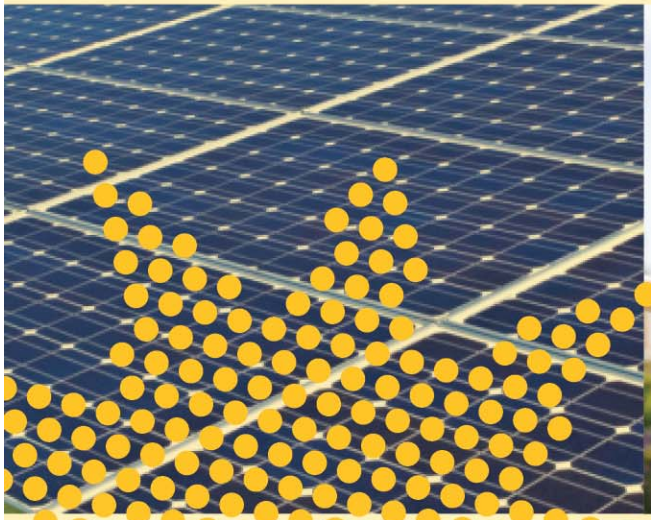
connected ••••• to the sun

Share the Sun℠ and SunRate℠ Workshop #1

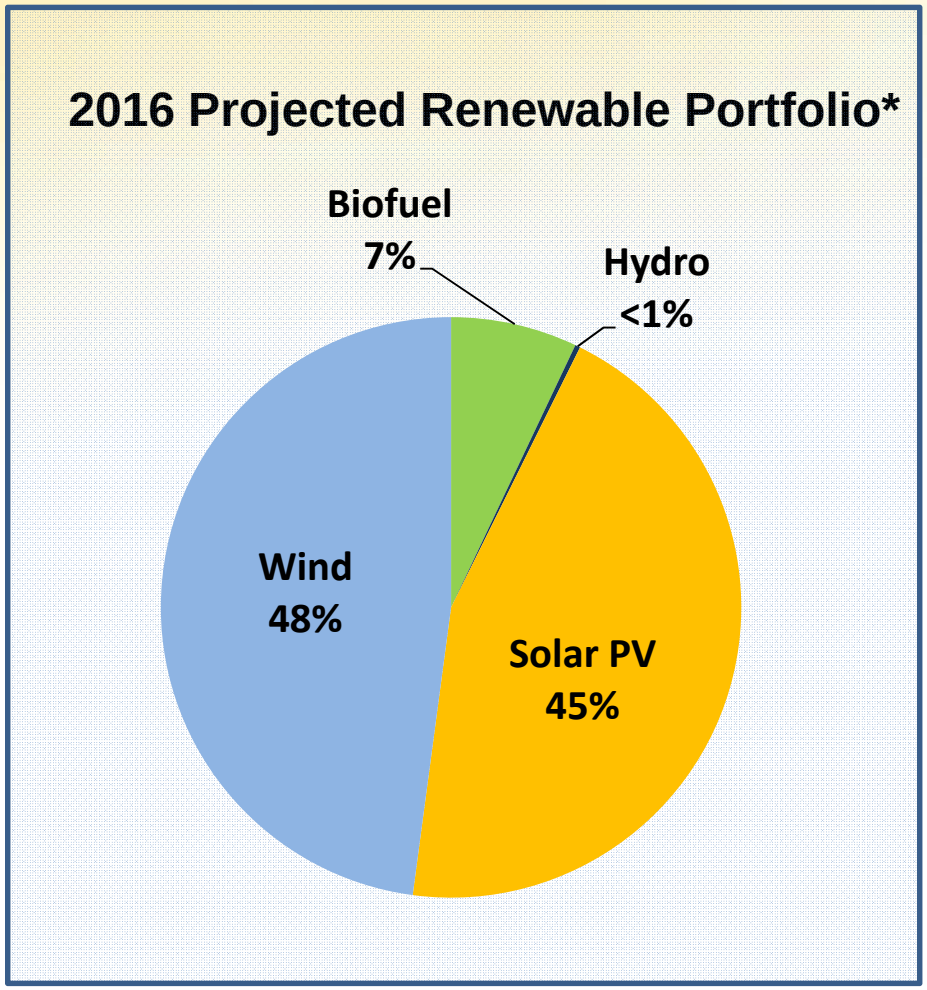
Monday, January 28, 2013 – 10:00 am



connected•••••to the sun: Day 1 Agenda

- Welcome Remarks and Introductions
- Agenda
- Ground Rules
- Program Overview
- Discussion on Program Pricing

connected••••to the sun: SDG&E's Commitment to Solar



- 33% renewable energy by 2020
- Over 1300 MW of solar PPAs contracted today as a part of our RPS
- Over 30 SDG&E-owned solar projects hosted by SDG&E customers
- 160 MW Net Energy Metering, over 21K customers
- Smart grid technologies provide platform for diverse energy supplies

* Contracted as 3/2012

connected••••to the sun: Listening to Our Customers

Our research has found:

- There is strong desire for SDG&E® to take initiative in protecting the environment
- SDG&E should offer a “green rate” program
- Our customers want to support solar energy

Preference for Renewable and Carbon Neutral Sources	
Souce	**%**
Solar	37%
No Preference	32%
Wind	16%
Nuclear	6%
Geo-Thermal	5%
Hydro-Electric	4%
Other	> 1%
Source: The Nielsen Company	

Nielsen Research – Energy Trends; October, 2009; 32,000 Respondents

connected•••••to the sun: Expanding Solar Access

- Rooftop solar installations have grown threefold since 2008
- Currently only 30% of SDG&E's customers can take advantage of rooftop solar either because of structural, shading or ownership issues
- *connected•••••to the sun* will expand solar access to all SDG&E customers and open up a new market for solar providers that complements rooftop solar

connected••••to the sun: Program Principles and Objectives

SDG&E to expand access to solar energy to customers, consistent with key principles:

1. Make solar energy available to all bundled customers, regardless of property ownership, income level, and credit rating
2. Facilitate a new market for solar providers
3. Maintain non-participant rate indifference
4. Protect consumers
5. Minimize costly grid impacts
6. Allow for market feedback to develop future innovative community solar projects based on solar provider/customer participation

connected••••to the sun: Connecting Customers to Solar Energy

- Expand solar access to customers by:
  - Eliminating the physical property limitations and reducing upfront costs of solar
  - Providing access to solar projects that have the benefits of optimal location, scope and scale
  - Providing customers options to choose the type of product and participation they prefer
- Create a sustainable market and new business opportunities for solar in SDG&E territory that does not rely on cross subsidies

connected••••to the sun:
Two Pilot Program Options

- SDG&E filed an application with the CPUC for *connected••••to the sun* on January 17, 2012.
- The application includes two pilot program elements:
  - *Share the Sun* allows bundled customers to work directly with solar providers to acquire rights to a portion of the energy produced by a specific solar power facility and receive a bill credit for the value of that energy.
  - *SunRate* allows bundled customers to buy some or all of their energy from local solar projects already under contract with SDG&E through a "green tariff."
- If the application is approved, the programs would be available to customers by 2014.

connected••••to the sun: Potential Benefits

- Expands local solar access and greater alternatives to all bundled SDG&E customers
- Removes site restrictions and building ownership as a hurdle to solar energy use
- Customers can lock-in their commodity price with a longer-term commitment
- May help customers achieve their sustainability goals and environmental requirements
- Allows customers to take their solar subscription with them when moving within SDG&E's service territory

connected••••to the sun: SunRate - How it Works

SDG&E's SunRate - for customers

SDG&E sets aside local solar projects under contract for customers

Customers can subscribe to buy solar energy for 50 percent, 75 percent, or 100 percent of their electricity use

Customers receive solar energy from SDG&E

connected••••to the sun: SunRate - Overview

SDG&E's green tariff supported by local solar projects

- Customers to match 50%, 75% or 100% of their electric consumption with local solar projects under contract with SDG&E
- Customers can lock-in their commodity price with a longer-term commitment
- 10MW allocation proposed for this pilot program (SDG&E will request CPUC to expand if successful and customer demand continues)

connected••••to the sun: SunRate - Enrollment

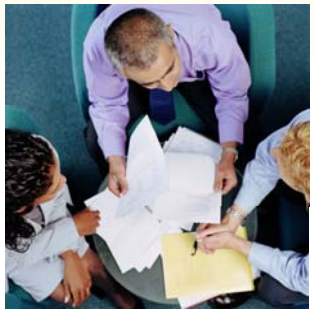
Customers could enroll online or by calling SDG&E

- Customers work directly with SDG&E
- Goal is to empower customers to make an informed decision and for enrollment to be easy to complete
- Customers could subscribe monthly (minimum of a 1 year term), or lock in a longer subscription for 5, 10 or 15 years
- SDG&E website's will include enrollment tools

connected••••to the sun: Share the Sun - How it Works

Share the Sun - for solar providers and customers

Solar provider constructs projects in San Diego



Customers acquire rights to the facility's capacity from a participating solar provider

Customers receive solar energy and a credit on their monthly bill from SDG&E

connected••••to the sun: Share the Sun - Overview

Community solar expands solar access to all bundled customers:

- Customers have new solar options - can work directly with the solar provider that best fits their needs
- Customers can acquire an interest up to 200% of their annual electric usage
- Customers can lock-in their solar commodity price with a longer-term commitment
- Customers can commit to renewable energy in small or large increments to suit their energy needs

connected••••to the sun: Share the Sun - Overview

Community solar creates a new market for solar providers:

- Affords flexibility for various business models, subject to certain requirements
- Solar providers to construct and sell rights to the capacity of their solar facilities to SDG&E customers
- Solar providers can identify and develop their own project sites or potentially utilize SDG&E land through a solicitation process
- SDG&E to purchase all energy from the solar provider at the renewable Feed-in-Tariff ("FiT") rate

connected••••to the sun: Share the Sun - Overview

- Solar providers may build up to a 3MW facility; limited to 1MW until the project is 80% subscribed
- Pilot program size is up to 10 MW total (SDG&E will request CPUC to expand if successful and customer demand continues)
- SDG&E will apply unsubscribed energy towards its RPS
- SDG&E automatically allocates facility's generation among participants/Provider and delivers bill credit to customer

connected••••to the sun: Share the Sun - Enrollment

Customers will work directly with solar providers to enroll

- Customers will tailor their subscription agreement by working with the solar provider directly
- Goal is to empower customers to make an informed decision and for enrollment to be easy to complete
- Customers could subscribe for 5, 10 or 15 years
- With input from stakeholders, SDG&E website could include enrollment tools, customer's program agreement, FAQs and other program information

connected••••to the sun: Solar Energy Pricing Design

- Both programs allow customers to buy solar energy from SDG&E
  - SunRate – local solar already under contract to SDG&E
  - Share the Sun – the customer's specific Share the Sun facility
- The solar energy cost paid by customers is based on:
  - SunRate – the average cost of local solar
  - Share the Sun – customer's cost depends on arrangement with solar provider

connected••••to the sun:
Program Subscription Payment - SunRate example

- Customers will pay for their program subscription through a monthly charge on their SDG&E bill
- If the solar cost is higher than SDG&E's average commodity cost, the customer will see an additional charge

Illustrative Example:

Solar Energy Cost* $/kWh	$ 0.130
SDG&E Average Commodity Cost $/kWh	($ 0.068)
SunRate Energy Payment or (Credit)	**$ 0.062**

*Net Energy Cost as Explained on Slide 19

connected••••to the sun: Solar Energy Cost - SunRate example

- Comprised of three components:
  - The cost of local solar
  - A charge to ensure the remaining bundled customers are indifferent
  - An adjustment to account for the value of the solar energy as compared to the value of SDG&E's average commodity

Cost of Local Solar*	$ 0.127
Power Charge Indifference Adjustment (PCIA)	$ 0.009
Solar Value Adjustment	$ (0.006)
Solar Energy Cost	**$ 0.130**

*Based on SDG&E's current weighted average cost of local solar

connected•••••to the sun:
Power Charge Indifference Adjustment (PCIA)

- *connected•••••to the sun*: programs avoid cost shifts to bundled customers who choose not to participate in the program through the following Adjustments:

1. Applying Power Charge Indifference Adjustment (PCIA)
   - Recover participant's share of any above-market costs associated with the balance of SDG&E's resources that had been procured to serve them
   - Simplify customer participation choice by levelizing the PCIA

2. Adjustment to account for differences in the value of the solar energy allocated to the programs and the value of the energy from the balance of SDG&E resources
   - Ensures any incremental value associated with solar energy from connected….. to the sun projects goes to program participants
   - Will avoid cross-subsidies among customers and permit long-term, sustainable growth of these programs

connected•••••to the sun: Solar Value Adjustment - Capturing a Solar System's Generation Profile (Energy Value)

- A relative look between the ratio of on-peak and off-peak energy of the program resource and the balance of resources in SDG&E's portfolio captures the difference in the energy value

Energy Value of Program Resource Year: 2011		**SDG&E Balance of Portfolio**	**SDG&E Program Resource***	
SP15 SDG&E: October 1 through October 31	Avg. On-peak Price	$40.00		$/MWh
	Avg. Off-peak Price	$25.00		$/MWh
Provided by SDG&E	On-peak Weight	65%	85%	
	Off-peak Weight	35%	15%	
	Weighted Price	**$34.75**	**$37.75**	**$/MWh**
	Incremental Adjustment to PCIA		**$3.00**	**$/MWh**

** Assumes a solar resource with a with a generation profile that delivers 86% of it's energy during peak hours*

connected•••••to the sun: Solar Value Adjustment - Capturing a Solar System's Generation Profile (Capacity Value)

- A relative look between the ratio of MW/MWh of the program resource and the balance of resources in SDG&E's portfolio captures the difference in the capacity value

Capacity Value of Program Resource

	Balance of Portfolio	Program Resource*	Adjustment	
Portfolio Generation (GWh)	18,000,000	21,900	NA	**MWh**
Portfolio (MW)	4,000	6	NA	**MWh**
Embedded Capacity	0.00022	0.00027	0.00005	**MWh**
Capacity Cost	$ 50,170	$ 50,170	$ 50,170	**$/MWh-yr**
Capacity Value	$ 11.15	$ 13.75	$ 2.60	**$/MWh**
		Incremental Adjustment to PCIA	**$2.60**	**$/MWh**

** Assumes a solar resource with a 25% capacity factor and resource adequacy as a percentage of nameplate of 60%*

connected••••to the sun: SunRate Customer Bill Mechanics

	Component	Electricity Delivery			Rate/kWh		Charge Amount
Standard Customer Bill							
Variable Rates	**Commodity**	**200**	**kWh**	**x**	$ 0.068	=	$ 13.60
	Transmission and Distribution (T&D)	**200**	**kWh**	**x**	$ 0.075	=	$ 15.00
				Total Electric Charges			**$ 28.60**
Add the Solar Energy Cost							
Fixed Rate for Contract Term	**Cost for Local Solar**	**200**	**kWh**	**x**	$ 0.127	=	$ 25.40
	Power Charge Indifference Adjustment	**200**	**kWh**	**x**	$ 0.009	=	$ 1.80
	Solar Value Adjustment	**200**	**kWh**	**x**	$ (0.006)	=	$ (1.20)
				SunRate Total	*$ 0.130*		$ 26.00
Subtract the Average Commodity Cost							
Variable Energy Cost	**Average Commodity Cost**	**200**	**kWh**	**x**	$ (0.068)	=	$ (13.60)
				Total SunRate Charge or Credit	**$ 0.062**		**$ 12.40**
						Total Electric Service	**$ 41.00**

connected•••••to the sun: SunRate Pricing and Rate Design

A customer's fixed commodity cost depends upon how many years they subscribe for

Subscription (Years)	1	5	10	15
SunRate Local Solar Cost $/kWh	$0.127	$0.127	$0.127	$0.127
Levelized PCIA $/kWh	$0.009	$0.012	$0.013	$0.013
Solar Value Adjustment $/kWh	($0.006)	($0.006)	($0.006)	($0.006)
Fixed SunRate Commodity Cost $/kWh	**$0.130**	**$0.133**	**$0.134**	**$0.134**

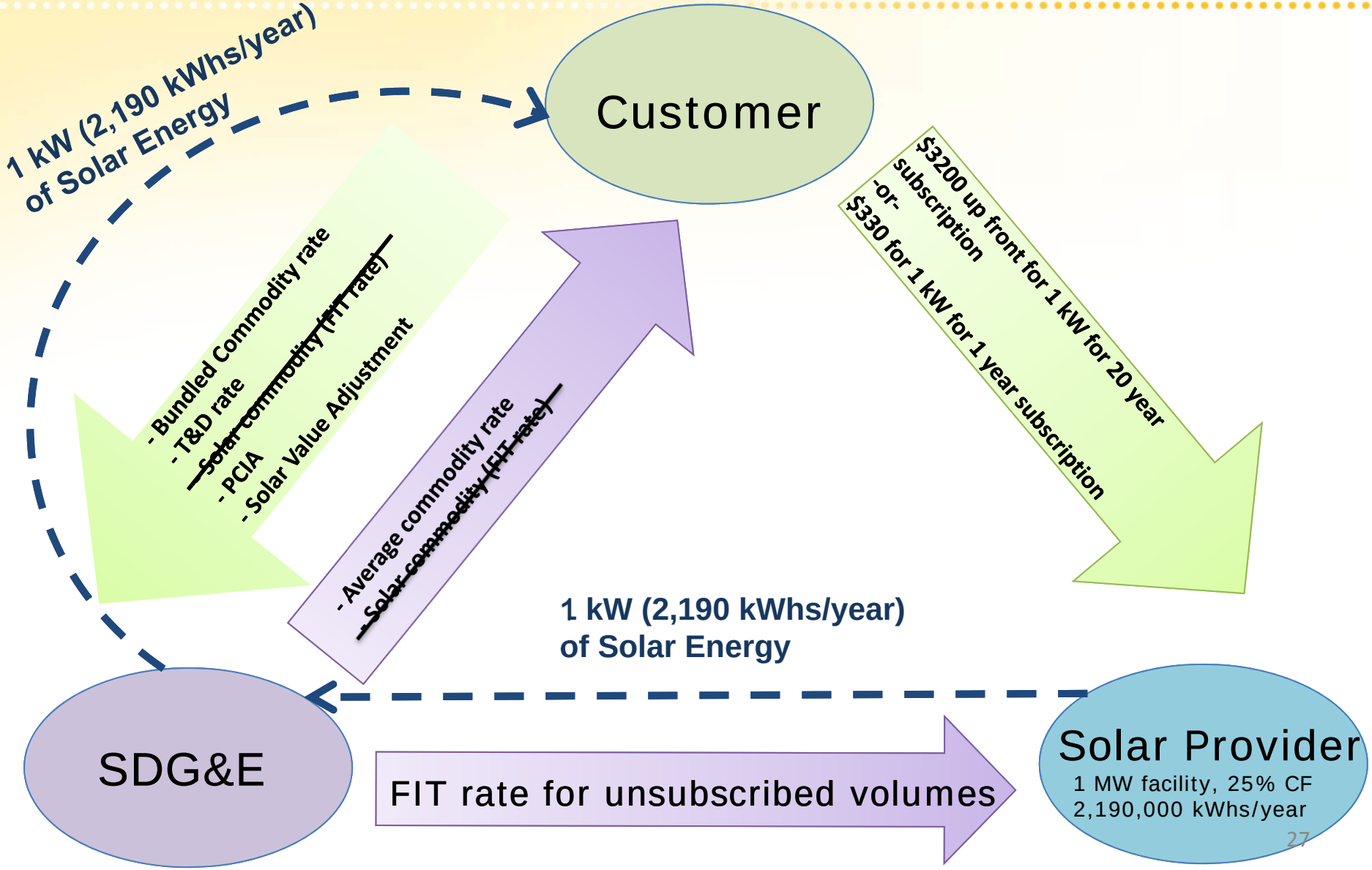
A customer's premium cost or savings in a given year depends upon what happens to commodity costs over time

Subscription (Years)	2014	Increase in Avg Comm Cost	Decrease in Avg Comm Cost
SunRate Commodity Cost $/kWh*	$0.134	$0.134	$0.134
Customer Avoided Avg Commodity Cost	($0.079)	($0.150)	($0.050)
Resulting Premium Cost	**$0.055**	**($0.016)**	**$0.084**
Monthly Premium 500 kWh Customer	**$27.50**	**($8.00)**	**$42.00**
*Represents a 15-year subscription			

connected••••to the sun: Share the Sun Customer Bill

- Includes the same components as SunRate but with a few adjustments:
  - Solar Energy Cost
    - Replace the local solar energy cost with the applicable FiT cost
  - Credit the customer the FiT cost
    - The customer has acquired the interest from the solar provider and the solar provider then assigns the FiT payment from SDG&E to the customer as a bill credit
    - The customer economics then depend upon the arrangement with the solar provider

connected•••••to the sun:
Money/Energy Flow Example – Share the Sun



connected••••to the sun:
Share the Sun Customer Bill Mechanics

	Component	Electricity Delivery			Rate/kWh		Charge Amount
Standard Customer Bill							
Variable Rates	**Commodity**	**200**	**kWh**	**x**	$ 0.068	=	$ 13.60
	Transmission & Distribution (T&D)	**200**	**kWh**	**x**	$ 0.075	=	$ 15.00
	Total Electric Charges						**$ 28.60**
Add the Share the Sun Energy Cost							
Fixed Rate for Contract Term	**FiT Pricing (Paid by Customer)**	**200**	**kWh**	**x**	$ 0.089	=	$ 17.80
	Power Charge Indifference Adjustment	**200**	**kWh**	**x**	$ 0.009	=	$ 1.80
	Solar Value Adjustment	**200**	**kWh**	**x**	$ (0.006)	=	$ (1.20)
	Share the Sun Solar Energy Cost				*$ 0.092*		$ 18.40
Subtract the Share the Sun Bill Credits							
Variable Energy Cost	**Average Commodity Cost**	**200**	**kWh**	**x**	$ (0.068)	=	$ (13.60)
Fixed Rate for Contract Term	**FiT Pricing (Credited to Customer/Paid to Solar Provider)**	**200**	**kWh**	**x**	$ (0.089)	=	$ (17.80)
	Share the Sun Bill Credit				*$ (0.157)*		$ (31.40)
	Total Share the Sun Charge or Credit				**$ (0.065)**		**$ (13.00)**
	SDG&E Total Electric Service						**$ 15.60**
	Price of Energy Rights Purchased by Customer						**?**
	Customer's Total Cost						**?**

Share the Sun:
SB32 FiT as the Basis for Share the Sun Pricing

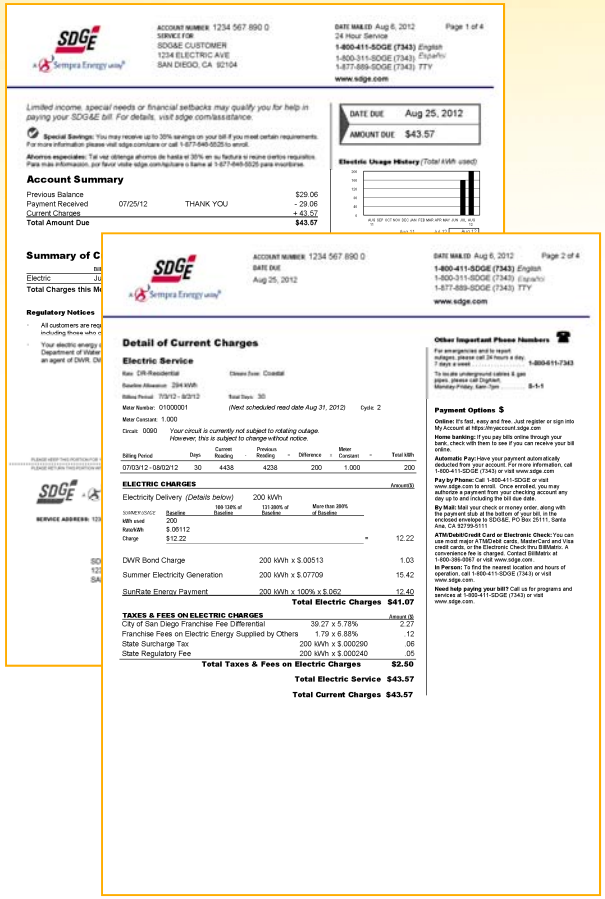
- Using FiT price discourages gaming between Share the Sun and FiT
- In order for SDG&E to count the unsubscribed volumes from Share the Sun towards its FiT targets, it must apply the FiT price to both programs
- Transparent source
- Intended to represent approximate market price

connected•••••to the sun: Early Termination Fees

- Comprised of above-market costs associated with the participant's subscription of solar energy plus any administrative costs
- Calculated as a present value of forecasted difference between cost of local solar and the sum of the market price benchmark in:
  - PCIA calculation
  - Renewable premium in the PCIA
  - Adjustments made in Section II to account for the value of solar energy and administrative costs

1. The MPB is escalated with Henry Hub natural gas prices
2. Renewable premium is set at that year's vintage value in the PCIA and fixed over the remaining subscription item
3. Solar adjustments are set at that year's values and fixed over the selected term
4. The discount rate used to calculate the present value is the then applicable SDG&E rate of return

SunRate: Sample Bill Illustration



Billing Period	Days	Current Reading	-	Previous Reading	=	Difference	x	Meter Constant	=	Total kWh
07/03/12 - 08/02/12	30	4438		4238		200		1.000		200

ELECTRIC CHARGES — Amount($)

Electricity Delivery *(Details below)* 200 kWh

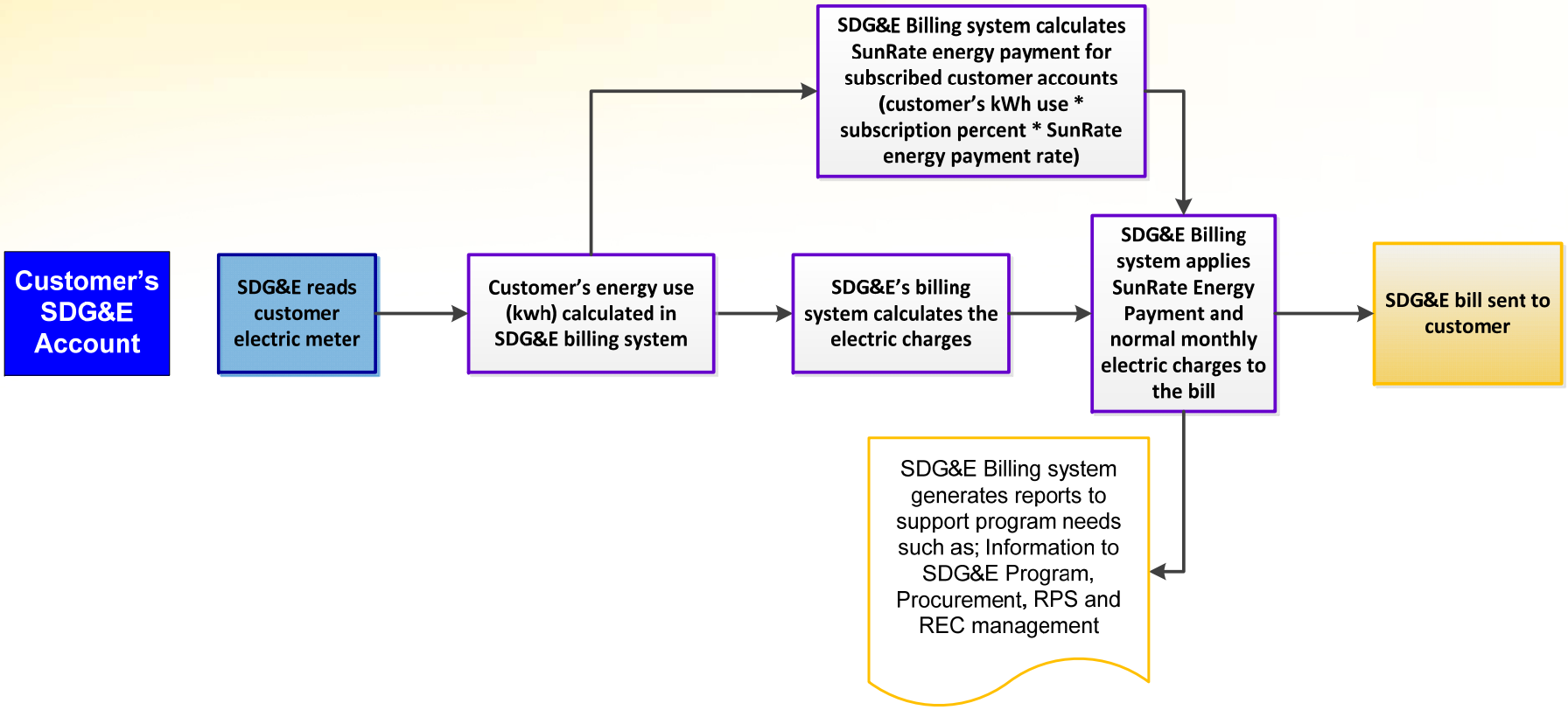
SUMMER USAGE	Baseline	100-130% of Baseline	131-200% of Baseline	More than 200% of Baseline	
kWh used	200				
Rate/kWh	$.06112				
Charge	$12.22				= 12.22

DWR Bond Charge	200 kWh x $.00513	1.03
Summer Electricity Generation	200 kWh x $.07709	15.42
SunRate Energy Payment	200 kWh x 100% x $.062	12.40
Total Electric Charges		**$41.07**

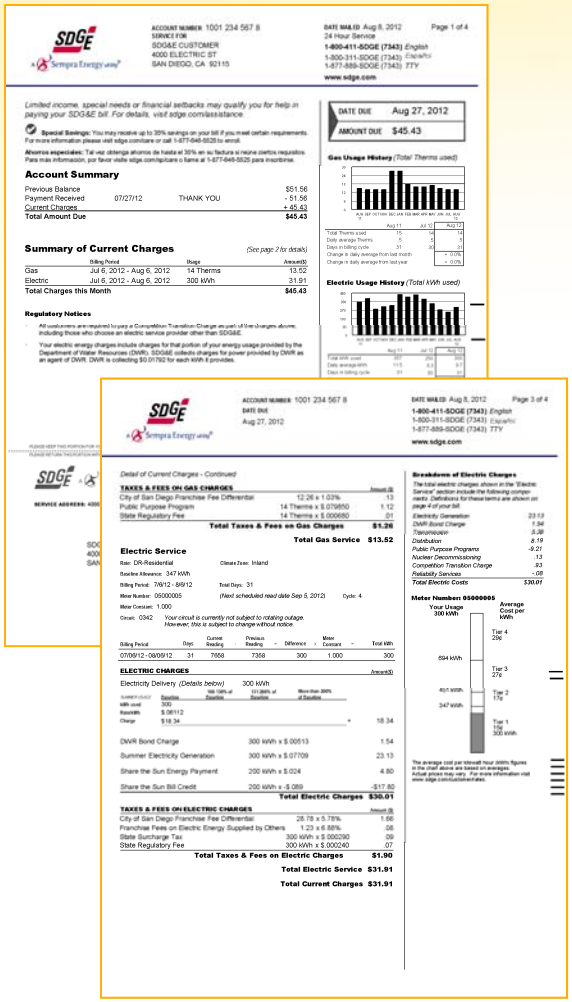
TAXES & FEES ON ELECTRIC CHARGES — Amount ($)

City of San Diego Franchise Fee Differential	39.27 x 5.78%	2.27
Franchise Fees on Electric Energy Supplied by Others	1.79 x 6.88%	.12
State Surcharge Tax	200 kWh x $.000290	.06
State Regulatory Fee	200 kWh x $.000240	.05
Total Taxes & Fees on Electric Charges		**$2.50**
Total Electric Service		**$43.57**
Total Current Charges		**$43.57**

connected•••••to the sun: SunRate Billing Process Flow



Share the Sun: Sample Bill Illustration



Billing Period	Days	Current Reading	-	Previous Reading	=	Difference	x	Meter Constant	=	Total kWh
07/06/12 - 08/06/12	31	7658		7358		300		1.000		300

ELECTRIC CHARGES — Amount($)

Electricity Delivery *(Details below)* 300 kWh

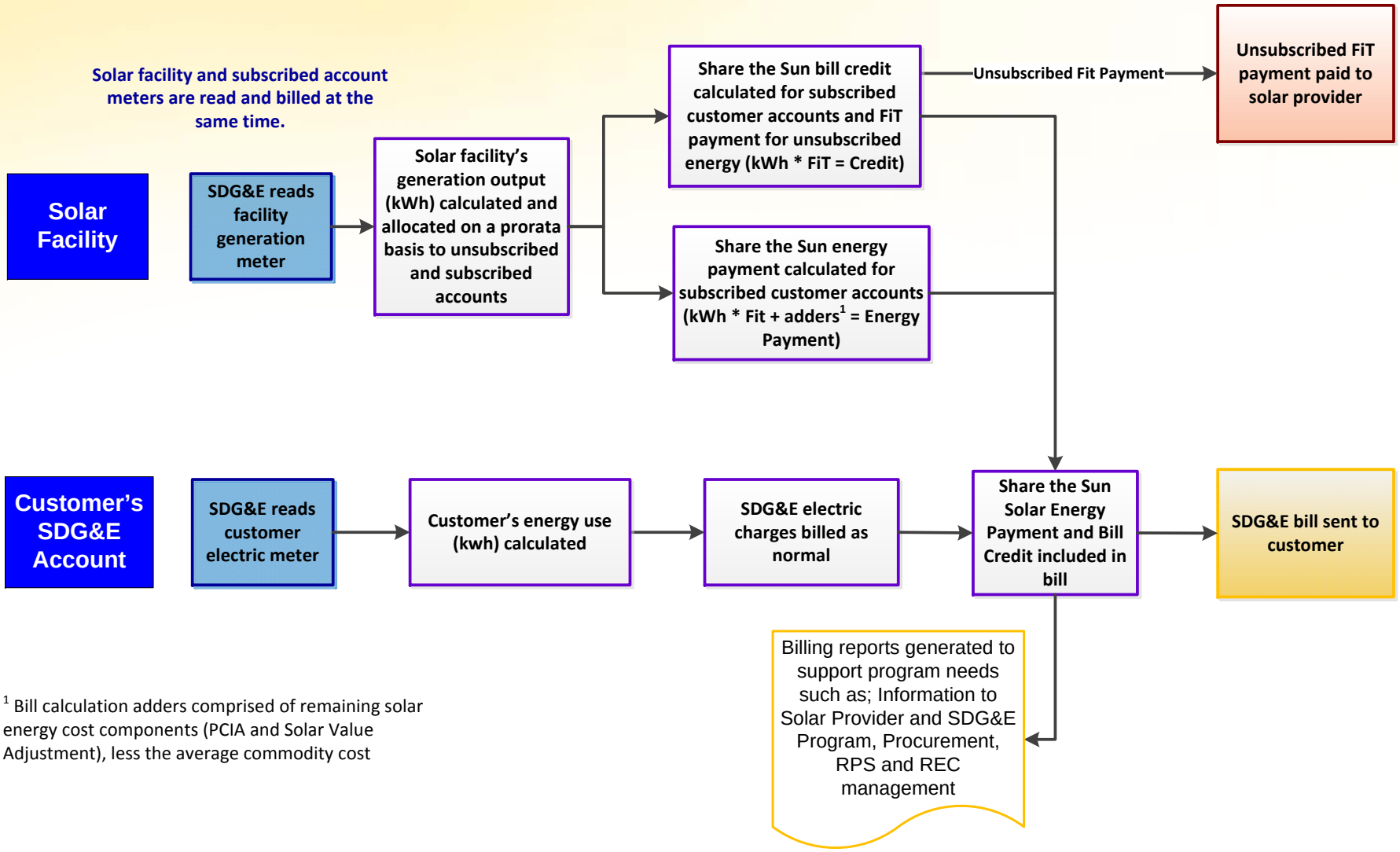
SUMMER USAGE	Baseline	100-130% of Baseline	131-200% of Baseline	More than 200% of Baseline		
kWh used	300					
Rate/kWh	$.06112					
Charge	$18.34				=	18.34

DWR Bond Charge	300 kWh x $.00513	1.54
Summer Electricity Generation	300 kWh x $.07709	23.13
Share the Sun Energy Payment	200 kWh x $.024	4.80
Share the Sun Bill Credit	200 kWh x -$.089	-$17.80
	Total Electric Charges	**$30.01**

TAXES & FEES ON ELECTRIC CHARGES — Amount ($)

City of San Diego Franchise Fee Differential	28.78 x 5.78%	1.66
Franchise Fees on Electric Energy Supplied by Others	1.23 x 6.88%	.08
State Surcharge Tax	300 kWh x $.000290	.09
State Regulatory Fee	300 kWh x $.000240	.07
	Total Taxes & Fees on Electric Charges	**$1.90**
	Total Electric Service	**$31.91**
	Total Current Charges	**$31.91**

connected•••••to the sun: Share the Sun Billing Process Flow



[1] Bill calculation adders comprised of remaining solar energy cost components (PCIA and Solar Value Adjustment), less the average commodity cost

connected•••••to the sun: Day 1 Summary and Tomorrow's Agenda

- Questions
- Areas of Consensus
- Topics for Further Discussion
- Day 2 Agenda

Thank you for your participation!