



Calgary

E3 Clients

300+
projects
per year
across our
diverse
client base



Example Recent Related Projects

- California Public Utilities Commission (CPUC), Avoided Cost Methodology and "E3 Calculator" (2003 - Present)
- CPUC, Net Energy Metering Revisit Rulemaking Technical Support (2020 - 2022)
- New York State Energy Research & Development Authority (NYSERDA), Value of Distributed Energy Resources Proceeding Support (2016 - Present)
- Washington Utilities Net Energy Metering Evaluation (2023)
- Sacramento Municipal Utility District (SMUD) Virtual Power Plant Cost Effectiveness & Resource Planning (2020 - 2021)
- South Carolina Office of Regulatory Staff (ORS) Net Energy Metering Policy Choices (2018)
- Confidential DER valuation work for developer clients in several other jurisdictions



Plan Context and Goals

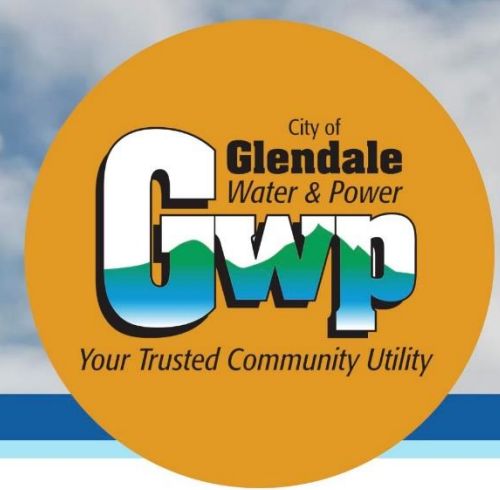
- In August 2022, the Glendale City Council passed a resolution expressing their intent to adopt policies and practices aimed at achieving the goal of having at least 10% of GWP customers adopt solar and energy storage systems by 2027, and to develop additional demand management measures, with a minimum total peak dispatchable and peak-load-reducing capacity of 100 MW
- GWP has partnered with Energy and Environmental Economics (E3) to create an equitable solar and energy storage adoption plan, with input from the community

*DER: Distributed Energy Resources



Goals of the Plan

- Maximize the use of renewable energy to serve the current and future energy needs of Glendale residents
- Maximize local solar and energy storage with the goal of a minimum penetration rate of 10% by December 2027
- Maximize the use of distributed energy resources (DERs) with a minimum total peak dispatchable and peak-load-reducing capacity of 100 MW
- Minimize the impact of cost shifts to low-income customers
- Maintain overall system reliability

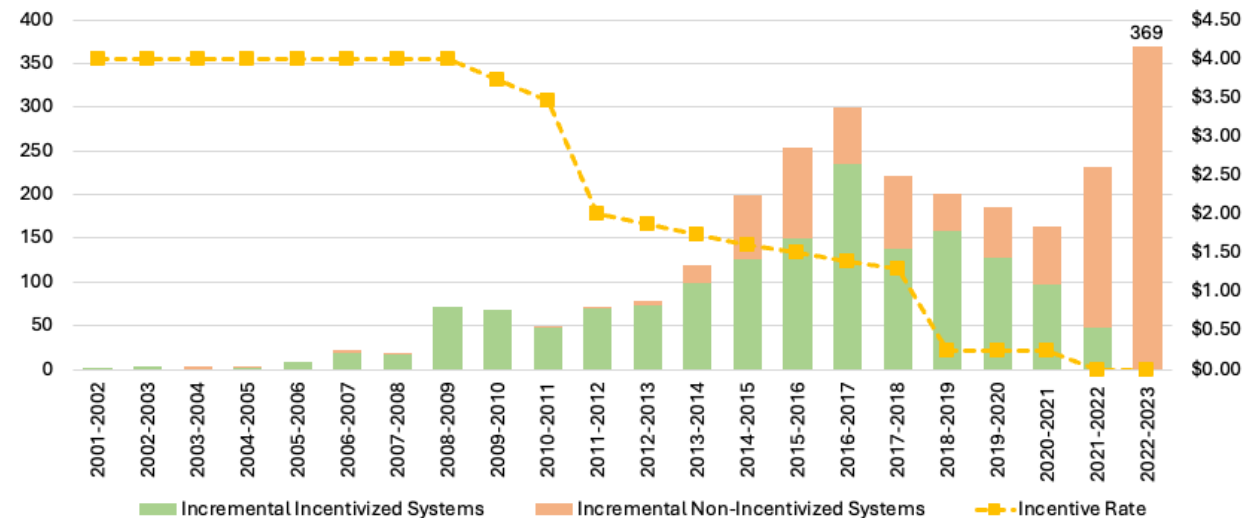


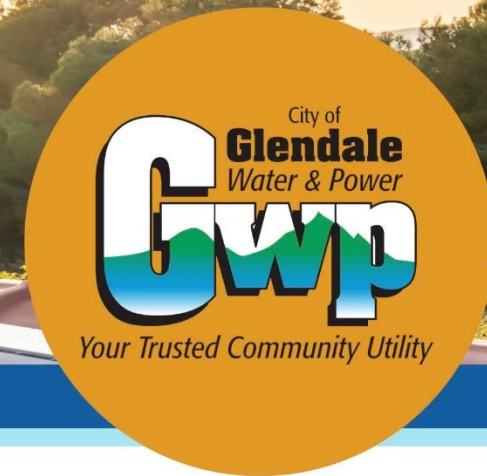
Where We Stand Today

- 2,921 PV/Solar Systems Installed since 2001 for a total of 28 MW
- 2,800 Residential PV/Solar Systems Installed since 2001 for a total of 17 MW
- 121 Commercial PV/Solar Systems Installed since 2001 for a total of 11 MW
- Solar penetration is currently at 3.25%
- Solar system installations in Glendale have been increasing every year, despite the end of the solar incentive program in 2022 (see graph)

Annual Customer Sited Solar Installations in Glendale

Solar systems installed in each year, number of systems
Upfront rebates for installing solar, \$/kW





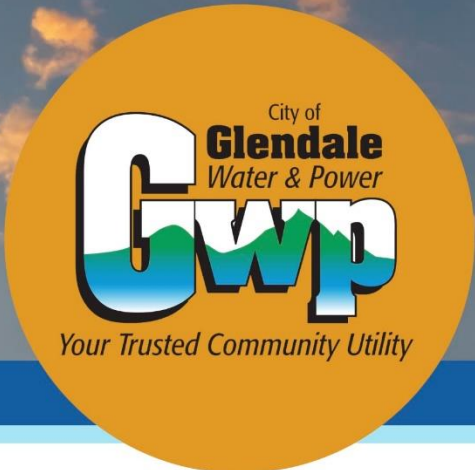
Plan Scope and Expected Outcomes

The solar and energy storage plan will include:

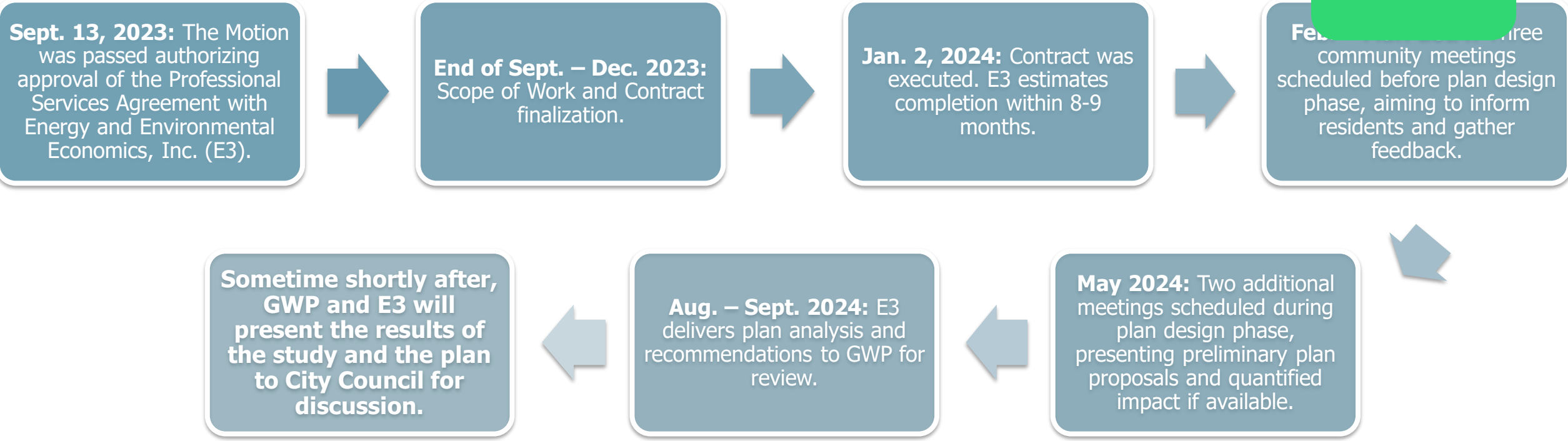
- An evaluation of the solar and energy storage adoption potential, including the feasibility of achieving the City Council's goals
- If the evaluation finds that the goals are not achievable, an estimate of when the goals can be achieved
- Policies and incentives to achieve the adoption and capacity goals
- Policies and incentives aimed at low-income customers, customers in heavily pollution-burdened areas, multifamily properties, and rental properties
- An analysis of the benefits and costs including direct and indirect economic, environmental, societal, and other noneconomic benefits and costs
- Direct and indirect impacts to low- and moderate-income households

Policies and Incentives Considered

- **Upfront Rebates**
- **Performance-Based Incentives**
- **Feed-In-Tariff (FIT) Program**
- **Net Energy Metering (NEM)**
- **Equity Strategies & Policies**
- **Community Solar Projects**
- **Energy Efficiency**
- **Demand Reduction**



Plan Timeline

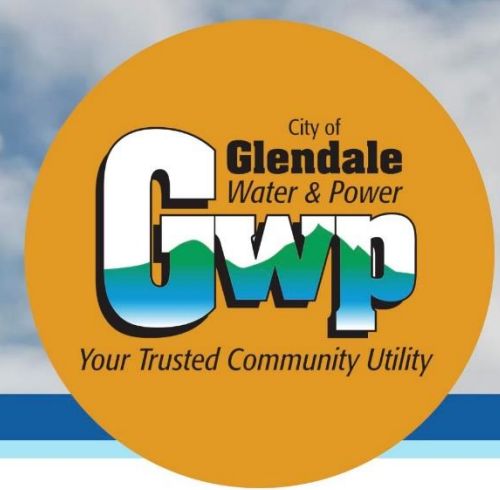




Community Meeting Timeline

- **Meeting 1-3:** These meetings will take place before the plan design phase of the project, with the goal of informing residents on the project, and gathering feedback to incorporate into the plan design phase.
- **Meeting 4-5:** These two meetings will take place during the plan design phase of the project, with the goal of presenting final proposals to the public, along with the quantified impact if available.

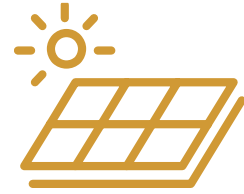
Meeting 1	Meeting 2	Meeting 3	Meeting 4	Meeting 5
Wednesday, February 28 th	Saturday, March 2 nd	Monday, March 11 th	Wednesday, May 15 th	Thursday, May 30 th
Adult Recreation Center 201 E Colorado St, Glendale, CA 91205	Sparr Heights Community Center 1613 Glencoe Way, Glendale, CA 91208	Zoom/Webinar	Adult Recreation Center 201 E Colorado St, Glendale, CA 91205	Sparr Heights Community Center 1613 Glencoe Way, Glendale, CA 91208
6:00 – 8:00 PM	10:00 AM – 12:00 PM	6:00 – 8:00 PM	6:00 – 8:00 PM	6:00 – 8:00 PM
In-Person	In-Person	Zoom/Webinar	In-Person	In-Person



Types of DERs (Distributed Energy Resources)



Energy Efficiency



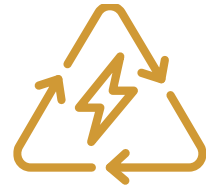
Customer-Sited Solar



Energy Storage



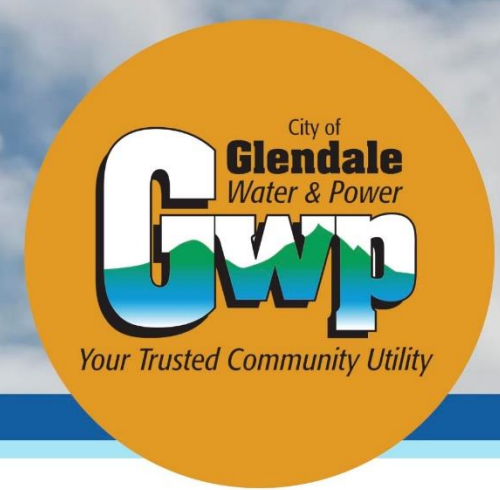
Electric Vehicles



Flexible Loads



Demand Response



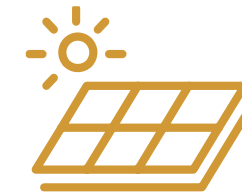
DER Technologies and Their Importance

- Distributed Energy Resources (DERs) refer to a variety of technologies that provide electricity or capacity at or near where it will be used
- DERs are an important strategy to increase renewable, zero-carbon, and/or low-carbon energy
- For residents and business owners, DERs can reduce energy costs and be a net positive investment once paid in full
- For utilities, DERs can reduce incremental system costs and may increase local reliability, depending on the mix of resources available
- There are a variety of DER opportunities for residential, commercial, and industrial customers as well as renters and low- and moderate-income customers

DER Examples



Energy Efficiency



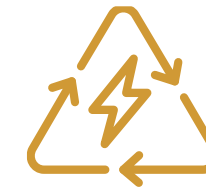
Customer-Sited Solar



Energy Storage



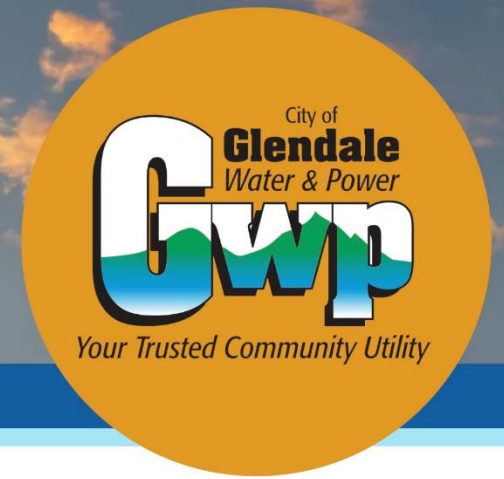
Electric Vehicles



Flexible Loads



Demand Response



GWP's Existing Programs and Incentives



Net Energy Metering (NEM) Program: solar customers are eligible to receive a bill credit for excess generation produced by their solar system



Electric Vehicle Charging Station Rebate: rebates for installing charging stations at residences or businesses

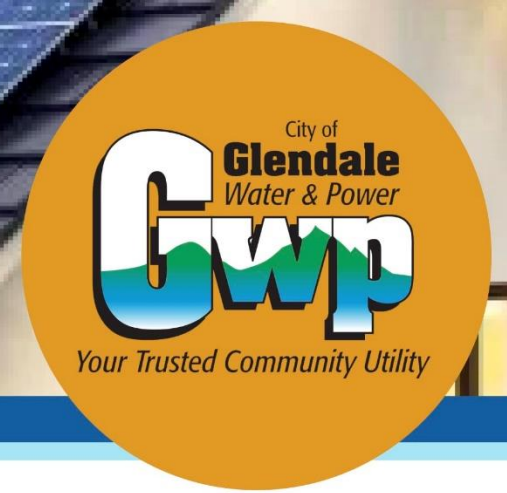


Peak Savings Program: receive a financial incentive for reducing demand during critical peak demand periods



Off-Peak Electric Vehicle Charging Rebate Program: incentives for residential customers to charge between 9pm and 12pm the next day

Visit the GWP website to learn more about these programs as well as other programs offered by GWP:
www.GlendaleWaterAndPower.com



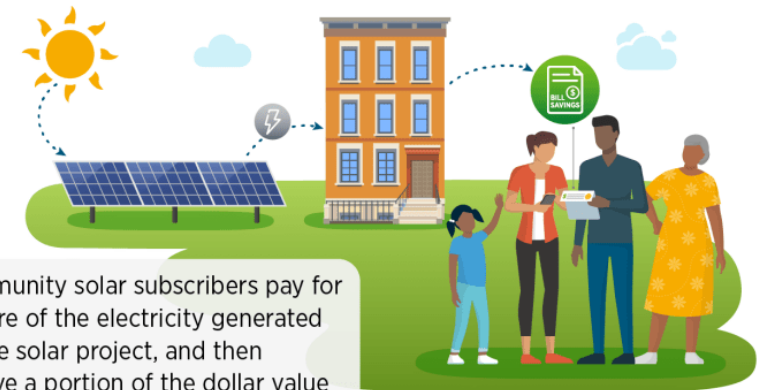
Multifamily Property Considerations

- Glendale has around 24,000 single family homes, but about 53,000 multifamily and condo units that may face barriers from landlords when adopting solar
- GWP is committed to ensuring that multifamily and rental properties are incorporated into the plan
- **Potential programs for multifamily and rental properties:**
 - ✓ **Community solar:** a local solar facility whose electricity is shared by community members who often cannot or prefer not to install solar panels on their properties. Potential challenges include its higher cost compared to utility-scale solar and a lack of available land.
 - ✓ **Virtual net energy metering (VNEM):** a bill crediting system where net metering credits from a shared solar system are shared between subscribers, such as between both property owners and tenants. Potential challenges include administrative complexities in managing billing and credits among multiple users.

Community Solar

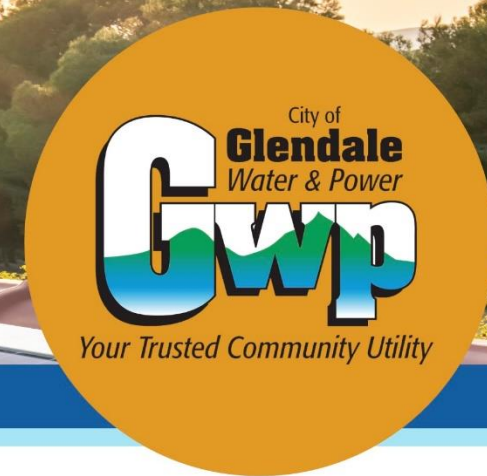
How does it work?

Community solar projects generate electricity from sunlight and the electricity flows to the electricity grid. Project owners can sell this power to their local utility.



Community solar subscribers pay for a share of the electricity generated by the solar project, and then receive a portion of the dollar value generated by the project as a credit.

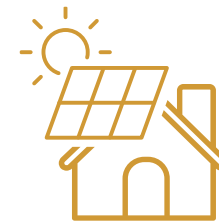
Source: <https://www.energy.gov/eere/solar/community-solar-basics>



DER Benefits and Costs

- The plan will include an analysis of the benefits and costs including direct and indirect economic, environmental, societal, and other noneconomic benefits and costs
- Participant benefits and costs are those that accrue to residents or business owners who install DERs or participate in DER programs
- Utility ratepayer benefits and costs are those that accrue to all utility ratepayers, resulting in either an increase or decrease in electricity rates
- Societal benefits and costs, including equity considerations, are those that accrue to society at large
- Some benefits and costs are difficult to quantify as they are not directly monetized and may lack a robust quantification methodology or concrete data

Examples of Benefits and Costs



Participant

- Bill savings
- Federal, state, and utility incentives
- Resilience
- Upfront costs



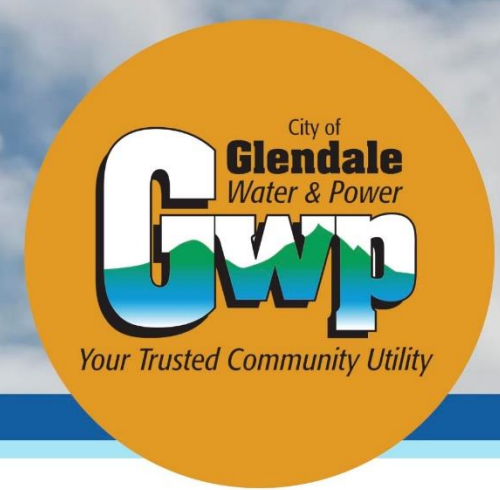
Utility Ratepayer

- Utility avoided costs
- Customer compensation



Society

- Reduced criteria pollutant emissions
- Reduced greenhouse (GHG) emissions
- Reduced land use impacts
- Employment opportunities



DER Opportunities and Challenges

Opportunities

- Increase renewable, zero-carbon, and/or low-carbon energy
- Reduce energy costs for residents and business owners
- Reduce utility system costs and increase local reliability
- Relieve constraints on the transmission and distribution systems
- Provides a variety of energy options to residential, commercial, and industrial customers as well as renters and low- and moderate-income customers
- Identify challenges for enabling progress and growth

Challenges

- Upfront costs may be prohibitive for residents and business owners, especially for low- and moderate-income households
- The installation of DERs may require upgrades to homes and businesses such as new electrical panels and/or structural improvements to the building
- Renters may not be able to install DERs since they do not own the building
- Multifamily residents (both renters and unit owners) face challenges in getting approval from property owners
- Reductions in utility revenues can result in cost shifts to non-participants



Discussion Stations (60 minutes)

Please visit a discussion station to learn more about the following topics:

- **Understanding Barriers to DER Adoption**
- **Equity and Environmental Justice**
- **Affordability and Cost Shifts**
- **Commercial and Industrial DER Adoption**

Each discussion station will have a dedicated discussion board, which will be screen shared, and a staff member taking notes to capture your input.

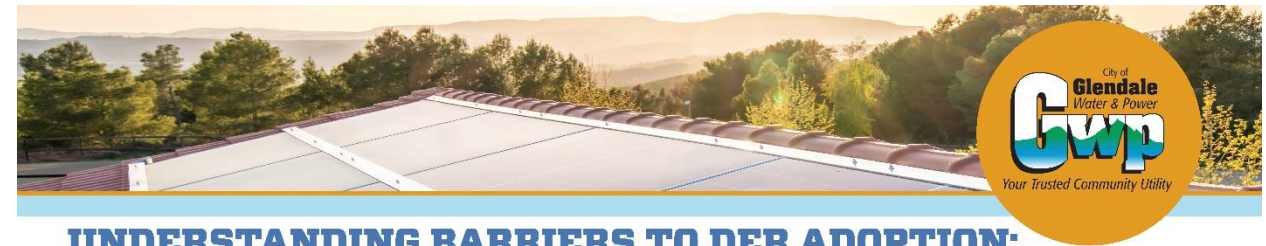
Overview of Discussion Stations

Barriers to DER Adoption

Led by: Jun Zhang (E3)



This discussion will focus on how we can work to overcome some of the reasons that people are currently unable to adopt distributed energy resources. We're hoping to get your input and feedback to understand the barriers that prevent people from currently adopting these resources as well as potential solutions that could be incorporated into the plan to empower growth and progress.



UNDERSTANDING BARRIERS TO DER ADOPTION: EMPOWERING PROGRESS AND GROWTH

FINANCING & FUNDING

Prohibitive Upfront Costs

- Significant upfront costs of solar, storage, and other DER technologies may be prohibitive for residents and business owners

Tax Credit Challenges

- Some households do not have enough tax appetite to fully benefit from the federal investment tax credits, or are not eligible for specific tax credits

Additional Challenges for Renters and Multifamily Residents

- Renters may not be able or willing to install DERs since they do not own the property
- Multifamily residents (both renters and unit owners) face challenges in getting approvals from property owners for adopting DERs
- Additional barriers include split incentives among property owner and tenants, and challenges associated with tenants lacking the authority or bill crediting mechanism to take advantage of on-site solar and other DER technologies

SITE SUITABILITY

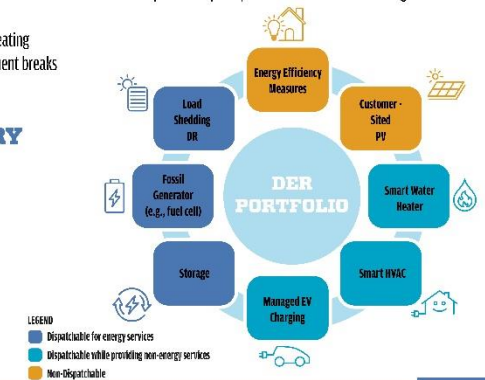
- Rooftop suitability is a common challenge for solar. Roofs best suited for solar have strong infrastructure, no leaks, and must not require significant maintenance at the time of installation.
- The installation of DERs may require upgrades to homes and businesses such as new electrical panels
- Adoption of air conditioning, heating, or water heating equipment typically occurs when existing equipment breaks

POLICY & REGULATORY

- Flat retail rates or minimally differentiated time-of-use structure
- Reductions in utility revenues can result in cost shifts to non-participants
- Absence of enabling legislation or policies
- "Soft costs" such as permitting and interconnection delays

COMMUNITY ENGAGEMENT

- Lack of access to information on DER technologies, policies, programs, and incentives
- Lack of interest in engagement and education
- Limited trust in DER technologies and developers, compounded by complex contracts and bill crediting confusion



**INPUT MATTERS: WE VALUE YOUR INPUT ON DER ADOPTION
BARRIERS TO INCORPORATE INTO THE PLAN.**

Further Questions?
Reach us at:
solar-der@glendaleca.gov



Overview of Discussion Stations

Environmental Justice and Equity

Led by: Hannah Platter (E3)



This station is to discuss how we can ensure that the plan helps the residents that need it most. We're hoping to talk to you all and learn more about which customer groups see the greatest energy and environmental burden currently and how we can create a plan that addresses existing inequities.

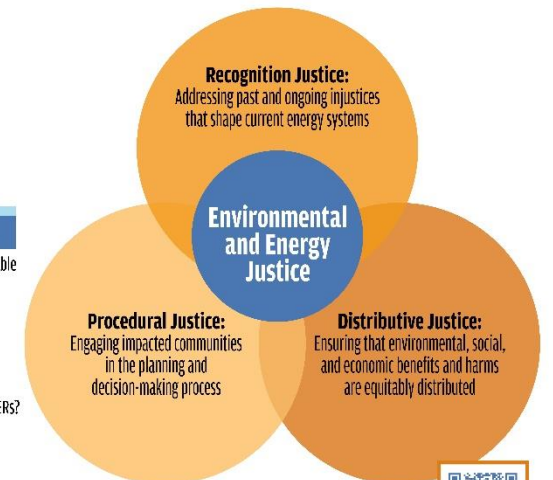


ENVIRONMENTAL JUSTICE AND EQUITY

CITY COUNCIL EQUITY AND JUSTICE PRIORITIES FOR THE SOLAR & ENERGY STORAGE PLAN

- Expand access to **on-site or community** solar for customers who have been historically excluded, including **low- and middle-income** customers, customers in **multifamily** buildings, and **renters**
- Focus on programs and incentives that provide benefits in heavily **pollution-burdened areas**
- Improve **energy affordability** for customers with high energy burdens
- Include **community ideas and concerns** about existing and potential DER programs

ENVIRONMENTAL JUSTICE FRAMEWORK



INCLUDING EQUITY AND JUSTICE IN THE SOLAR & ENERGY STORAGE PLAN

Example Equity and Justice Metrics:

Electricity Bills: How do participating and non-participating customers' bills change as solar and other DERs are added in Glendale?

Energy Burden by Income Bracket: What share of a customer's monthly income is spent on electricity?

Adoption and Incentive Distribution: Is access to DERs and city-provided incentives overrepresented or underrepresented in certain customer groups?

Guiding Questions:

- What incentives or support is needed to achieve equitable access to DERs?
- Which customer groups currently see the highest energy and environmental burdens in Glendale?
- What benefits might come from increased adoption of DERs?
- What harms might come from increased adoption of DERs?
- What other ways can we measure energy equity outcomes in this plan?



Further Questions? Reach us at: solar-der@glendaleca.gov



Overview of Discussion Stations

Affordability and Cost Shifts

Led by: Eric Cutter (E3)



This station is to discuss the impacts of distributed energy resources on affordability and energy bills of both customers who adopt the resources and customers who do not. At this station, we want to hear your thoughts on how best to increase affordability for all customers.



AFFORDABILITY AND COST SHIFTS

PLAN COMPONENTS

- Consideration of incentives and rebates to improve affordability of adopting DERs
- Policies aimed at low- and moderate-income customers
- The plan aims to minimize the impact on cost shifts to low-income customers

The plan considers multiple objectives:



AFFORDABILITY AND DER COSTS

Metrics: Energy affordability can be measured by **energy burden**, the percentage of household income spent on energy bills

Barriers: While DERs can reduce energy bills for participants, they can also be associated with high upfront costs that present a barrier to adoption

What are your concerns about energy affordability and other costs as solar and other DERs are adopted?

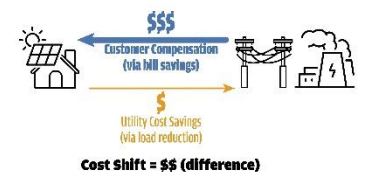
OPPORTUNITIES

- DERs can reduce energy bills for residents and business owners
- Utility incentives can further reduce a customer's energy bill via bill credits
- Federal, state, and utility incentives can reduce the upfront costs associated with installing DERs
- Financing and leasing options can help improve the economics for some customers
- Community solar could have the potential to provide affordable options for low-to-moderate income customers, assuming available space

What other programs and incentives could improve affordability and increase DER adoption?

COST SHIFTS

- DERs can reduce loads which provides electricity system cost savings for the utility, otherwise known as "utility avoided costs"
- DERs may result in reductions in utility revenues due to reduced bill payments resulting from customer compensation (net energy metering or other incentives)
- If customer compensation is greater than utility system cost savings, rates need to increase to recover utility costs, resulting in a cost shift from participants to non-participants



Overview of Discussion Stations

Commercial DER Adoption

Led by: Willdan Team



This station reviews the vital role Commercial and Industrial customers play in reaching the 100MW DER goal. Existing efficiency programs offer businesses low and no cost building efficiency and electrification upgrades. Workplace solar, storage and EV charging can all play an important role in completing Glendale's transition to clean energy.

COMMERCIAL AND INDUSTRIAL DER ADOPTION PLAYS A VITAL ROLE

ENERGY EFFICIENCY

Energy Efficiency is the FIRST FUEL in California - make it work for you!

Glendale Water and Power's Business Energy Upgrade program serves customers with the direct installation of energy efficiency measures:

- Lighting
- Heat Pump Water Heaters
- Refrigeration
- Custom Measures

What measures could we add that would help your business?
An Energy Services Representative (ESR) can show you how to participate!

SOLAR AND STORAGE

- Coupling batteries with solar ensures energy is available after the sun sets
- Federal tax credits are available for both solar and storage, with a bonus credits for energy communities or projects in low-to-moderate income communities
- There are federal and GWP electric vehicle (EV) incentives available for installing workplace chargers, enabling EVs to charge during the workday when solar energy is abundant
- Larger solar and storage systems are more cost effective

Workplace charging under solar shade canopies makes good use of parking lots and upper decks of parking garages

DEMAND MANAGEMENT

- When you use energy is as important as how much you use
- Managing demand reduces demand charges and creates capacity for other electrical end uses
- Using energy during off peak periods reduces energy costs with time of use (TOU) rates

The figure shows an example dispatch and load shape of a customer with solar, storage, and an electric vehicle (EV). The storage is charged from solar to avoid exports and maximize bill savings under net energy metering. Storage is discharged at the beginning of the on-peak TOU period, and the EV begins charging at the start of the nighttime off-peak period. The customer load with solar is significantly reduced throughout the on-peak TOU period.

For a reference, please see the "Solar Design for Smart Energy Transition" section in the front end of a "Transferable" 421044 report from the Bureau of Energy Efficiency, Southern California Edison, and Energy Systems Integration Group. <https://www.berkeleyca.gov/energy-transferable> project website.

Further Questions?
Reach us at: solar-der@glendaleca.gov

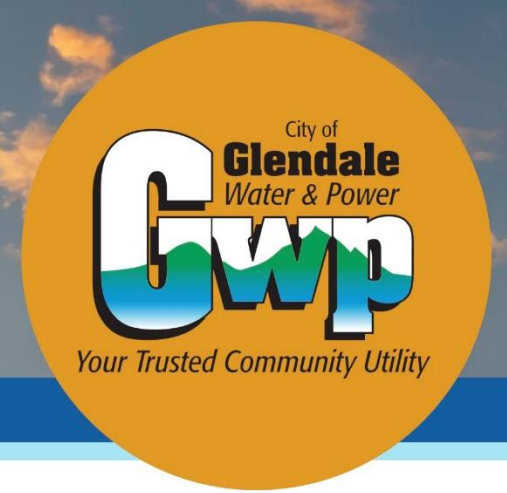


Discussion Stations (60 minutes)

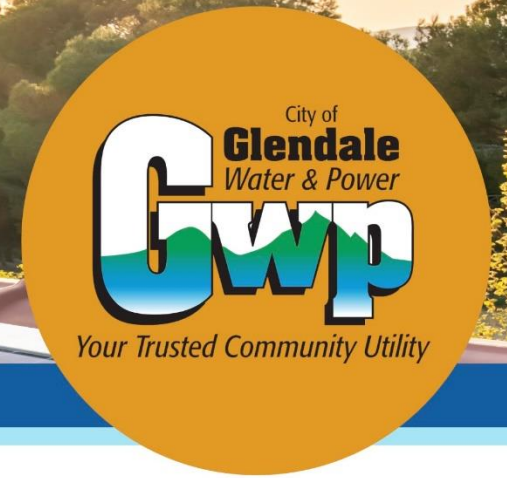
Please visit a discussion station to learn more about the following topics:

- **Understanding Barriers to DER Adoption**
- **Equity and Environmental Justice**
- **Affordability and Cost Shifts**
- **Commercial and Industrial DER Adoption**

Each discussion station will have a dedicated staff member taking notes to capture your input.



Q&A (10-15 minutes)



Closing Remarks and Future Engagement



Thank you for attending today's community meeting! We appreciate your participation and feedback to incorporate into the plan design phase.



Please consider attending a future community meeting where we will present the plan's proposals and provide residents with the opportunity to ask questions and provide comments before the plan is finalized.

- Wednesday, May 15th, 6-8pm
at the Adult Recreation Center
- Thursday, May 30th, 6-8pm
at Sparr Heights Community Center



**To view the most up-to-date meeting times and locations, or to learn more about the plan, visit the Glendale Water and Power website:
GlendaleCA.gov/Solar-DER-Plan**



**Didn't get a chance to ask your question or give your thoughts during Q&A?
Email GWP at solar-der@glendaleca.gov**