



STRATEGIC UPDATE

PRESENTED BY
Paula Gold-Williams,
President & CEO

March 6, 2018

Informational Update

AGENDA

**PART 1: THOUGHT
LEADERSHIP /
FLEXIBLE PATH**

**PART 2:
POTENTIAL SOLAR
OPTION FOR COSA**

2ND ANNUAL FUTURE OF ENERGY SYMPOSIUM

WE HAD:

- Great External Speakers
- Updates from our Sr. Chiefs
- City & State Congressional Guests
- Social Media
- **PRESS CONFERENCE** on Smart City



Ralph Cavanagh
Natural Resources Defense
Council
San Francisco, CA



Dr. Massoud Amin
University of Minnesota
Minneapolis, MN



Clint Vince
Dentons
Washington, D.C.



Dr. Jeffery Addicott
St. Mary's University
San Antonio, TX



Ofir Hason
CYBERGYM
Tel Aviv, Israel

#FutureOfEnergySA



2ND ANNUAL FUTURE OF ENERGY SYMPOSIUM



Paula Gold-Williams kicked off the 2nd Annual Future of Energy Symposium

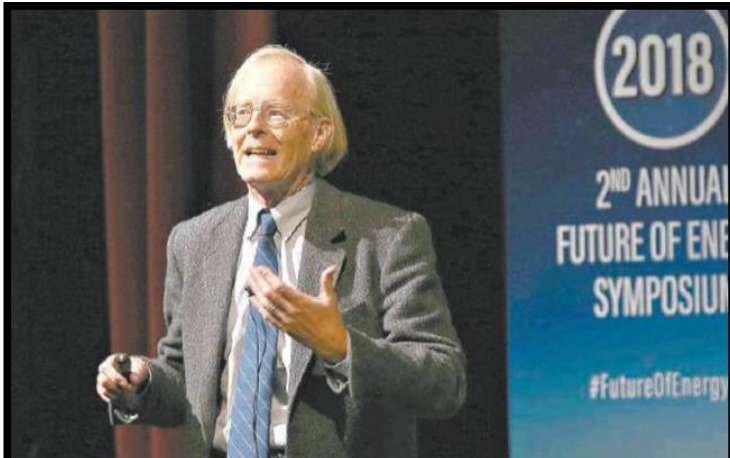


Dr. Cris Eugster hosted a panel on energy & its foundational role for our smart city with guests Dr. Massoud Amin and Clint Vince



Mayor Ron Nirenberg discussed our path for moving our city forward, thru focuses on climate, renewables & other emerging topics.

2ND ANNUAL FUTURE OF ENERGY SYMPOSIUM



Dr. Cavanagh explained how federal policy on home appliances has supported energy conservation. Then he & I discussed how gas is an important value proposition for SA.



“FELECIA TALKS:” Our Chief Customer Engagement Officer (CCEO) explained how *the voice of the customer* was anchoring our path forward.

DEVELOPING A FLEXIBLE FUTURE



Traditional power plants play an important role in firming up renewables until energy storage reaches utility scale

Now: Renewables and Traditional Generation



Future: Renewables and Energy Storage

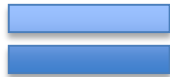


Currently not economical.

WHY FLEXIBLE?

Traditional (Historical)

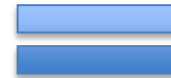
- **Predictable customer load**
- **Predictable customer growth**
- **Consistent generation levels**



40+ Year Baseload Assets
Traditional Power Plants

Flexible (Future)

- **Energy Efficiency**
 - Equipment using less energy
 - Declining use per customer
- **More Potential for Renewables**
 - Intermittency in generation
 - Renewables serving off-peak hours
- **New technologies on the horizon**



Need Ability to Adapt
Flexible Generation Path

FLEX PLAN KEY ASSUMPTIONS



The Flexible Generation Path allows for updates in strategic direction as technologies & customer needs change

WILL CONSIDER & ASSESS:

- Moving up shut down of JK Spruce 1 to 2030 from 2047
- Removing the JK Spruce 1 coal unit SCR* from business plan & budget
- Extending life of Combined Cycle plants (AVR & Rio Nogales) additional 8 years
- Adding 4,100 MW of renewables by 2040 (in addition to current 1,600 = 5,700 MW)
- Adding 550 MW of battery storage (duration increased from 1 to 4 hours discharge)
- Including Flexible Generation build in smaller increments to fill remaining load forecast gap
 - **MAJOR CONSIDERATION:** “Price to Beat” based on Natural Gas Combined Cycle (NGCC) - \$ per MWh & capacity factor

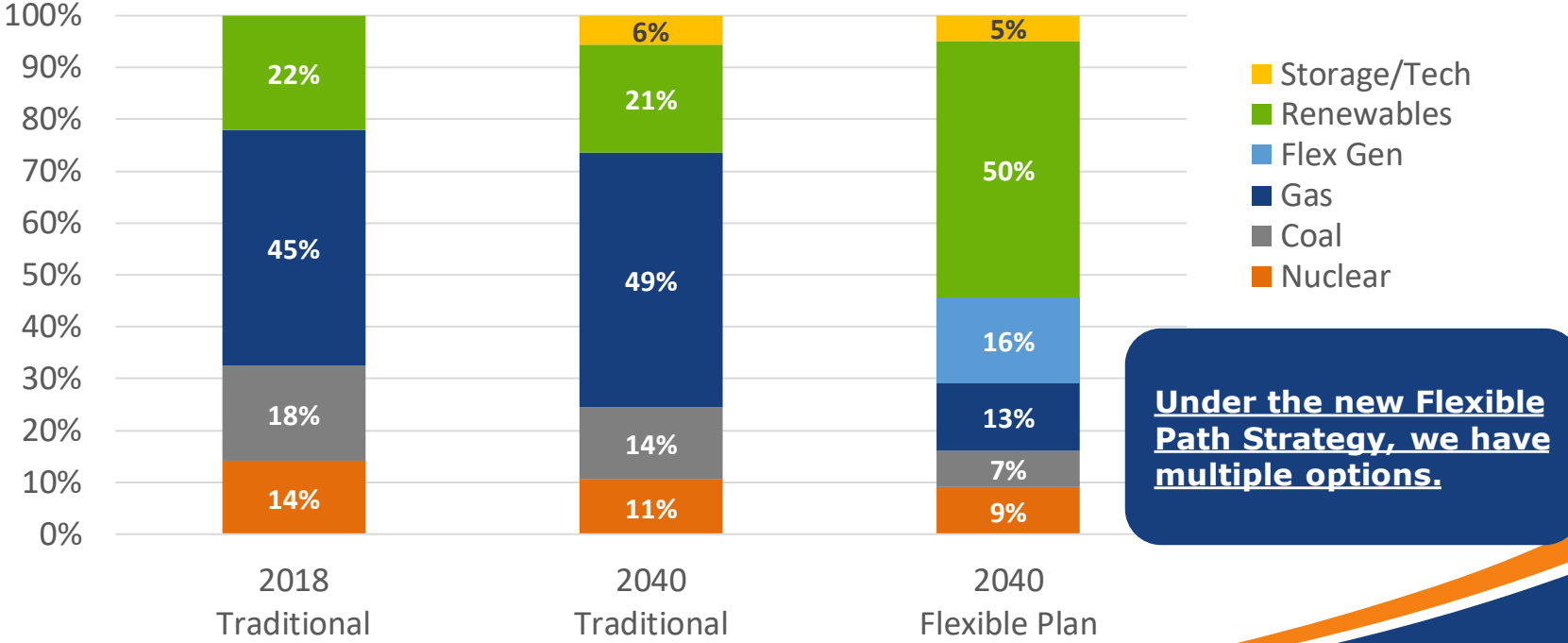
* Selective Catalytic Reduction (Reduces NOx)

FLEXIBLE PATH STRATEGY - CAPACITY MIX



Natural Gas combined cycle provides the baseline pivot within the Flexible Path Strategy. Will adjust our plan when competing technology provides more benefit.

Nameplate Mix

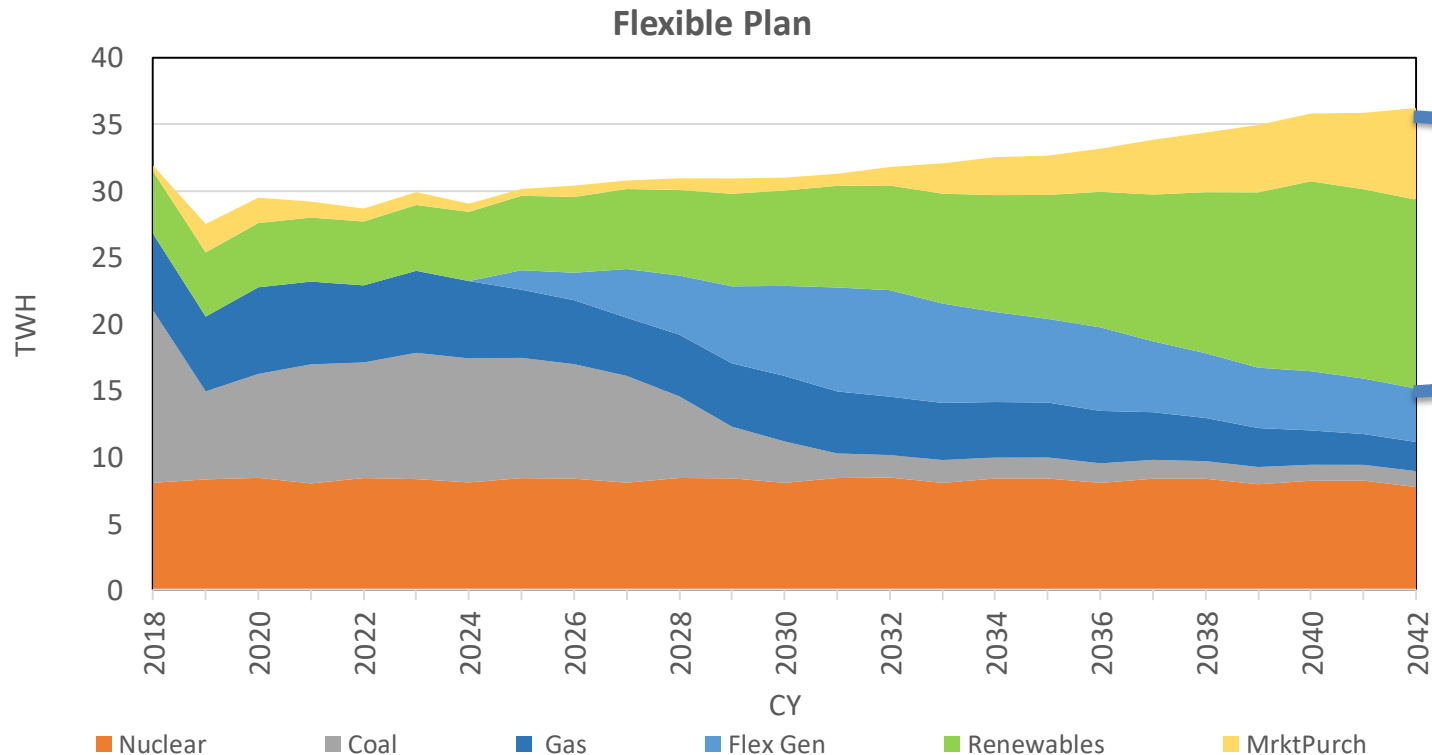


Under the new Flexible Path Strategy, we have multiple options.

FLEXIBLE PATH STRATEGY – ALL GEN MIX (TWh)



While we're not projecting to be long in generation, especially if Distributed Generation materializes, we will ensure that a balanced portfolio approach is maintained.



Market purchases could be renewables.

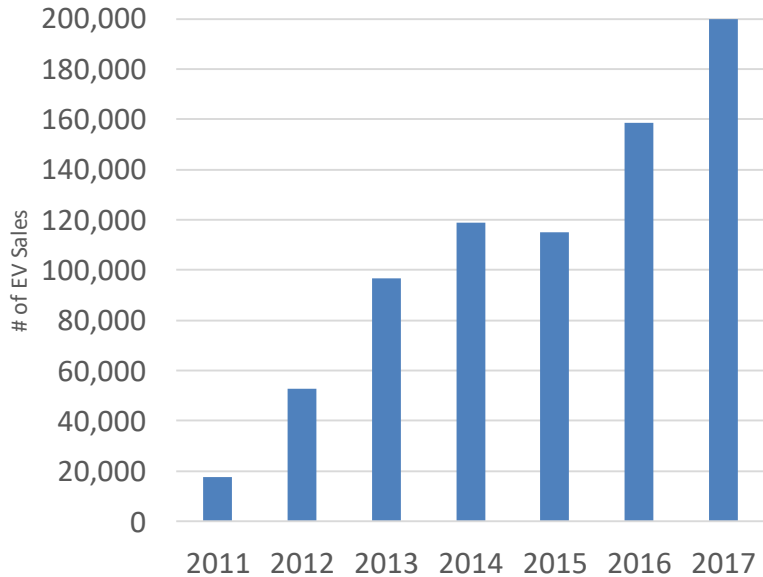
A flexible path strategy with renewable and market purchase options.

ELECTRIC VEHICLES (EVs)



OTHER NEW OPPORTUNITY!

U.S. EV Sales



- U.S. EV sales are growing, but are only about 1% of total U.S. vehicle sales.
- EV sales are predicted to be over 50% of new car sales by 2040.

ELECTRIC VEHICLE CHARGING STATION LOCATIONS



City & County

- Libraries
- Public Garages
- County Services
- Community College
- Port SA



Education

- UTSA
- ACCD



Additional Locations

- Hospital & Medical Clinics
- Grocery Stores & Malls
- Entertainment
- Workplace

ELECTRIC VEHICLE CHALLENGES



- Unauthorized commercial EV charging stations are operating in the Greater San Antonio Area, creating the following risks:
 - Customers being charged high rates for use of these stations
 - Creates potential public and employee safety hazards if the interconnection is not set up properly
 - Owners of these stations violate the law by reselling electricity in the area powered by CPS Energy
- CPS Energy is currently developing a framework for installation of charging stations by authorized vendors where they are needed

MORE ROOFLESS SOLAR!

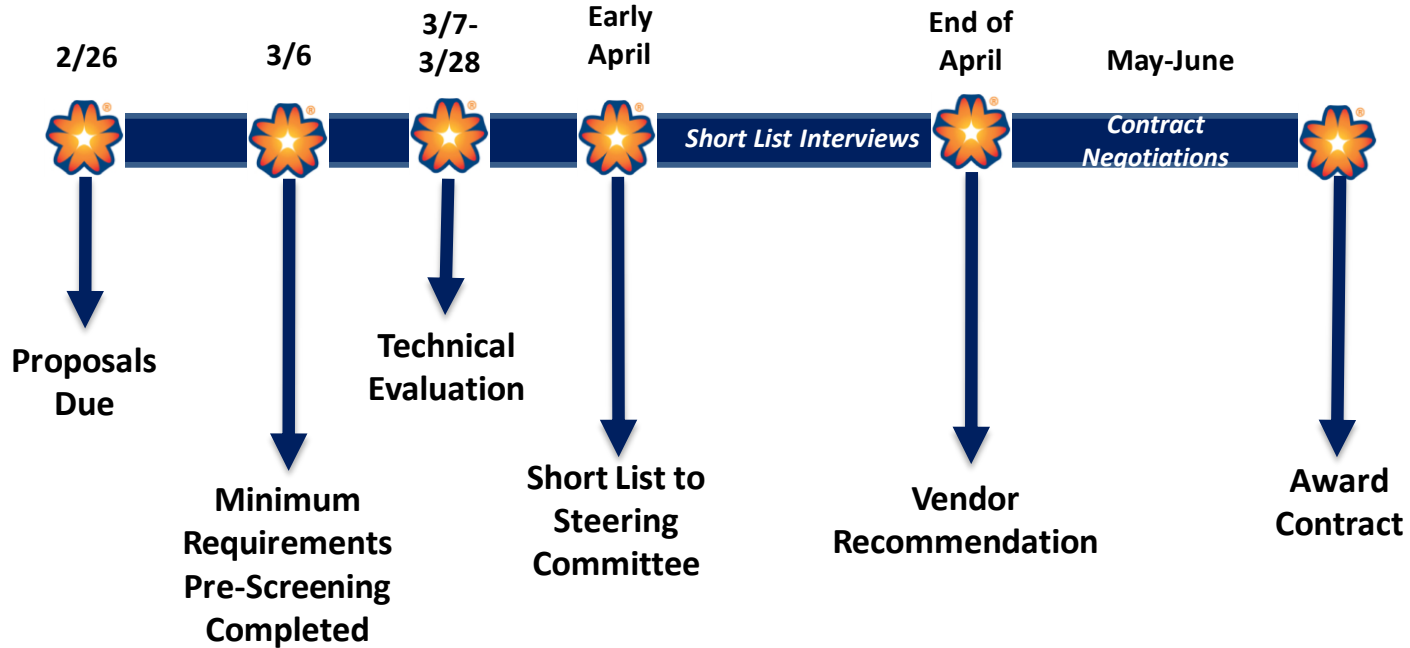


RFP responses received February 26, 2018
Target to award contract by June 2018

- Phase 1 sold out quickly, customer feedback very positive
- Seeking vendor to build up to 5 MW in CPS Energy territory
- Encouraging innovative approaches



TENTATIVE RFP TIMELINE





Thank You



COSA'S PATHWAY TO 100% RENEWABLES FOR CITY FACILITIES

PRESENTED BY:

Cris Eugster

Chief Operating Officer

March 6, 2018

Informational Update

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- **NEXT STEPS**



DIVERSIFICATION & CREATIVITY



Our strategic strength in energy diversification & its continual focus on being creative positions us to be able to support COSA's & other local governments' environmental & climate goals!



THE VISION



- We are the ideal strategic partner to deliver solutions to meet this goal & achieve a green energy supply for COSA facilities
- We can provide options & flexible approaches with our broad renewable portfolio & programs

Nirenberg joins ranks of "solar mayors"



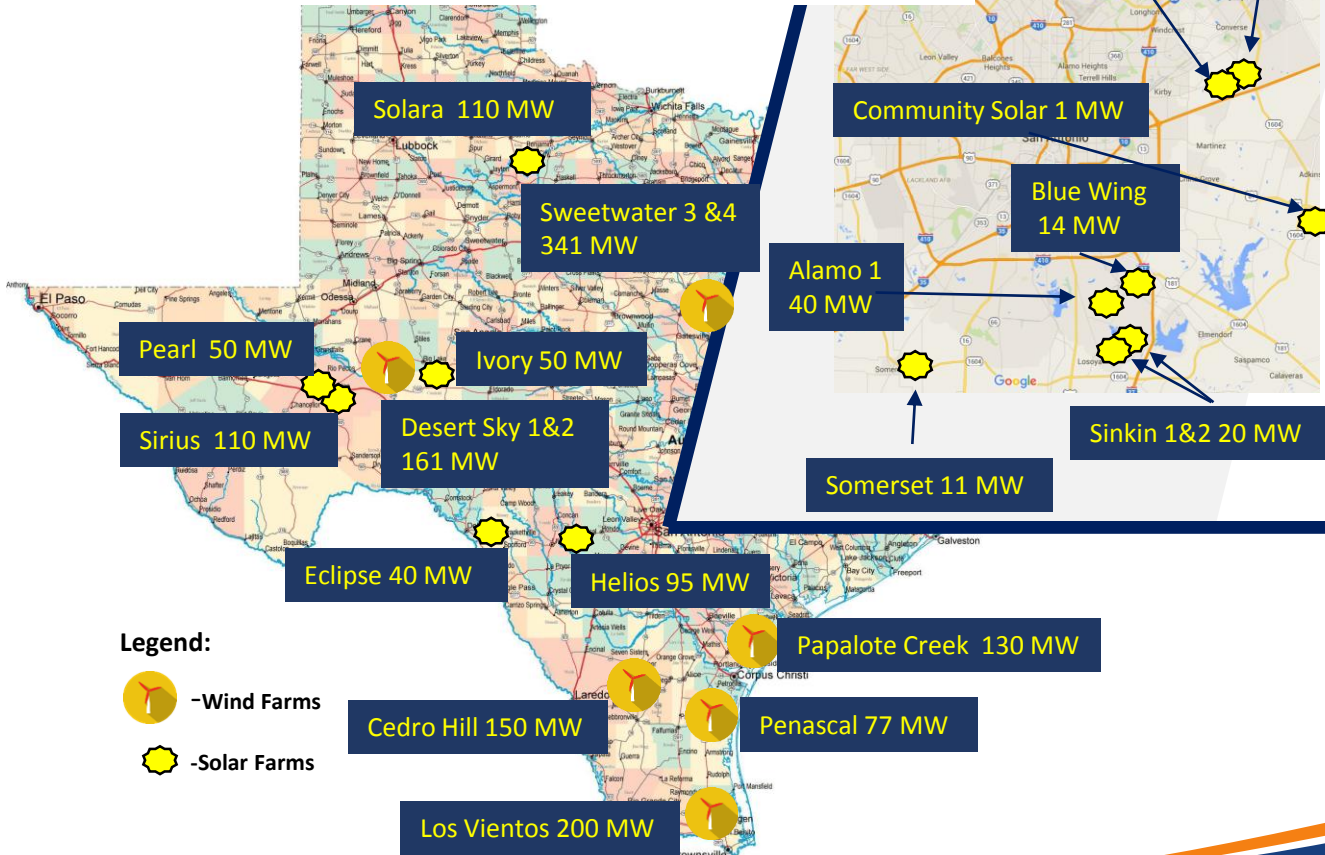
San Antonio Mayor Ron Nirenberg has joined the ranks of nearly six dozen U.S. mayors seeking to make solar energy a key element of their communities.

PAGE SHANN



By Sergio Chapa - Reporter, San Antonio Business Journal
Jan 3, 2018, 1:10pm

LARGE SOLAR & WIND PORTFOLIO



Residential Solar

- 88 MW homeowner owned
- 5 MW Solar Host installed and in-flight
- 1 MW Community Solar installed
- 5 MW Community Solar RFP

Legend:
 - Wind Farms
 - Solar Farms

#1 IN SOLAR IN TEXAS



Alamo 7 Solar Farm 106.4 MW – Haskell, Texas



Alamo 6 Solar Farm 110.2 MW – Pecos County, Texas



CPS Energy has over 500 MW of Solar

ADDITIONAL PROGRAMS



Solar Host &
Roofless Solar



Energy Efficiency



MY THERMOSTAT REWARDS

Electric Charging



Weatherization



Solar Rebates

CURRENT COSA USAGE



- City Facilities: ~1,200
- Annual Average Usage: ~225,000 MWh
- Current Renewable Procurement: ~3,350 MWh
 - Renewable % of total load: 1.5%
 - Includes direct renewable pricing & COSA-owned on-site
- Solar Host participation ~300 kW

COSA'S PATH TO 100% RENEWABLE/SOLAR



There are many pathways to success

Short Term

- Synthetic
- Written Structural Transactions

Hybrid

Renewables

Solar
Wind

+

Traditional Generation

Very Long Term

Renewables

Solar
Wind

+

Energy Storage

RECs*

PPAs**

Physical Assets

Rebated

Non-Rebated

Synthetic

New Renewable Generation

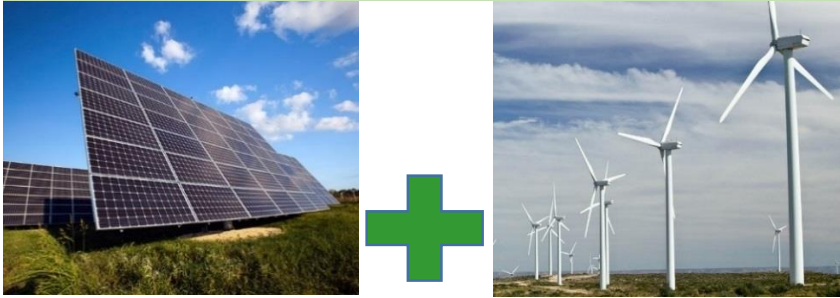
* RECs: Renewable Energy Credits

** PPAs: Purchased Power Agreements

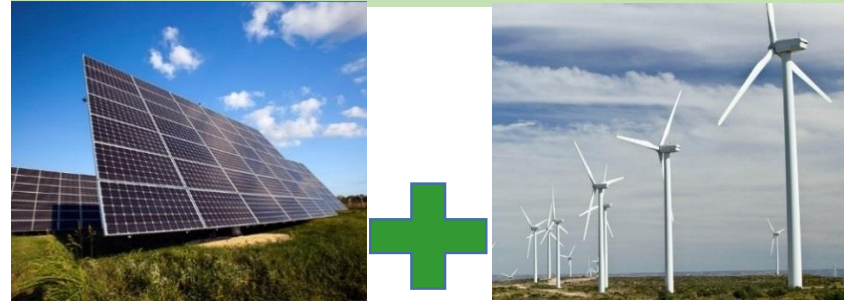
CPS ENERGY WILL FIRM UP RENEWABLES



NOW: RENEWABLES & TRADITIONAL GEN.



FUTURE: RENEWABLES + ENERGY STORAGE



Traditional generation is playing the role of “virtual storage” for renewable energy until energy storage technology scales up.

PATHWAY TO SUCCESS



- Utilize CPS Energy Renewable Energy Credits (RECs) tied to our solar & wind farms
- Flexible build out of rooftop solar on COSA facilities supported by solar rebate
- Ability to integrate new technologies & opportunities in the future

ROOFTOP SOLAR + CPS ENERGY RECS GETTING TO 100% RENEWABLE IN 2018



e⁻ +

Build 3 MW Solar (example)

Upfront Capital Cost
- CPS Energy Rebate
= Net Capital Cost



CPS Energy RECs (example)

Value of CPS RECs
x 216,500 MWh
= Cost Per Year

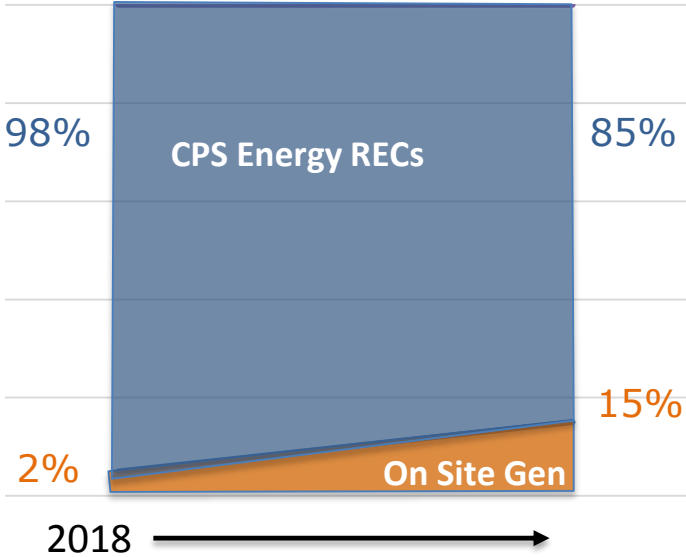
Rooftop solar requires capital investment

Purchase of RECs added to electric bill

100% RENEWABLE COSA CAN CONTROL THE PROGRAM

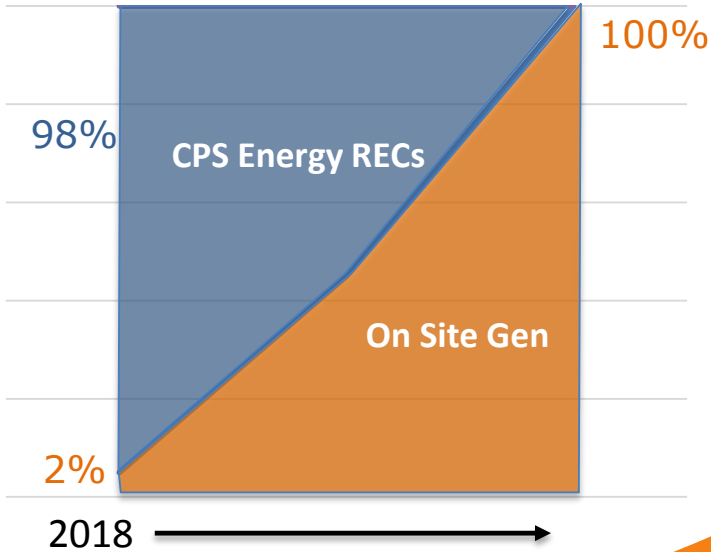


Small On-Site Buildout



or

Aggressive On-Site Buildout



COSA can be 100% renewable quickly with the ability to scale using the CPS Energy portfolio

ROOFTOP SOLAR + RECS

FLEXIBLE OPTIONS



Benefits

- RECs are tied to physical CPS Energy solar and wind farms
- Ability to achieve 100% renewable in the short-term
- Blend of on-site generation supplemented with CPS Energy renewable portfolio
- Utility cost savings from solar production to offset the cost of RECS
- Flexibility to slow down or speed up on-site generation based on changing solar panel costs
- Ability to adjust approach at any time

NEXT STEPS



- Meet with COSA about path forward
- Finalize proposal to COSA
- Begin internal process to support transaction



Thank You

GLOSSARY

DEFINITIONS



Acronym	Term	Definition
MW	Megawatt	A measure of the capability to produce one million watts of energy
MWh	Megawatt hour	Unit for measuring power that is equivalent to one million watts; equal to 1,000 kilowatt hours (Kwh)
PPA	Purchase Power Agreement	A contract between two parties, one who generates electricity and one who purchases the energy
REC	Renewable Energy Credit	Tradeable, non-tangible energy commodity representing proof that 1 MWh of electricity was generated from an eligible renewable energy source
	Synthetic	A virtual PPA where the buyer receives RECs directly from the renewable generator but does not take physical delivery of power.