



RATE ADVISORY COMMITTEE UPDATE

***GENERATION PLANNING
A JOURNEY FOR OUR FUTURE***

October 25, 2022

AGENDA & OBJECTIVES



- RAC's Journey to today
- Basic principles
- Public input
- Closing Remarks

The Rate Advisory Committee (RAC) was started back in 2021 with generation planning as one of it's primary objectives. This part of their journey will be complete when they send their recommendation to the CPS Energy Board in December.

PURPOSE OF THE RAC



The purpose of the RAC as defined in the bylaws is:

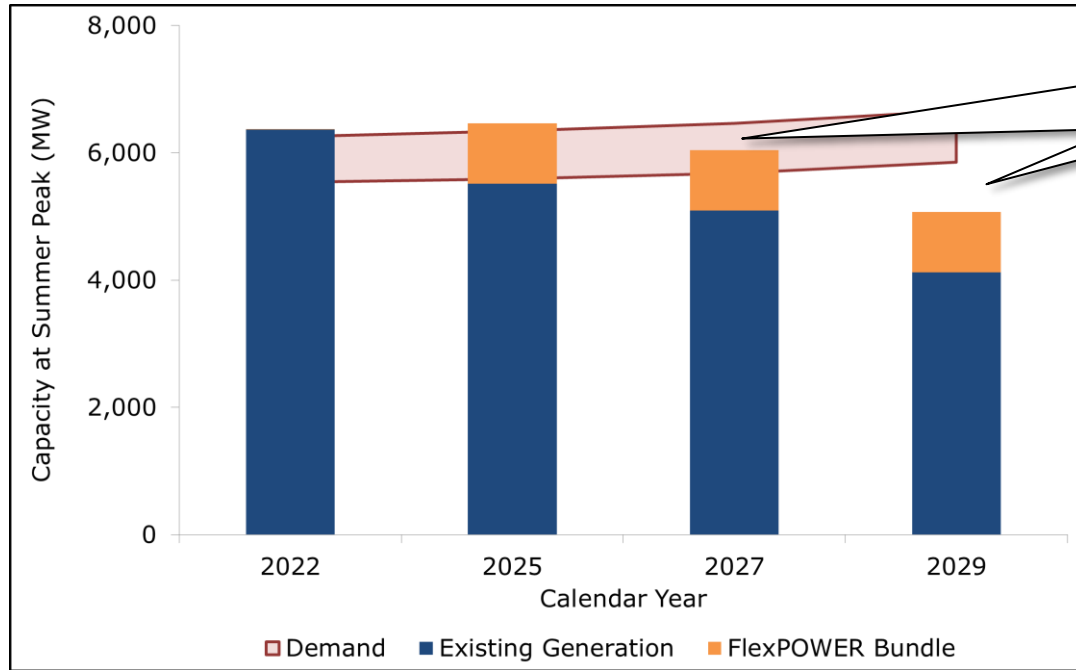
"Members of the RAC will devote the necessary time and energy to learn about the utility business and the rate design function in order to understand and provide thoughtful input and perspectives to CPS Energy Management and Board of Trustees on rate structure, rate design, proposed rate increases and generation planning issues."

One of the founding purposes of the RAC is to learn & provide thoughtful input & perspectives on generation planning.

GENERATION PLANNING PRINCIPLES

GENERATION PLANNING

CURRENT GENERATION PLANNING PROCESS TAKES US THROUGH 2030



Generation planning process is largely focused between now & 2030.

Load growth (~115 MW per year) and upcoming capacity retirements mean that CPS Energy needs new capacity to meet customer needs.

POWER GENERATION PLAN UPDATE

TIMELINE



2021

Sep 2021:
**RAC
Generation
Planning
Intro**

2022

Jan 2022:
**Rate
Request
Approval**

May 2022:
**Announced 300 MW
of Solar**

**Scenarios, Analysis
Approach, &
Assumptions**

**Community
Conversations**

August 2022:
**Announced 180 MW
of Solar**

**Analysis
Results &
Options**

We are here

Nov 2022:
**RAC / CAC
Input to Board**

Dec 2022:
**Options /
Recommendation
to Board**

2023

Our objective is to develop a recommended generation plan by December 2022.

CRA POWER GENERATION RESOURCE PLANNING APPROACH



Identify Planning Objectives

Agree on planning objectives and metrics to measure the performance of the plan against each objective

Develop Market Scenarios

Identify key sources of uncertainty and the potential range of future outcomes, and design internally consistent future scenarios

Develop Resource Portfolios

Design options for future resource plans, often based on different future scenarios and priorities

Portfolio Modeling and Analysis

Evaluate the performance of each resource portfolio against each future scenario, stochastic uncertainty, & extreme risk events

Select Preferred Plan

Identify trade-offs from each resource portfolio and select the preferred portfolio

Charles River Associates' (CRA) integrated 5-step resource planning approach starts with identifying the planning objectives and ending with a preferred plan.

GENERATION PLANNING OBJECTIVES



System Reliability &
Climate Resiliency

RAC: 18 (31%)



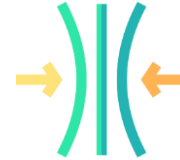
Environmental
Sustainability

RAC: 13 (22%)



Affordability

RAC: 12 (20%)



System Flexibility

RAC: 5 (8%)



Workforce Impact




RAC: 1 (2%)

Five planning objectives were established, with System Reliability & Climate Resiliency, Environmental Sustainability, and Affordability scoring as most important by RAC members.

RAC numbers represent "Dot Plot" ranking tallies out of 59 total from August RAC meeting

METRICS/EVALUATION CRITERIA



Planning Objectives	Metrics	Measures
 System Reliability & Climate Resiliency	<ul style="list-style-type: none">Diversity of Generation Capacity MixCapacity HeadroomClimate Resiliency	<ul style="list-style-type: none">Pie chart of generation mix in CPS Energy portfolio by fuel type (e.g. wind, solar, gas, coal, etc.) in 2030Reserve Margin in 2030Revenue requirements in extreme weather in 2030Market purchases in extreme weather in 2030
 Environmental Sustainability	<ul style="list-style-type: none">Progress Towards City of SA Climate Action & Adaptation Plan (CAAP) Goals	<ul style="list-style-type: none">% reduction in CO₂ intensity from CPS Energy generation in 2030, relative to 2016 baselineThe carbon intensity (CO₂ per MWh) of electricity generated by CPS Energy fleet in 2030 and 2040% reduction in electricity demand due to energy efficiency measures in 2030
 Affordability	<ul style="list-style-type: none">Bill ImpactRevenue Requirements	<ul style="list-style-type: none">Estimated monthly bills in 2030 (Reference & scenarios)Present value of revenue requirements between 2023 and 2030Present value of revenue requirements between 2023 and 2050

Evaluation criteria are refined based on RAC feedback, with more focus on near-term outcomes.

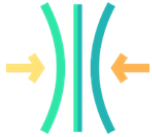
METRICS/EVALUATION CRITERIA



Objectives

Metrics

Measures



System Flexibility

Market Purchases

Dispatchability

→ % of CPS Energy electricity demand that is met through ERCOT market purchases in 2030

→ % of generating capacity in CPS Energy fleet that can have its output adjusted on demand in 2030



Workforce Impact

CPS Energy Workforce Impact

Local Economic Impact





→ Number of CPS Energy Generation Employees in 2030

→ Total \$ in capital expenditures for new generation capacity built in greater San Antonio area

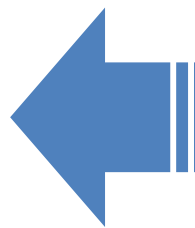
Evaluation criteria has been refined based on RAC feedback, with more focus on near-term outcomes.

ERCOT SCENARIOS



ERCOT Scenario	Narrative
 Reference Scenario (REF)	<ul style="list-style-type: none">Continuation of historical trends in demand growth, technological developments
 Carbon-Based Economy (CBE)	<ul style="list-style-type: none">Reduced environmental regulations and no federal or state-level carbon limits
 Net Zero Carbon Economy (NZE)	<ul style="list-style-type: none">Federal or state-level economy-wide net zero carbon targets by 2045
 Volatile Market (VMA)	<ul style="list-style-type: none">Geopolitical concerns drive policy decision-making

Key sources of uncertainty to incorporate into analysis.



Natural Gas Prices



Carbon Policies



Technology Costs



Demand Growth












Market Design

CRA developed 4 ERCOT scenarios, which reflect diverse but possible future states of the world.

VARIABLES OF KEY ERCOT SCENARIO

**Note that all CPS Energy portfolio analysis will incorporate IRA tax credit provisions*



ERCOT Scenario	 Natural Gas Prices	 Carbon Policies	 Technology Costs	 Demand Growth	 ERCOT Market Design Change
 Reference Scenario (REF)	Baseline	Baseline carbon price	Baseline	Baseline	Confirmed changes only
 Carbon-Based Economy (CBE)	Low due to production increases	No carbon price	Baseline	High demand driven by low fuel and carbon prices	Confirmed changes only
 Net Zero Carbon Economy (NZE)	Low due to electrification drive	High carbon price	Fast decline + Inflation Reduction Act Tax Credits*	High demand driven by electrification	Capacity market launched & seasonal reserve margins
 Volatile Market (VMA)	High	No carbon price to alleviate inflation pressure	Slow decline + Inflation Reduction Act Tax Credits*	Low demand due to high natural gas prices	Confirmed changes only

Each scenario comprises a combination of five input variables whose levels vary across the scenarios as shown below.

PORTFOLIO DESIGN



Gas

Future power to come from gas technologies only, including combined cycles and reciprocating internal combustion engines ("RICE")



Renewables

Future power to come from wind, solar, and storage technologies



Blend

Future power to come from gas, wind, solar & storage technologies

Three basic options are being analyzed, where new generation resources are either, all-natural gas, all-renewables & storage, or a blend of technologies.

CPS ENERGY PORTFOLIO CONCEPTS



Portfolio	P1	P2	P3	P4	P5	P6	P7	P8	P9
Allowed Technology to Meet Capacity Gaps	Gas Only	Blend 1	Renewables	Blend 2	Renewables				
Spruce 1	Dec 2028		Dec 2028	Dec 2047	Mar 2025	Mar 2025	Mar 2025	Mar 2025	Mar 2028
Spruce 2	Convert to gas in Dec 2027 and retire in Dec 2065		Dec 2027	Dec 2065	Mar 2028	Mar 2028	Mar 2028	Convert to gas in Dec 2025 and retire in Mar 2035	Convert to gas in Dec 2028 and retire in Mar 2035
Braunig 1 - 3	Mar 2025		Mar 2025	Mar 2025	Mar 2025	Mar 2024	Mar 2024	Mar 2025	Mar 2025
Sommers 1	Mar 2027		Mar 2027	Mar 2027	Mar 2027	Mar 2026	Mar 2026	Mar 2027	Mar 2027
Sommers 2	Mar 2029		Mar 2029	Mar 2029	Mar 2029	Mar 2028	Mar 2028	Mar 2029	Mar 2029
Arthur Von Rosenberg	Dec 2047		Dec 2047	Dec 2047	Dec 2047	Mar 2030	Mar 2030	Dec 2047	Dec 2047
Rio Nogales	Dec 2049		Dec 2049	Dec 2049	Dec 2049	Mar 2030	Mar 2030	Dec 2049	Dec 2049
Milton B Lee 1 – 4	Dec 2039		Dec 2039	Dec 2039	Dec 2039	Mar 2035	Mar 2040	Dec 2039	Dec 2039
Milton B Lee 5 - 8	Dec 2045		Dec 2045	Dec 2045	Dec 2045	Mar 2035	Mar 2040	Dec 2045	Dec 2045

CRA is modeling 9 candidate portfolio concepts for CPS Energy (P1 – P9). Each portfolio concept is a combination of a retirement schedule and allowed technologies to meet capacity gaps.

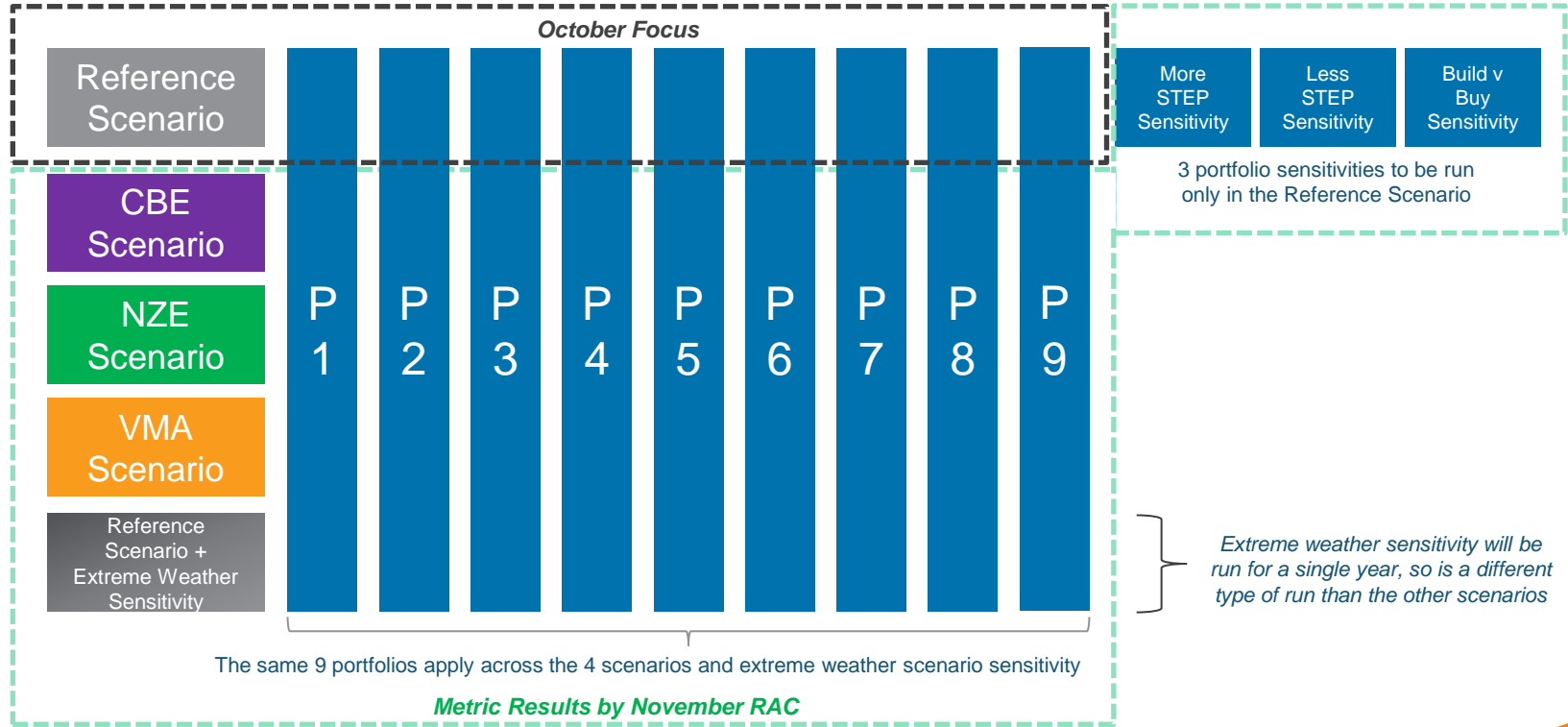
Notes:

CPS Energy Portfolios

Proposed by RAC Member Belmares

1. All unit retirements require ERCOT approval.
2. When units retire, ERCOT may require transmission reliability upgrades to the grid, which typically take 4 to 5 years (i.e. estimated completion in the 2026 to 2027 timeframe).
3. New generation resources may not be available until 2026, so bridge purchases will be considered for P5-P8 as needed.
4. Spruce 2 gas conversion is likely not feasible before 2027, so bridge purchases will be considered in P8 as needed.

PORTFOLIO EVALUATION



CRA will generate up to 50 sets of results as part of a comprehensive portfolio evaluation.

TIMELINE - FORWARD LOOK



DATE	EVENT
Nov 3 rd	Open Q&A with Burns & McDonnell-Peer Review <ul style="list-style-type: none">• Morning session 9:00 am – 11:00 am• Afternoon session 4:00 pm – 6:00 pm
Nov 14 th	CPS Energy Board Meeting
Nov 17 th	RAC Meeting
Dec 1 st	Open House for Power Generation Resource Planning <ul style="list-style-type: none">• Morning session TBD• Afternoon session TBD
Dec 2 nd	Open Q&A with Burns & McDonnell-Peer Review <ul style="list-style-type: none">• Morning session 9:00 am – 11:00 am• Afternoon session 4:00 pm – 6:00 pm
Dec 6 th	Special RAC Meeting
Dec 15 th	Regular RAC Meeting
Dec 19th*	CPS Energy Board Meeting

The RAC will have two Q&A sessions & two RAC meetings before their potential vote on December 15th.

PUBLIC INPUT

ENGAGEMENT RESOURCES

POWERING OUR COMMUNITY'S FUTURE



RATE ADVISORY COMMITTEE MEETING



Discussing Power Generation Planning

Thursday, September 15, 3pm - 6pm

Meetings and presentations are livestreamed, recorded, and posted.
View them and sign up for Public Comment at cpsenergy.com/rac

- ONGOING OUTREACH
- RAC & BOARD MEETINGS
- [CPSENERGY.COM/PATHFORWARD](https://cpsenergy.com/pathforward)
- SURVEY
- QR CODE
- MATERIALS DISTRIBUTION VIA COMMUNITY ENGAGEMENT
- COMMUNITY TOWN HALL (NOV. 15)
- NEXT OPEN HOUSE (DEC. 1)
- VIRTUAL TOWN HALL (DEC. 8)



AGING
GAS STEAM UNITS
MUST BE REPLACED &
WE MAY TRANSITION
AWAY FROM COAL
by 2030



approximately
115 MW
additional
GENERATING CAPACITY
will be needed each year to
support population growth

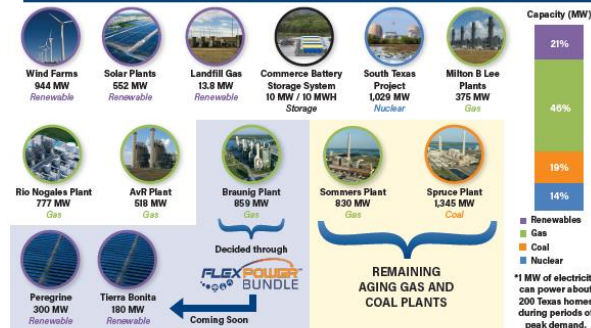


CPS Energy is assessing how to replace aging power plants, whether to continue operating coal-powered units, and planning for population growth. Our generation planning process will identify the types of power generation resources to be added over the next several years. Planning objectives include system reliability, customer affordability, environmental sustainability, and other factors. CPS Energy will work with the Rate Advisory Committee to assess several generation planning options. CPS Energy is scheduled to make a recommendation on an updated generation plan to our Board of Trustees in late 2022.

Powering Our Community's Future is an initiative designed to inform and encourage you to be part of the decisions we need to make for our community.

Stay Up to Date and Take Our Survey at cpsenergy.com/pathforward

CURRENT POWER GENERATION PORTFOLIO*



HOW CAN I GIVE INPUT?

The decisions around powering our community's future are important and we want you to participate so your opinions can be heard. We have multiple ways for you to learn more and provide feedback.

Watch or attend a meeting of the CPS Energy Board of Trustees.
Meeting live streams, presentations, and how to participate in Public Comment can be found at cpsenergy.com/boardmeetings.

Watch a CPS Energy Rate Advisory Committee meeting and provide Public Comment. Learn more at cpsenergy.com/rac.

Stay informed about upcoming public input opportunities, including a Tele-Town Hall and multiple Open Houses.

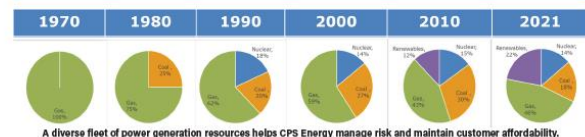
WHAT IS THE TIMELINE FOR RETIRING AGING GAS AND COAL PLANTS?



CITY OF SAN ANTONIO'S CLIMATE ACTION AND ADAPTATION PLAN (CAAP)

The CAAP goal is to reach carbon neutrality by 2050. Emission reduction goals for 2030 and 2040 established in the CAAP can be met with our current plan to add more renewables and close the Spruce 1 coal unit. To achieve net-zero carbon emissions by 2050, most of our fossil fuel (gas and coal) generation may need to be retired or fitted with technology to capture carbon, if feasible. CPS Energy will continue to review proposals for zero-emission generation technologies such as hydrogen or geothermal energy, as the technologies become more feasible for utility-scale deployment.

POWER GENERATION DIVERSIFICATION 1970-2021



WHAT PORTFOLIO CONCEPTS ARE CPS ENERGY AND THE RAC REVIEWING TO REPLACE AGING GAS AND COAL PLANTS?*



** Each portfolio concept is a combination of a retirement schedule and potential technologies to meet capacity gaps.

ENGAGEMENT OPEN HOUSE



EVENT OVERVIEW

- **DATE: THURSDAY, OCT. 6**
- **HOSTED AT HQ GRID ROOMS & TWO TIME OPTIONS TO ATTEND**
- **COME AND GO FORMAT**
- **SUBJECT MATTER EXPERTS ENGAGE AND ANSWER QUESTIONS AT EACH STATION**
- **COMMENTS COLLECTED THROUGH VIDEO, SURVEY, AND COMMENT CARDS**
- **SPANISH SPEAKERS AVAILABLE**

OPEN HOUSE RECAP

- **ATTENDANCE: 35 (18 AM, 17 PM)**
- **SURVEY PARTICIPATION AS OF OCT. 17: 125**



ENGAGEMENT

SURVEY QUESTIONS¹

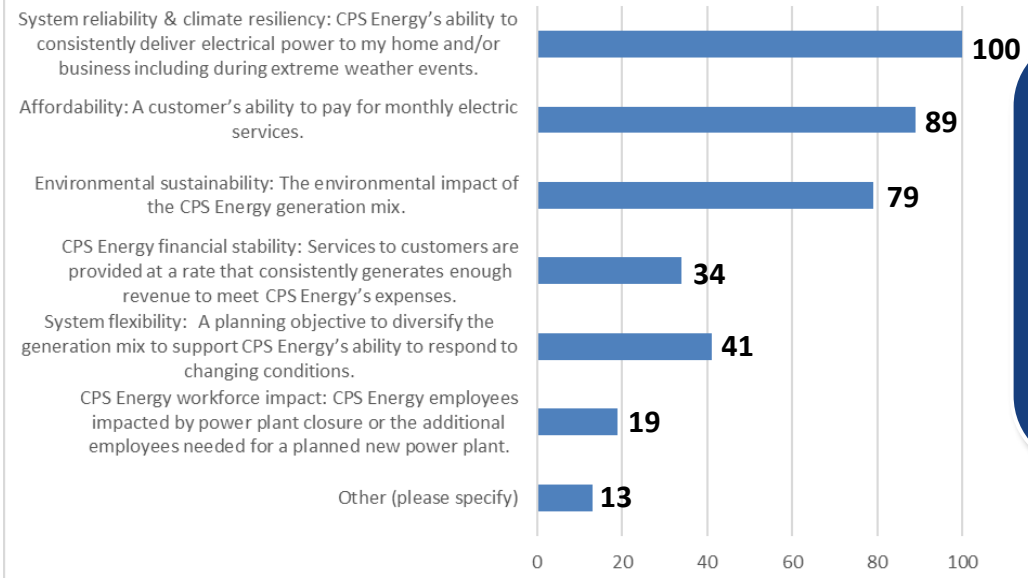


- 1. Please select three objectives listed below that are important to you in how CPS Energy powers our community now and in the future.**
- 2. What is your primary preference for how CPS Energy will make power in the future?**
- 3. Please provide any additional comments or feedback you would like to share with CPS Energy regarding Powering Our Community's Future.**

Notes: 1) Questions in survey are aligned with questions presented to the Rate Advisory Committee (RAC).

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SURVEY QUESTIONS #1



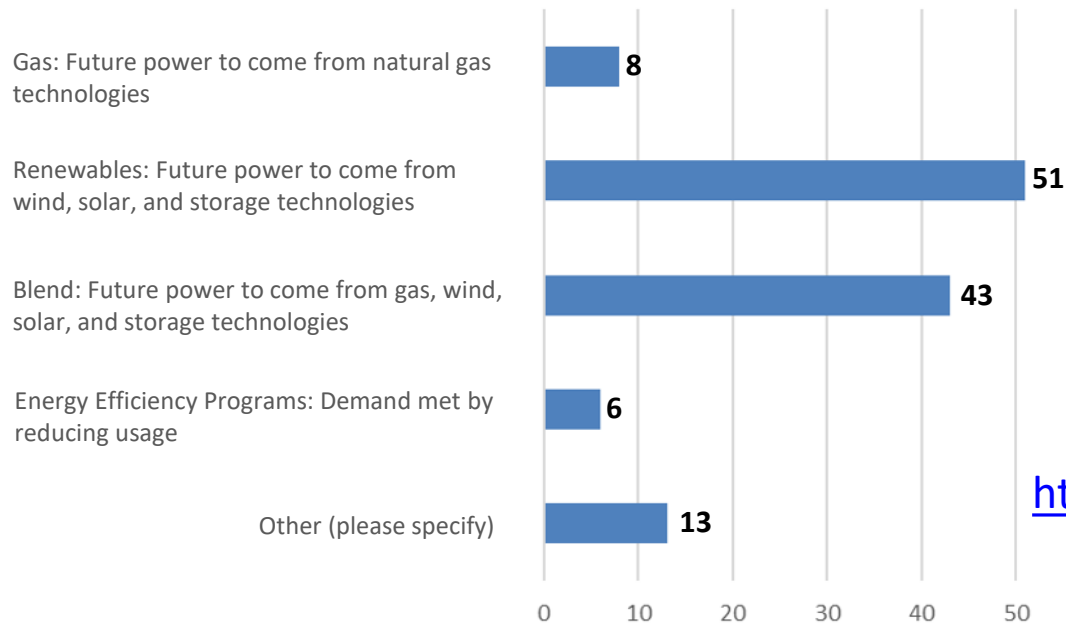
System Reliability and Affordability have received the highest scores so far to date with Environmental Sustainability a close third.

<https://www.cpsenergy.com/pathforward>

Results as of Oct. 17, 2022

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SURVEY QUESTIONS #2



**A renewables portfolio
is preferred by the
survey participants to
date with blend
coming in second.**

<https://www.cpsenergy.com/pathforward>

Results as of Oct. 17, 2022

ENGAGEMENT

UPCOMING EVENTS



DECEMBER OPEN HOUSE

- **DATE: THURSDAY, DEC. 1**
- **LOCATION: TBD**
- **TIME: 9-11 A.M. & 5:30-7:30 P.M.**
- **FEEDBACK WILL CONTINUE TO BE COLLECTED VIA COMMENT CARD, SURVEYS AND VIDEO**
- **SPANISH SPEAKERS WILL BE AVAILABLE**
- **A GRASSROOTS OUTREACH CAMPAIGN WILL HELP TO INFORM HARD-TO-REACH AUDIENCES WHO MAY BE INCLINED TO SHARE THEIR INPUT TO CPS ENERGY**

DECEMBER VIRTUAL TOWN HALL

- **DATE: THURSDAY, DEC. 8**
- **LOCATION: VIRTUAL/CALL-IN**
- **TIME: TBD**
- **CPS ENERGY WILL TAKE QUESTIONS AND COMMENTS FROM THE COMMUNITY AND ANSWER AS MANY AS POSSIBLE**
- **FEEDBACK WILL BE COLLECTED AND DEVELOPED INTO A FAQ SECTION ON THE GENERATION PLANNING PROCESS WEBPAGE**
- **SPANISH & ASL TRANSLATION WILL BE AVAILABLE FOR PARTICIPANTS**

CLOSING REMARKS BY CHAIR REED WILLIAMS



Thank You