

Exhibit to Agenda Item # 1

SMUD 2021-2022 Rate Proposal overview, including proposed rate increases and new Solar and Storage Rate and programs.

Board Finance & Audit Committee and Special SMUD Board of Directors Meeting
Tuesday, May 18, 2021, scheduled to begin at 5:30 p.m.

Virtual Meeting (online)

Transformational Leadership

- Builds on SMUD's long-term support for solar industry
- Recognizes all solar energy has important role to play in reducing carbon emissions
- Balanced approach to support all technologies and customer investments needed to achieve zero carbon
- Supports next essential step in aggressive decarbonization
- Enables wide-ranging customer choice

Rates and Programs – Strategic Approach

- 2030 Zero Carbon Plan: Transformational and Industry-Leading
- Rates and Programs: Industry-Leading to achieve the Transformation
 - Community-Focused
 - Holistic
 - Flexible
 - Customer Choice
- Result of extensive outreach and feedback – Thank you!

Rates Proposal Overviews

Rate Proposal	Rate Increase & Effective Date	Customer Groups Impacted
2022 – 2023 Rate Increases	1.5% effective on 3/1/2022 2.0% effective on 1/1/2023	All Customers
Solar and Storage Rate	Effective 1/1/2023	All Solar and Storage customers approved for interconnection on or after 1/1/2022
Critical Peak Pricing Rate (CPP)	6/1/2022	Optional Rate for Residential Customers <ol style="list-style-type: none"> 1. Up to 30,000 customers with a SMART Thermostat 2. Solar and Storage Customers 3. Storage Only Customers

** Other minor miscellaneous rate changes will be included in the CEO and GM Rates and Recommendations Report.*

Rates Increase Drivers

- We recognize our community is coming out of COVID
- The proposed increase (1.5%) is well below the forecasted rate of inflation; SMUD is committed to keeping rate increases within inflation
- Major drivers for rate increases:
 - Wildfire mitigation, vegetation management
 - Aging infrastructure
 - Commodities – resource adequacy and renewables
 - Increased material costs
 - Increased labor costs
- Continued internal focus on cost savings and efficiencies to minimize rate increases

Supporting Programs

Drive solar and storage adoption

Solar and Storage Rate Supporting Programs & Incentives	Description	Incentive Level	Customer Groups
Storage Incentive Program	Battery incentive	Up to \$500	Customers with solar and/or storage
	Battery incentive with Critical Peak Pricing (CPP)	Up to \$1,500	Residential Customers with solar and/or storage
	Battery incentive with Virtual Power Plant (VPP)	Up to \$2,500	Customers with solar and/or storage
Virtual Net Energy Metering (VNEM)	Virtual solar for multifamily residences	N/A	Under-resourced Communities

Staff Will Implement Interconnection Fees on 1/1/2022 for New Solar Customers

Start date: January 1, 2022

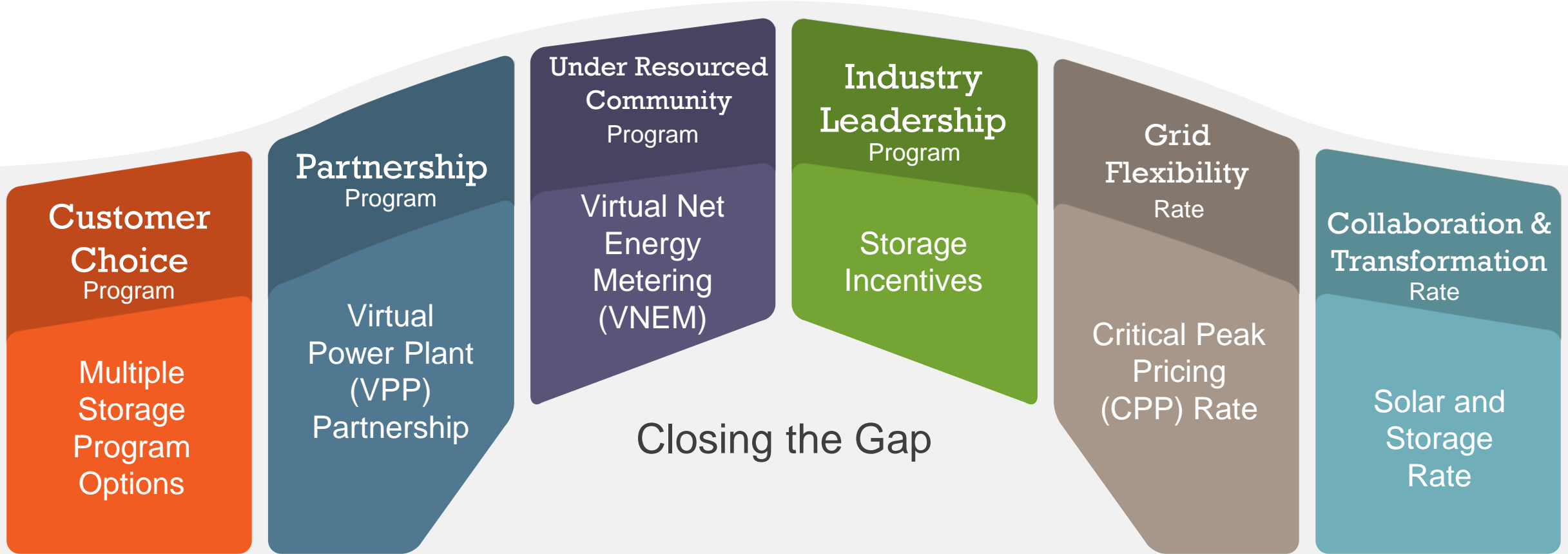
Residential (Majority)	Residential
<10kW - \$475	>10kW - 20kW - \$900

Commercial	Commercial (Majority)	Commercial (Cost based)
<100kW - \$2,500	>100kW - <500kW - \$3,300	>500kW - \$5,000

NOTE: This is a direct cost recovery fee for SMUD to cover expenses related to technical document review, validation of system sizes, onsite inspections, integration into SMUD's distribution system, and processing of application.

Overview of Solar & Storage Rate and Programs

Path to a carbon-free future



Net Energy Metering (NEM) 1.0
1998 - 2022

2023 Solar and Storage Rate



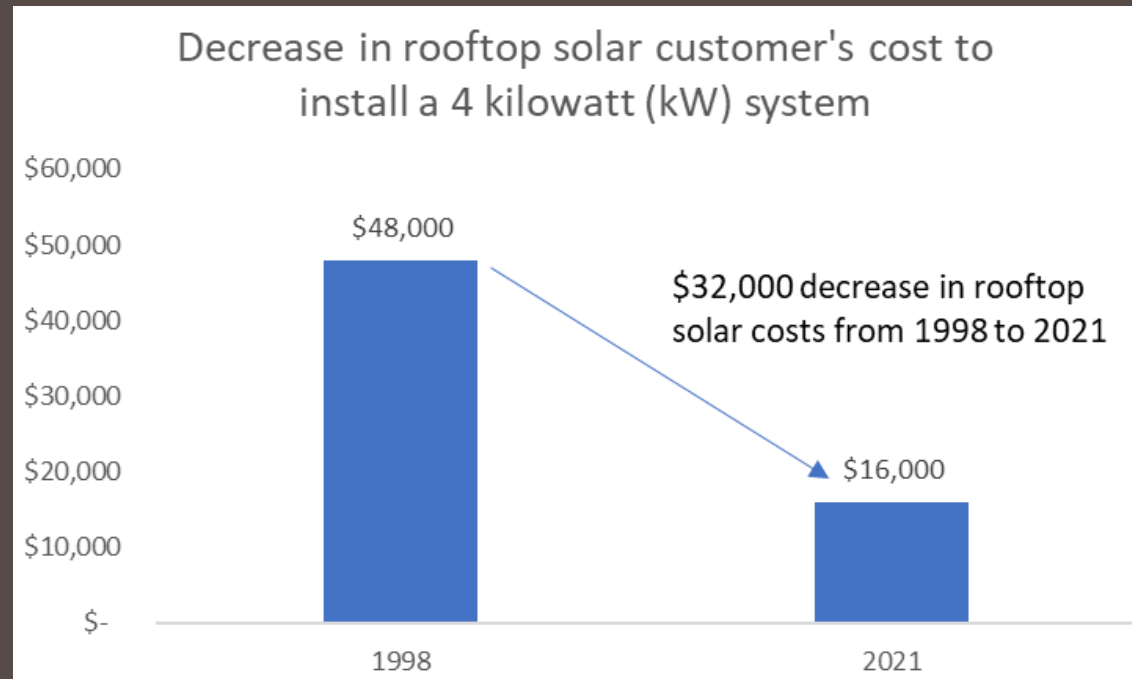
Solar & Storage Rate Transformation

Net Energy Metering (NEM) 1.0 was successful in reducing rooftop solar costs!

Rooftop solar prices (per watt)

1998 ~\$12 per Direct
Current Watt (Wdc)*

2021 ~\$4 (national average)



NOTE: Rate proposal recommends continued NEM 1.0 rate for existing Customers through 2030.

* (NREL US DOE SunShot Initiative) reflects a 1998 price of about \$12.00/Wdc for ≤ 10 kW)

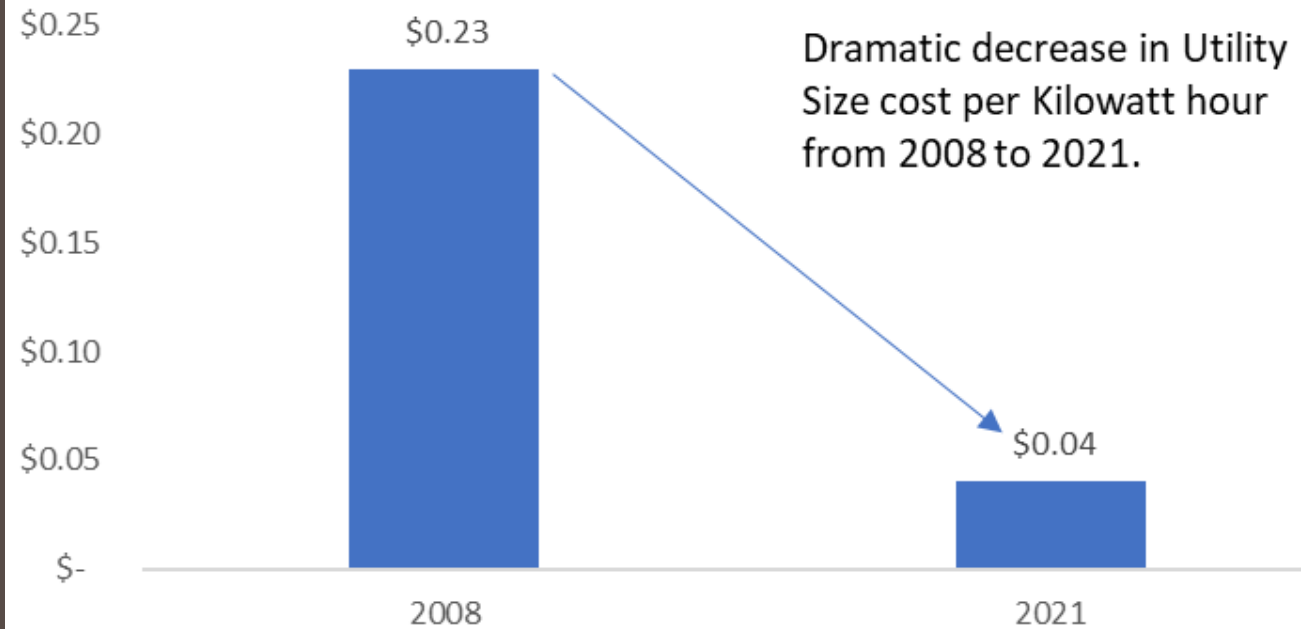
Net Energy Metering (NEM) 1.0 was successful in reducing Utility Size solar energy costs!

**SMUD's cost of local
Utility Size solar per
Kilowatt Hour (kWh)**

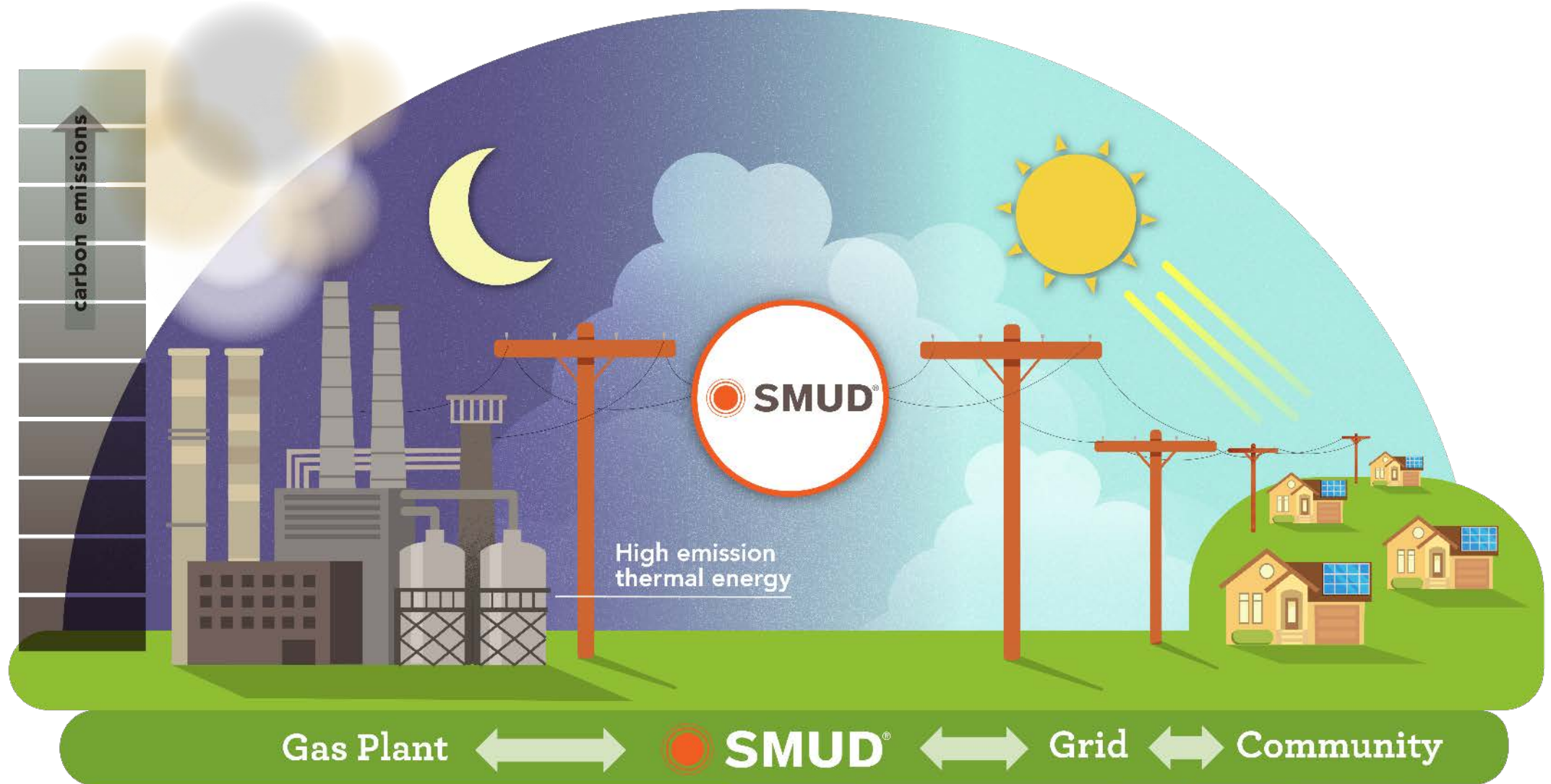
2008 ~\$0.23 / kWh

2021 ~\$0.04 / kWh

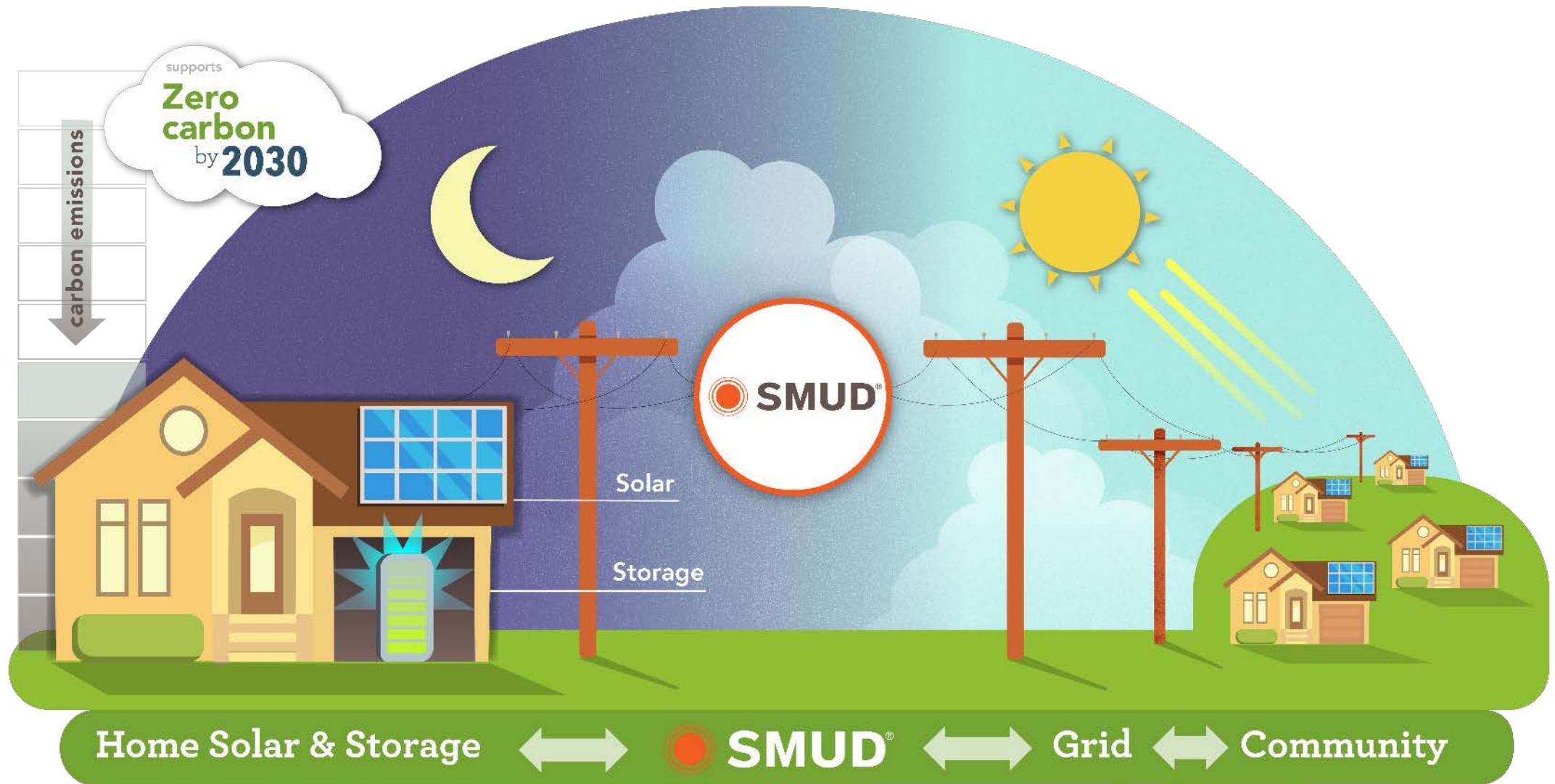
Decrease in Utility Size Solar price per Kilowatt Hour (kWh)



The Challenges Under NEM 1.0



Solar and Storage Rate Transformation

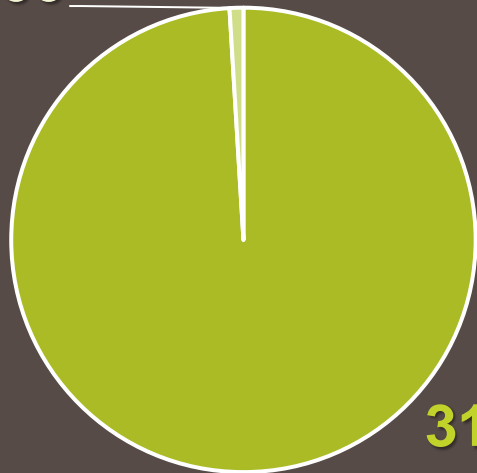


SMUD's Leadership – Transforming the Solar Market to Solar & Storage

NEM 1.0

22 years = 300 storage customers or <1% adoption rate

300



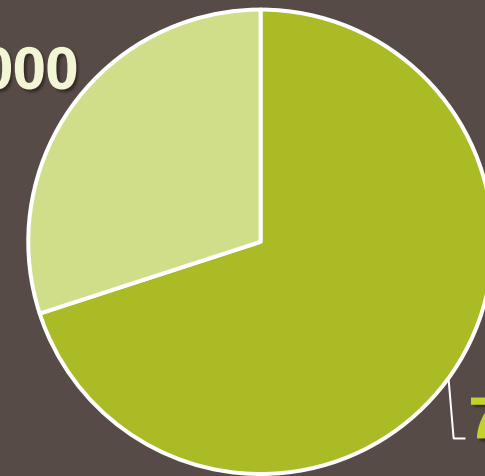
■ Solar Only Customers
■ Solar + Storage Customers

\$25M in storage / battery incentives

Solar & Storage Rate

9 years = 30,000 storage customers

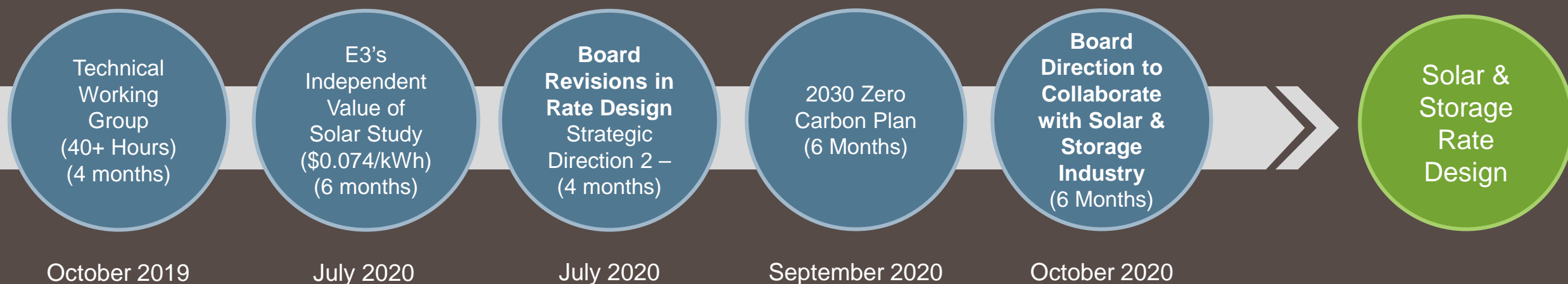
30,000



■ Solar Only Customers
■ Solar + Storage Customers

Solar & Storage Rate Collaboration

Two-Year Journey



2 Years of SMUD Staff working with Customers, Stakeholders, and the Solar & Storage Industry to develop the Solar & Storage Rate.

We Invited a Wide Range of Organizations to Collaborate & Design a Win/Win Solar and Storage Rate

ACR Solar	Solar Rights Alliance
Aztec Solar	STEM
California Energy Storage Association (CESA)	Sunrun
California Solar & Storage Association (CalSSA)	Tesla
Solar Edge	Vote Solar

CEO
invested
hours

40+

7 staff
invested
hours

630+

We listened...

This what we heard:	Solar and Storage Balanced Approach:
Support the solar and storage industry	Incentives to encourage customer adoption
Don't change how SMUD treats solar energy that is consumed on site	Unchanged... Further encouragement of on site consumed energy through storage incentives
Under Resourced Communities	VNEM for Under Resourced Communities
Make it easy to understand	One price for energy sold back to SMUD
Make the customer part of the solution	Strong financial incentives for customers to adopt storage and partner with SMUD to help achieve the 2030 Zero Carbon Plan
Encourage storage adoption	

Support from Experts

“SMUD has a long history of supporting rooftop solar. As SMUD commences on its 2030 Zero Carbon Plan, SMUD needs to align its net metering policy to get the most out of solar and storage to decarbonize electricity, buildings, and transportation cost-effectively and affordably. To this end, SMUD has engaged in a transparent, stakeholder driven process and developed an innovative net metering tariff.

SMUD’s new tariff encourages coupling solar with storage so that customers can save money, enhance resiliency, and provide benefits to the grid. SMUD’s new net metering policy will also include options for virtual net metering which can bring distributed renewable energy to multi-tenant building customers. SMUD’s proposal generously doesn’t include any fixed charges for solar customers. The record in the California Public Utilities Commission’s on-going net metering proceeding (Rulemaking 20-08 020) indicates that some fixed charges for solar customers may be necessary to avoid undue rate increases for non-solar customers.”

- Mohit Chhabra, Senior Scientist, Climate and Clean Energy Program



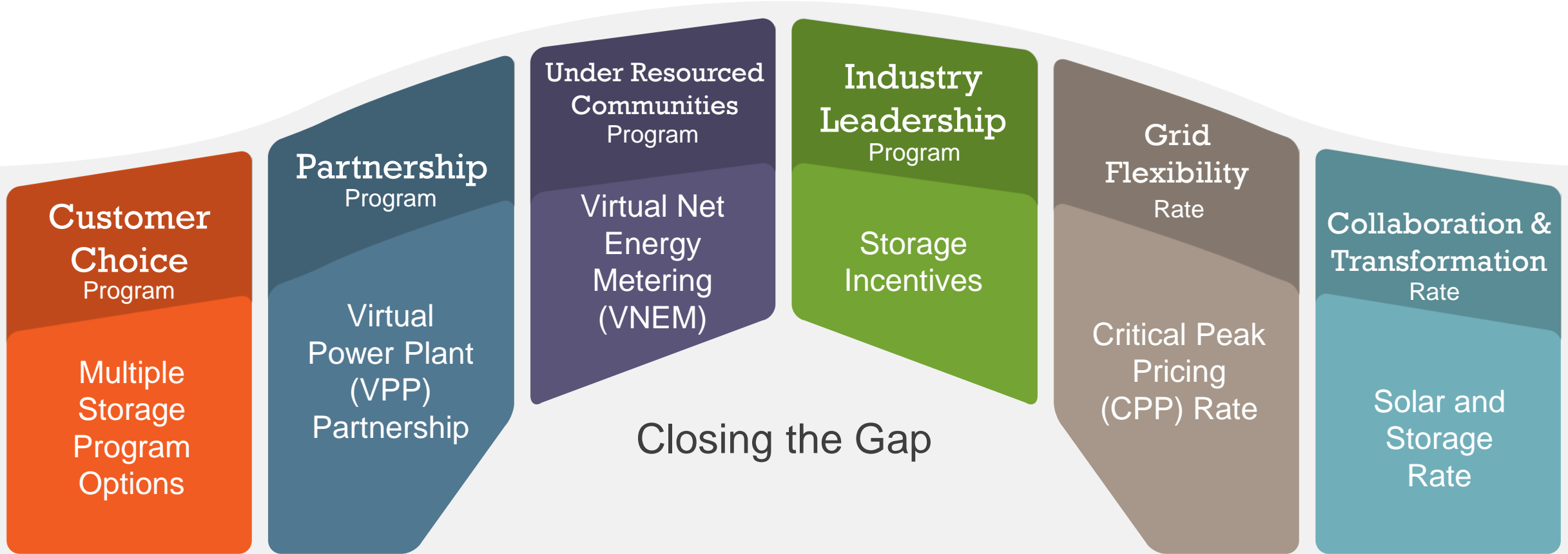
Support from Experts

“SMUD’s proposed Solar and Storage Rate is a step in the right direction – it leverages price signals and incentives in a way that enables its goal of achieving a zero-carbon future.”



- Michael Colvin, California Energy Program Director, Environmental Defense Fund

Path to a carbon-free future



NEM 1.0
1998 - 2022



Introduce you to the Solar and Storage Rate through The Smith Household customer perspective...

Meet The Smith Family...

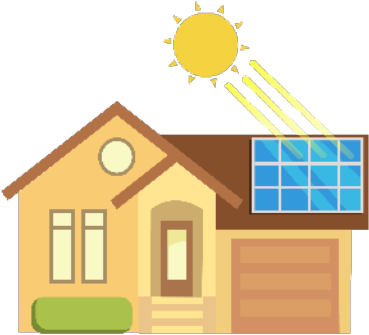


The Smiths are SMUD customers and are considering adding solar to their home

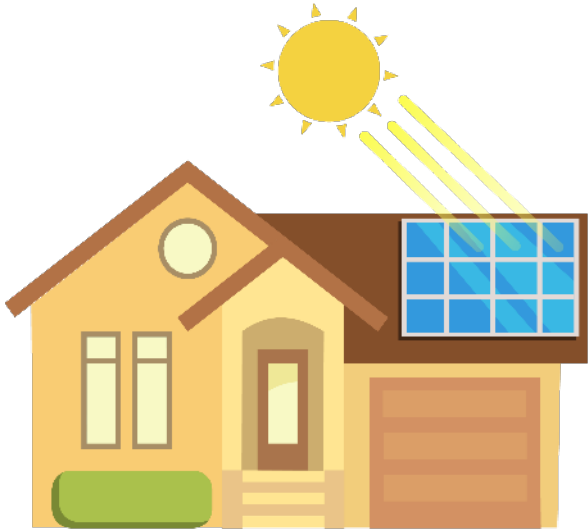




“How can I
help SMUD
meet the
2030 Zero
Carbon
Plan?”

The Smiths have done some research, and this is what they have learned so far...

			
	Rooftop solar on a sunny day	Rooftop solar on a cloudy day or at night	Gas Fired Powerplants (regardless of weather or time of day)
Reliability	✓	✗	✓
Energy	✓	✗	✓
Carbon Free	✓	✓	✗



Carbon-free



Reliable

How do we get the energy and reliability of a gas-fired powerplant with the carbon free energy of solar?



Carbon-free & Reliable



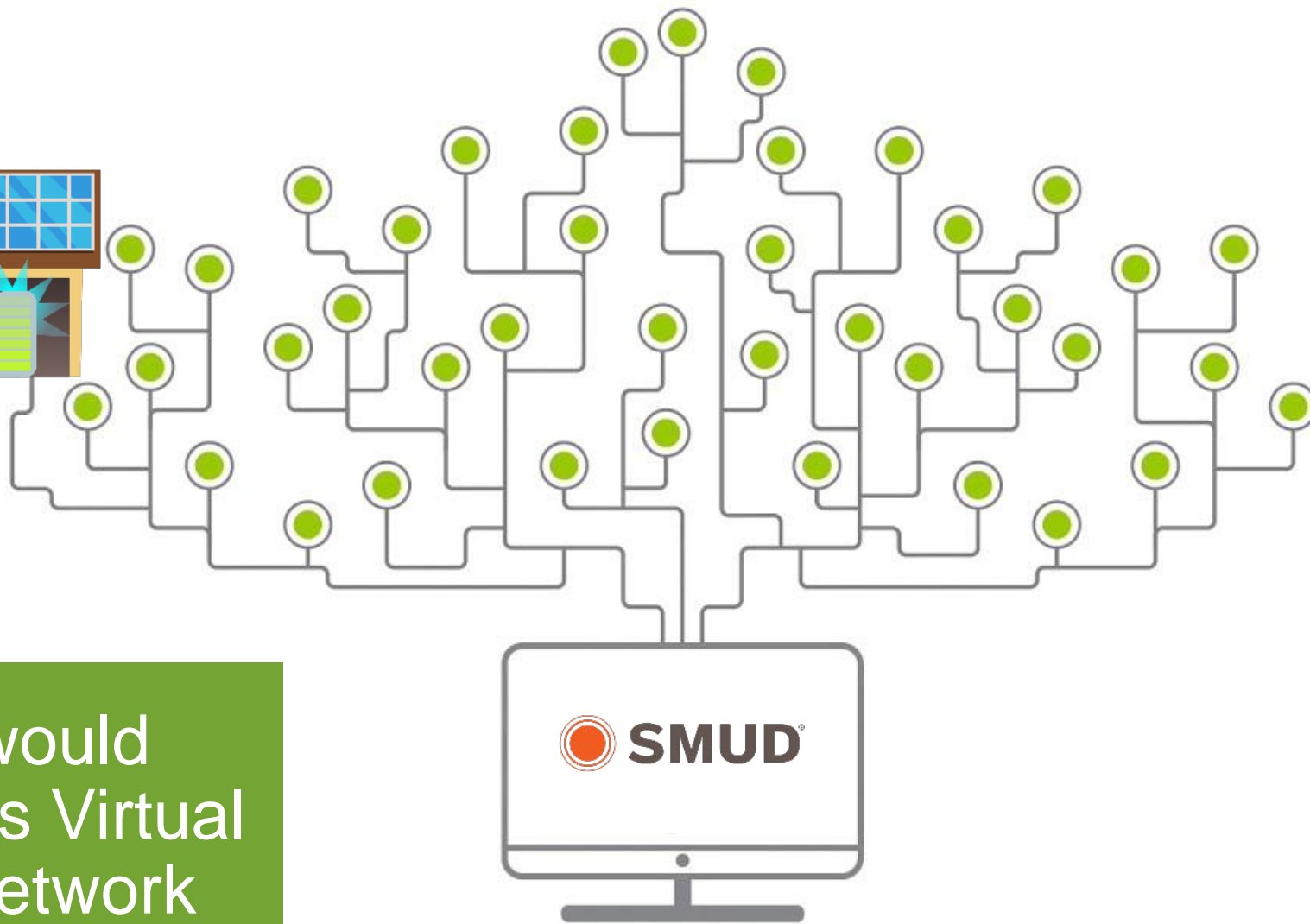
Making the Customer Part of the Solution:

What if the Smith Family partnered with SMUD to install Solar + Storage or Storage Only on their home?

The Win / Win Virtual Power Plant Partnership:

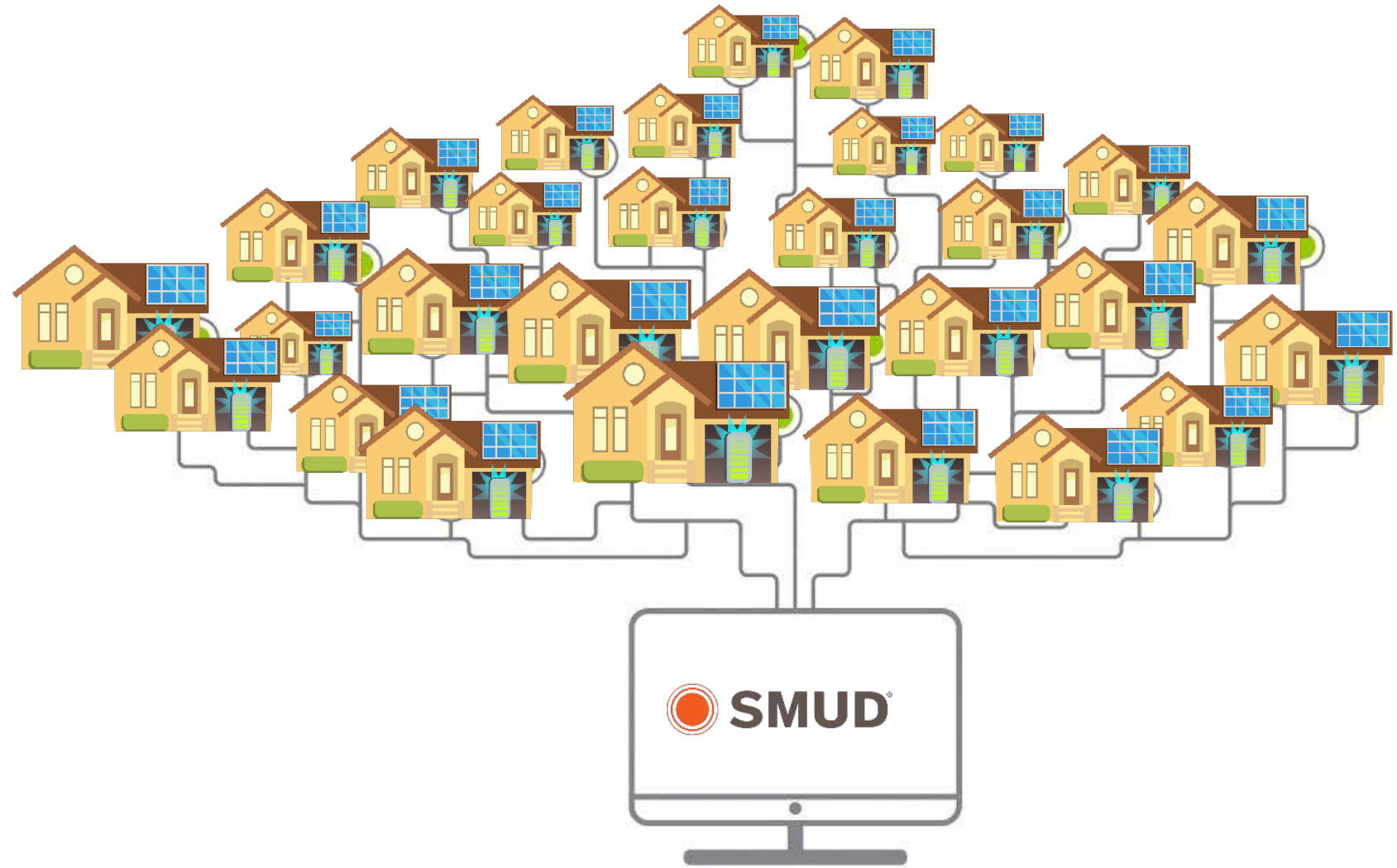
Smith Family: Adding backup power (resiliency) for their own home, reducing her electric bill and maximizing their return on investment

SMUD: Assists in achieving the Zero Carbon Plan and adding a carbon free grid asset that provide reliable power



The Smith's home would become part of SMUD's Virtual Power Plant (VPP) Network

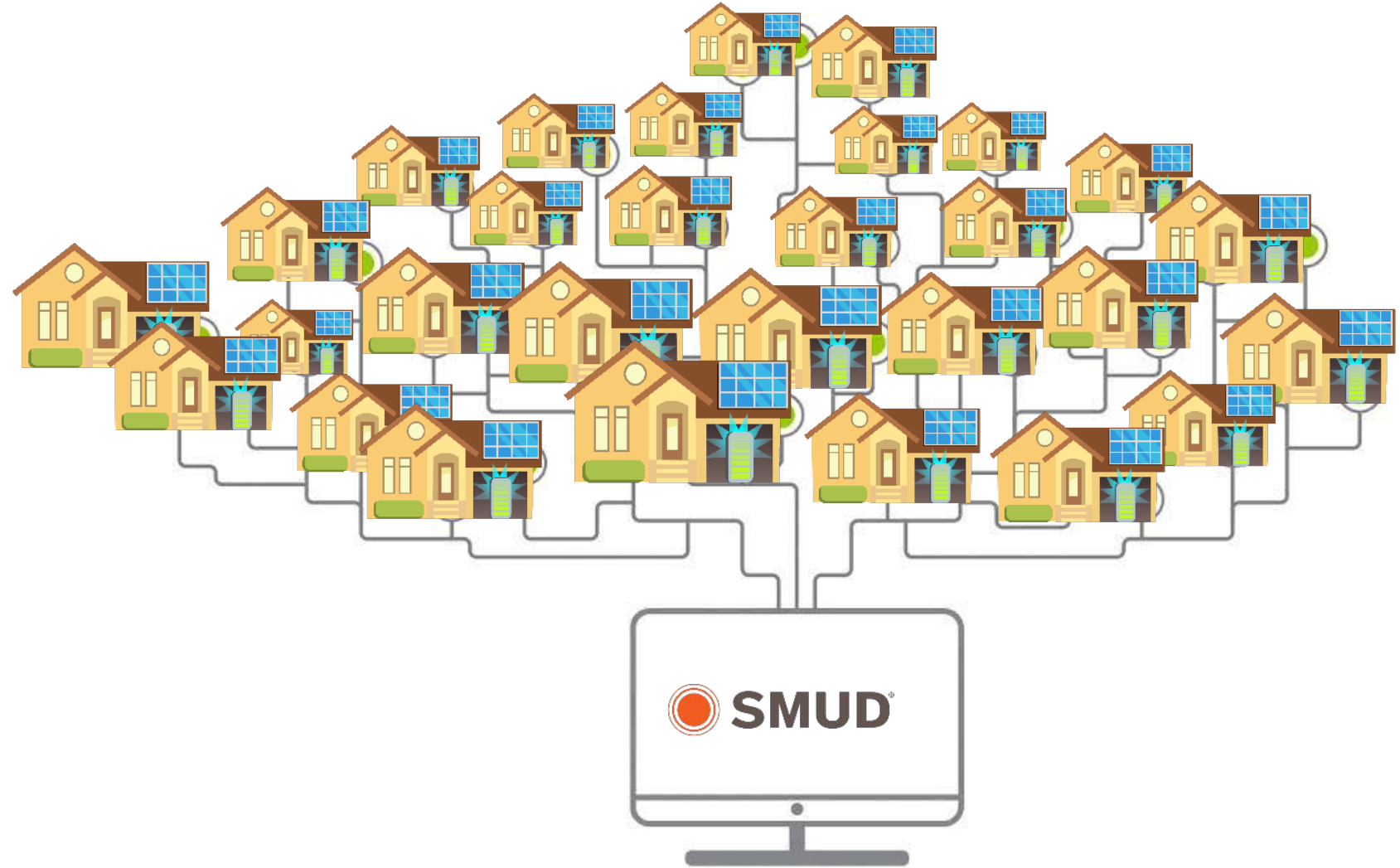
What if 30,000
SMUD customers
like the Smiths
wanted to
become part of
this Virtual Power
Plant network?





Now instead of calling on a gas fired powerplant when SMUD needs reliable energy during non-solar producing periods ...

... SMUD can
now call on this
Virtual Power
Plant network for
clean, reliable
energy.



100%

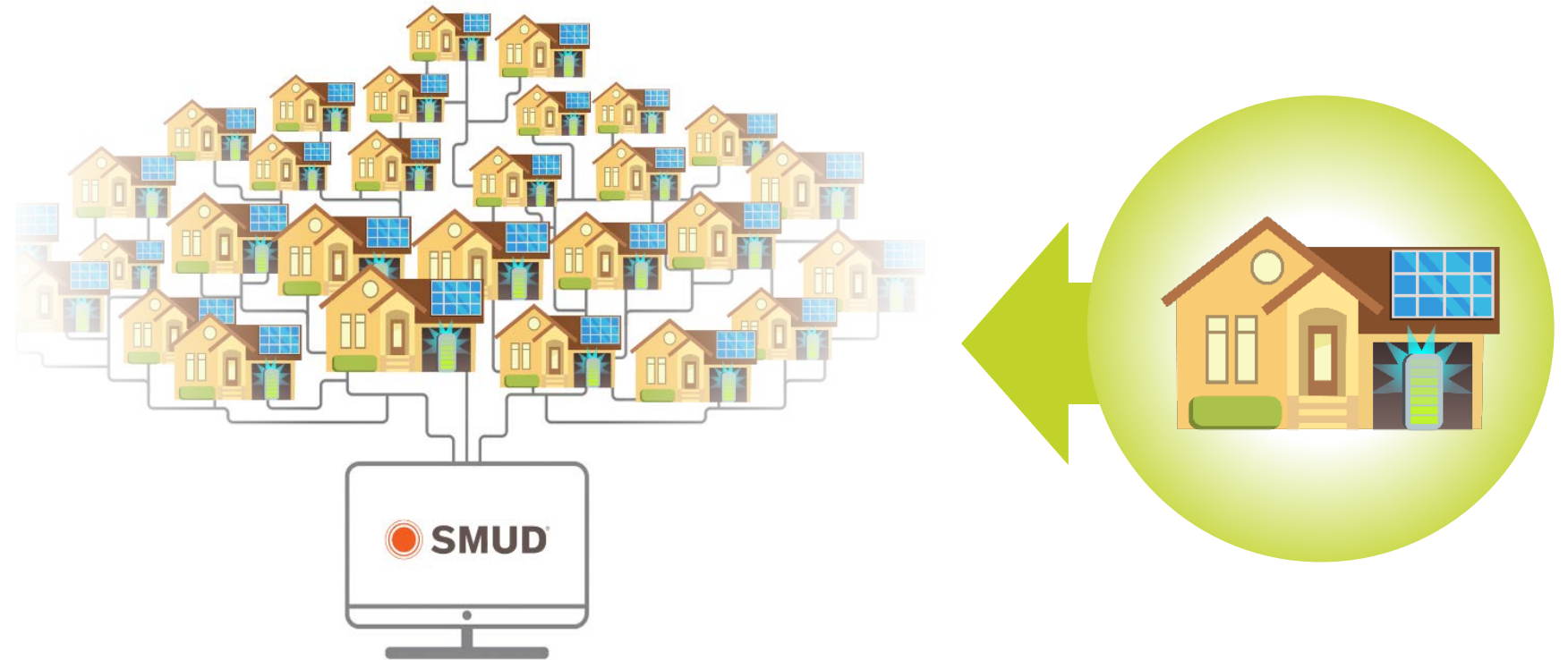
Zero
carbon



What is SMUD getting out of this partnership?

- Help in achieving the 2030 Zero Carbon Plan
- Help in providing ALL customers with reliable clean energy
- Improved air quality in our region
- Local job creation

So how do customers, like the Smith Family, become part of this Virtual Power Plant network?



Virtual Power Plant Partnership Incentives

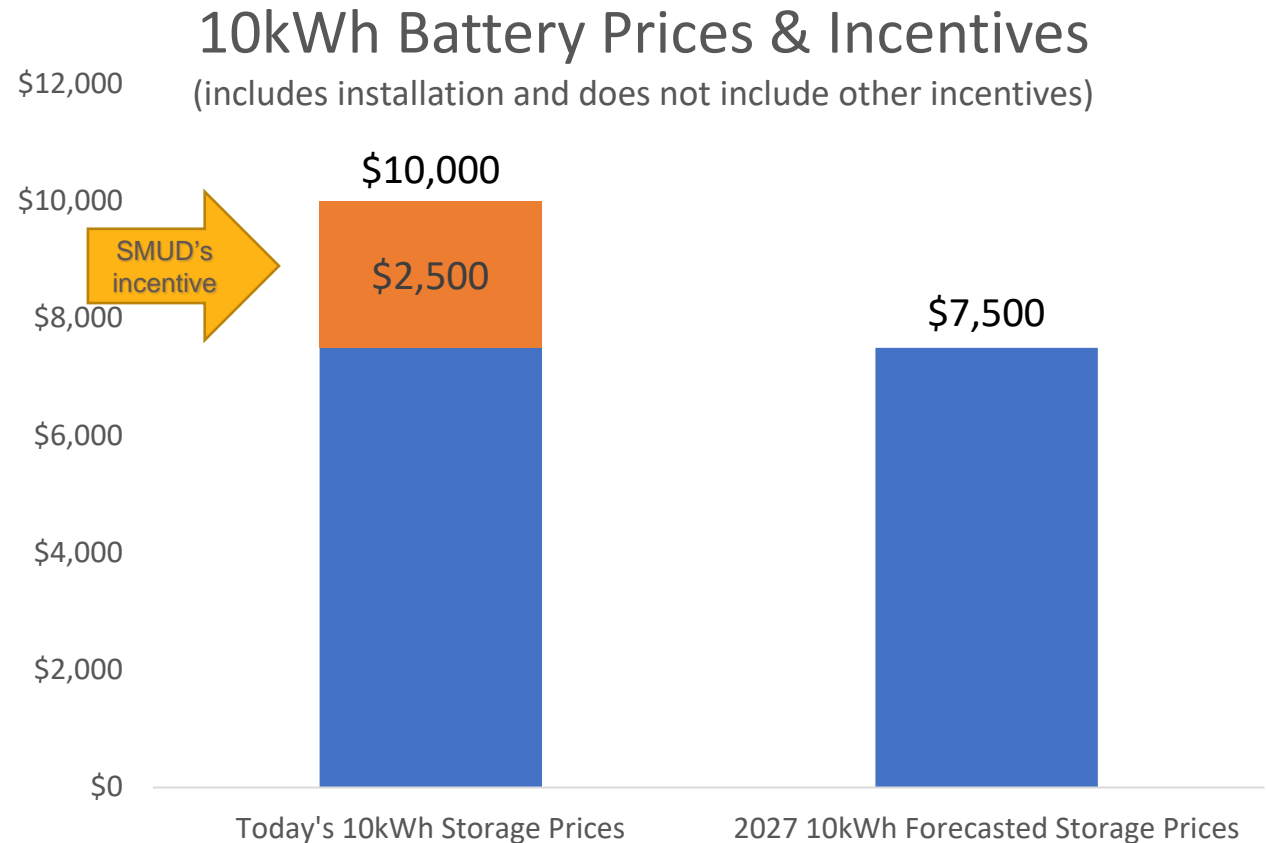


- SMUD wants to pay SMUD customers an upfront incentive up to *\$2,500 (or \$250/kWh capacity) to reduce customers upfront costs for storage devices
- SMUD will also make on going “grid benefit” payments to Virtual Power Plant customers that align with grid service costs
- SMUD anticipates this will require no customer action once the storage device is interconnected

** These values are derived on proposed Solar and Storage Rate modeling and forecasted adoption rates. Budget and enrollment limitations may apply.*

Transforming and accelerating the energy storage market

- Today a 10-Kilowatt Hour (kWh) Battery costs approximately ~\$10,000 (includes installation costs and does not include other Federal / State incentives)
- SMUD is seeing industry forecasts that Battery prices will continue to drop to \$7,500 by 2027
- SMUD's \$2,500 Incentive will bring 2027 Battery prices forward to today so more customers can adopt these technologies earlier to help transform the industry



Note: 2027 storage forecast is a combination of Self Generation Incentive Program (SGIP) pricing trends and Guidehouse Insights pricing trends.

Summary of SMUD's Storage Incentives

Storage Incentives

Tier 1 Up to \$500
Direct Battery Incentive

Tier 2 Up to \$1,500
Critical Peak Pricing
(CPP) rate enrollment

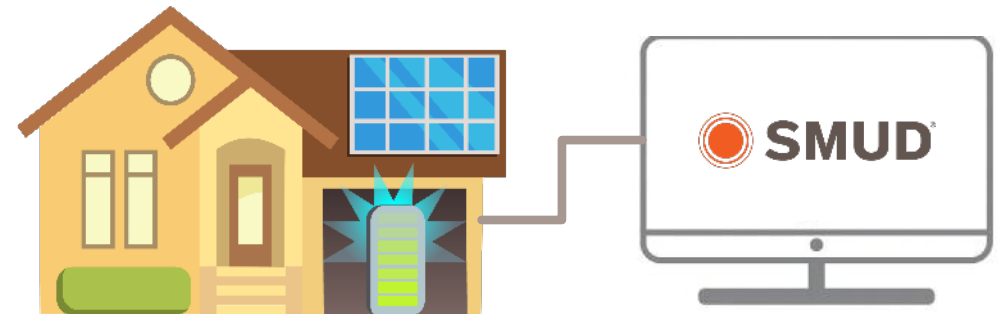
Tier 3 Up to \$2,500
Virtual Power Plant (VPP)
partners



Direct Battery



Critical Peak Pricing



Virtual Power Plant Partners

Solar and Storage Rate – Energy Sold Back to SMUD



The Smiths decided to purchase a solar + storage unit

- Reviews SMUD's three different storage programs
- Choose to become a Virtual Power Plant Partner with SMUD
- The Smiths pay a one-time upfront interconnection fee

Solar and Storage Rate – Energy Sold Back to SMUD



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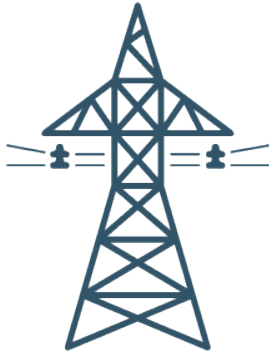
Whatever excess power the Smiths do not “self-consume” or store in their battery they can sell back to SMUD at **\$0.074/kWh** no matter the time of day or season.

Solar and Storage Rate – Energy Sold Back to SMUD

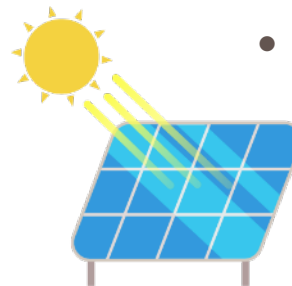


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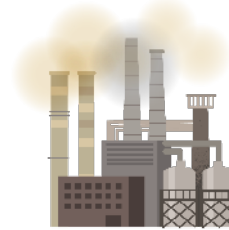


Whatever excess power the Smiths do not “self-consume” or store in their battery they can sell back to SMUD at **\$0.074/kWh** no matter the time of day or season.



What makes up the \$0.074/kWh?

- SMUD is recognizing Smith's excess energy avoids generating this power from a powerplant
- By avoiding powerplant generation SMUD can avoid the following related costs:



- Carbon
- Natural Gas
- Capacity (Transmission, Distribution, & Generation)

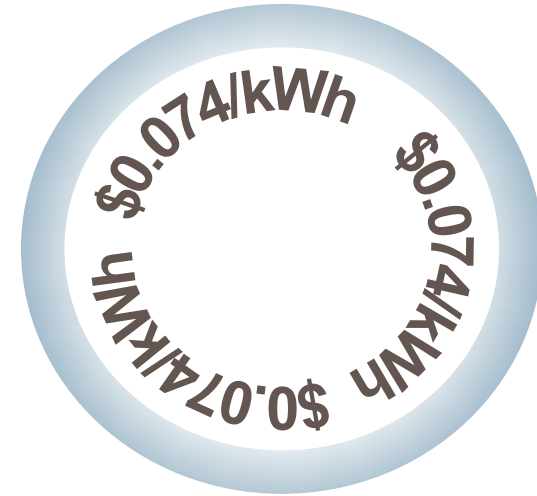
- SMUD is recognizing Smith's excess energy provides a **unique indirect benefit of avoiding disturbing land** for a utility size solar plant.

Solar and Storage Rate – Energy Sold Back to SMUD

There are several market forces that will influence the \$0.074/kWh value of excess generation:

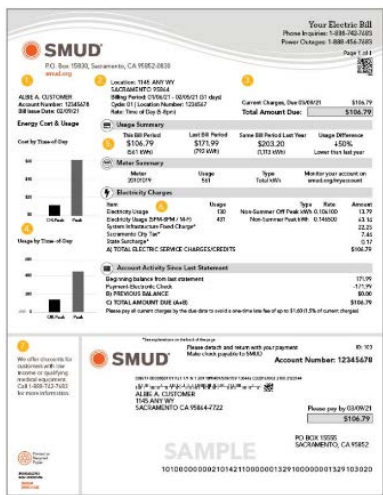
- More Electric Vehicles – (+)
- Electrification of the home – (+)
- Decarbonization of the grid – (+)
- Declining solar & storage prices – (-)

SMUD will reevaluate this value every 4 years and the value will not be revised more than +/- 30%.

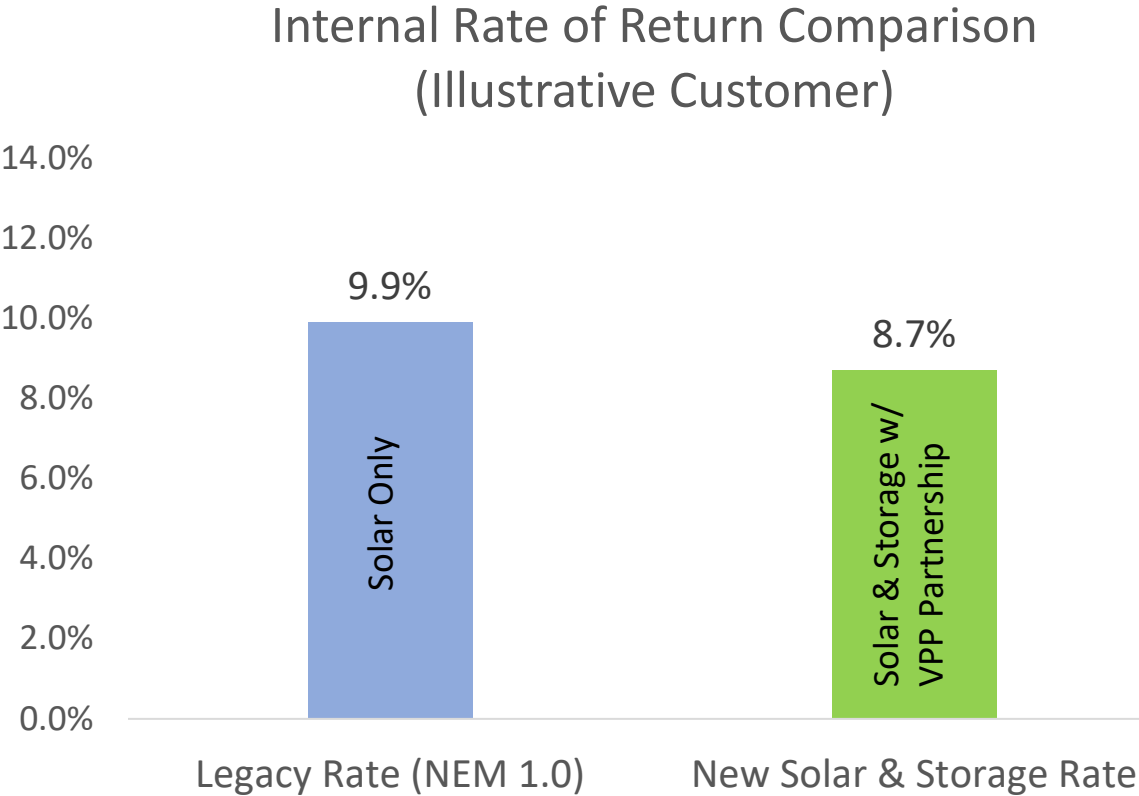


What does the Smith's bill look like before and after the Solar & Storage Rate (with programs)?

¹ Smith's Annual Bill	\$1,356
Solar & Storage + VPP Bill Savings	- \$968
<hr/>	
² Smith's New Annual Bill	\$388



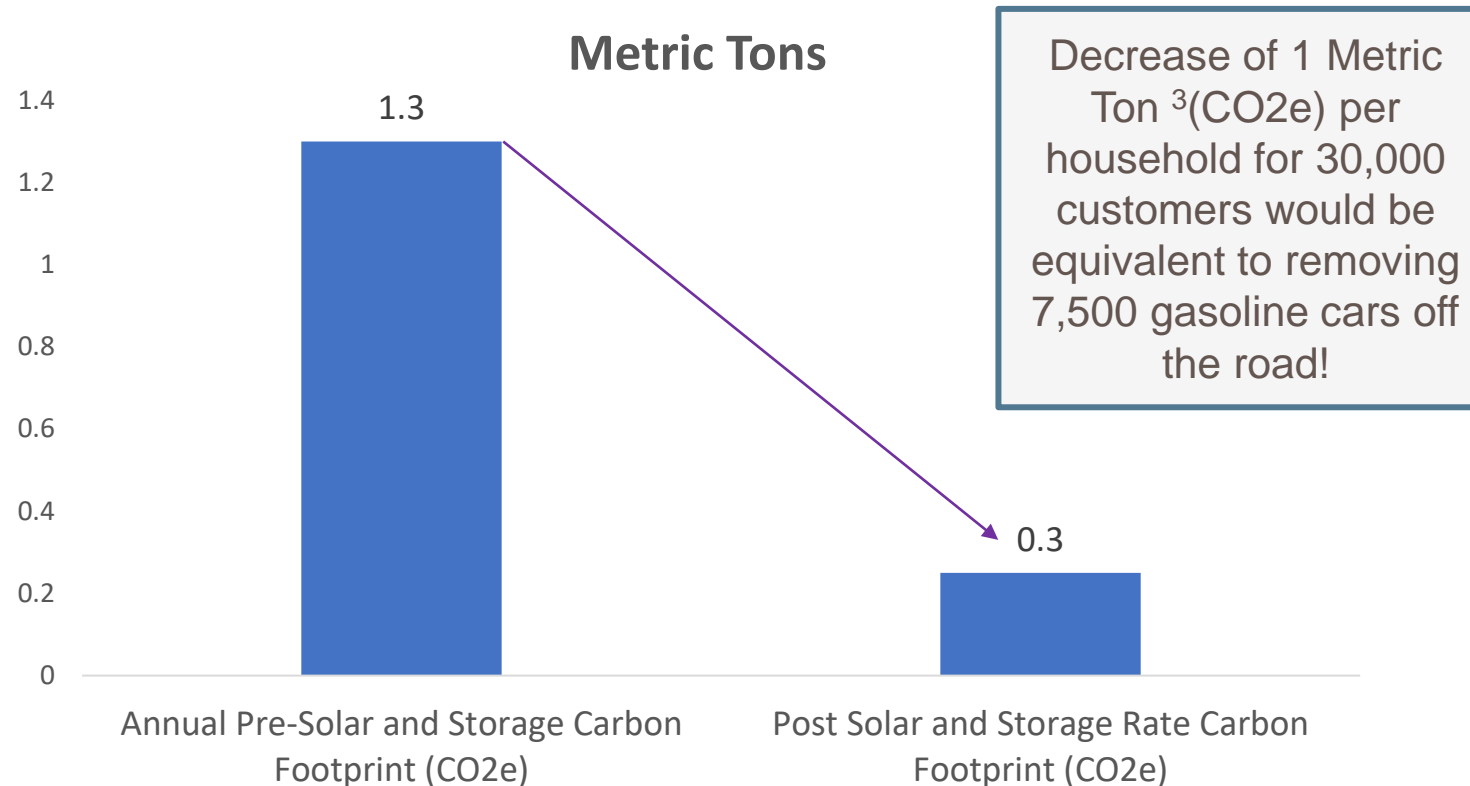
¹ Includes System Infrastructure Fixed Charge (SIFC)
² Illustrative example, this is not reflective for all customers



NOTE: Rate proposal recommends continued NEM 1.0 rate for existing customers through 2030.



What does Smith's carbon footprint look like before and after the Solar & Storage Rate (with programs)?



³ CO2e – Carbon Dioxide Equivalent term for describing different greenhouse gases in a common unit
<https://www.epa.gov/greenvehicles/greenhouse-gas-emissions-typical-passenger-vehicle>



UNDER
RESOURCED
COMMUNITIES

Virtual Net Energy Metering (VNEM)

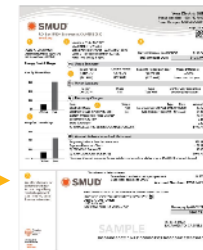
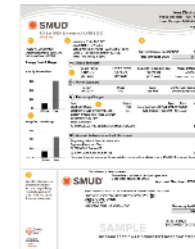
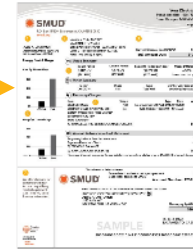
SMUD is committed to bringing the benefits of solar to under-resourced multi-family dwelling communities.



Under Resourced /
Affordable Housing On
Site Solar Generates
Energy



SMUD receives
solar generation and
allocates bill credits
to individual VNEM
customers

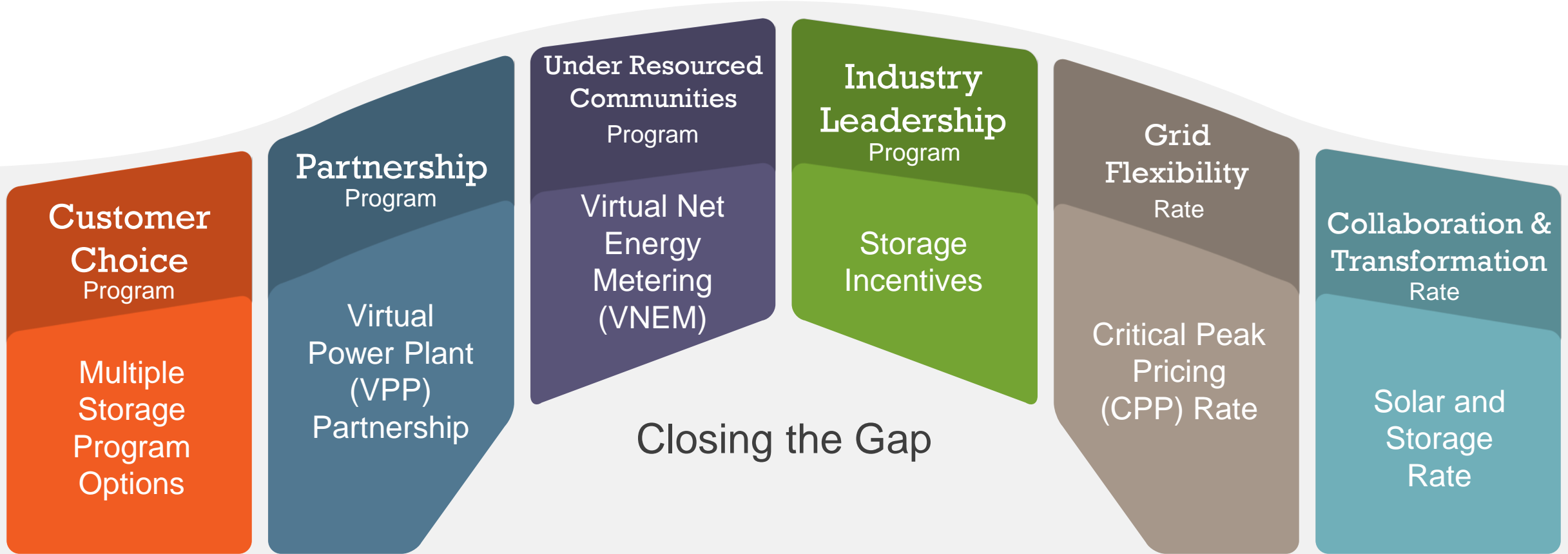


VNEM customers will receive a bill
credit from on site solar generation



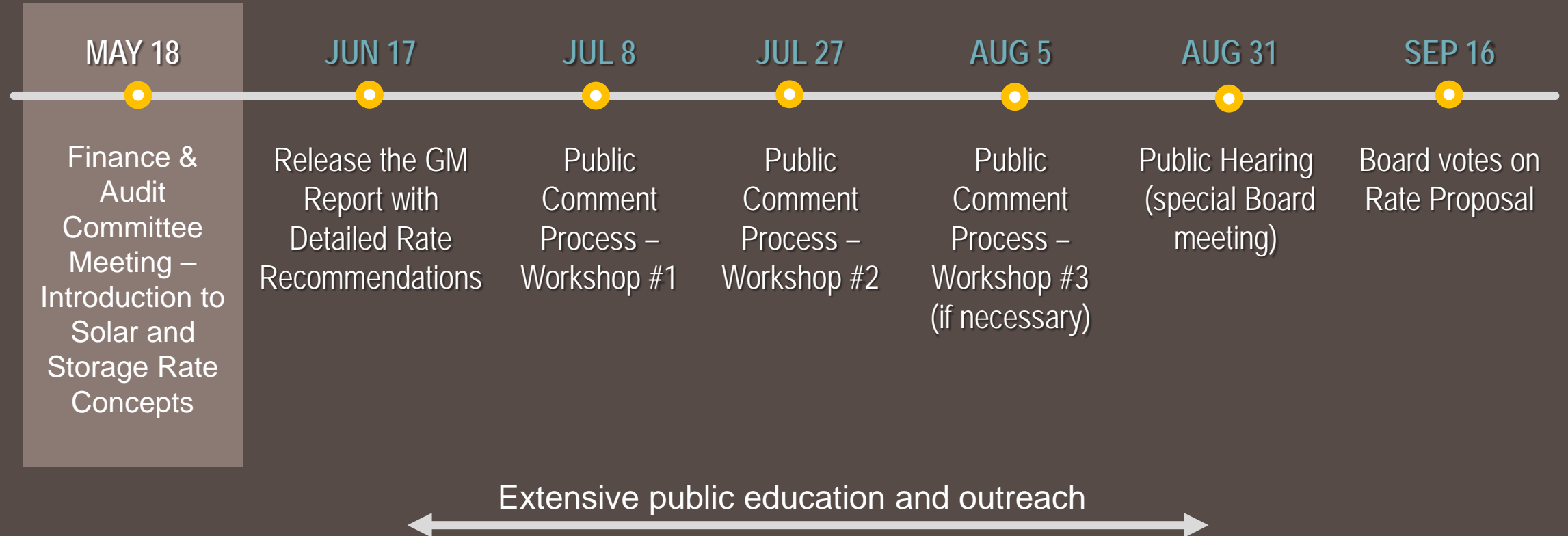
Eligible customers will continue to
receive Energy Assistance Program
Rate and/or MED Rate Discount

Path to a carbon-free future



Timeline of Solar and Storage Rate Process

2021



Questions?

