



December 10, 2021

TO: Ron Nirenberg, Mayor
Michelle Lugalia-Hollon, Director of Policy
Juan Valdez, Senior Policy Advisor

FROM: Matthew Popkin, Kevin Brehm, Genevieve Lillis, Jubing Ge, and Aaron Schwartz, RMI

RE: Technical Review of CPS Energy's 2021 Flexible Path Resource Plan

Executive Summary

In its [2019 Climate Action and Adaptation Plan](#) ("CAAP"), the City of San Antonio ("the City") set a necessarily ambitious goal of becoming carbon neutral by 2050. The CAAP explicitly states that reducing the carbon impact of energy generation in partnership with CPS Energy ("CPS") is one of the single most impactful actions the City could take to reduce its emissions. With its joint roles of providing oversight and being CPS' largest customer, San Antonio has a unique responsibility to ensure that CPS' Flexible Path Resource Plan ("resource plan") aligns with the City's climate, resilience, and affordability goals and that it accurately informs future decision-making on energy procurement, power plant retirement, and customer rates.

Utilities develop resource plans to inform near-term decision-making and offer a guide for longer-term strategic direction. An effective resource plan – one that is accurate, aligned with policy targets, and trusted – should increase confidence in the utility's plans and decision-making, better serve customers, and reduce risk in the face of an uncertain future. ***Unfortunately, CPS' resource plan is not aligned with best practices and does not credibly position CPS for the challenging transition and investments needed to provide affordable, reliable, resilient, and environmentally responsible electricity.*** This technical review offers five main critiques:

- I. ***Misleading communication on customer affordability:*** CPS presents misleading charts on potential utility bill impacts and misrepresents the costs of efficiency and conservation programs by deemphasizing the programs' net benefits. This directly hinders stakeholder understanding and casts doubt on the resource plan's credibility.
- II. ***Overly narrow scenario modeling and forecasting:*** CPS' limited analyses of scenarios and forecasts unnecessarily exposes San Antonio customers, CPS, and the City to greater operational risks, unanticipated costs, and suboptimal investment and retirement decisions. More extensive modeling could also enhance customer confidence, strengthen community trust, and better inform CPS' own decision-making.
- III. ***Suboptimal analysis of clean energy market data and natural gas price forecasts:*** CPS' unjustified, singular forecasts of renewable energy and natural gas prices, in particular, limit the ability for renewable energy to effectively compete in their models and inhibit understanding of CPS' potential risk exposure to unforeseen natural gas price increases.

- IV. ***Inadequate financial considerations for coal retirement:*** CPS's resource plan offers no discussion of financial strategies that other regulated utilities have used that could allow for an accelerated retirement of the Spruce coal plant with minimal shocks to customer bills.
- V. ***Limited discussion of the impacts of climate-change related risks on future operations:*** CPS, like many utilities, continues to underestimate the growing risk of extreme weather and temperature events. Integrating these risks into the resource plan would highlight and justify needed grid reliability and resilience measures and better prepare the community to withstand future crises.

These limitations mean CPS and the City risk making suboptimal decisions in the face of uncertainties that could negatively impact customer bills, resource procurement and retirement, CPS and City budgets, and grid reliability and resilience. This report offers 12 technical recommendations that CPS should consider to improve its current plan and future resource plans. Many of these steps would add further considerations to an already complex planning process, yet the expense and effort are well-justified. This decade will demand a transition unlike any in history, and CPS needs to recognize that it cannot continue business as usual for its planning or operations.

Moving forward, we encourage the City to directly engage with CPS and advance one or more of the following actions, listed from highest to lowest impact:

- ***Urge CPS to create a new resource plan*** that provides transparent inputs, assumptions, and modeling, follows best practices in resource planning, and is directly aligned with the City's CAAP goals. Given CPS' upcoming leadership transition, this would be a particularly opportune moment to "hit the reset button" and develop a new plan that is accurate, aligned with policy targets, and trusted. This would be a significant undertaking, but it would be far better than basing major decisions for the San Antonio community on a fundamentally flawed plan.
- ***Encourage CPS to considerably revise its current resource plan*** based upon the 12 technical recommendations and best practices outlined in this report. This approach could also be a sizable effort given the need to significantly expand the number of scenarios considered, but it would result in a more transparent, accurate, and robust planning process for CPS and the community.
- ***Instruct CPS to improve its presentation and messaging*** of resource plan options and data. With relatively little effort, CPS could support a more honest conversation about its current programs, limitations in its scenarios and forecasts, and the trade-offs of major decisions.
- ***Request additional information to clarify CPS' planning process and assumptions.*** This should be a straightforward request for CPS, particularly if the current resource plan does continue to serve as the basis of decision-making in San Antonio (*which we cannot in good faith recommend*).

Thank you for the opportunity to help San Antonio evaluate CPS' resource plan. We hope this is a useful and timely report to support Mayor Nirenberg's climate action, resilience, equity, and affordability priorities. RMI welcomes the opportunity to further discuss this report as appropriate and help better align CPS' resource planning with the City's CAAP goals.

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Introduction

In its [2019 Climate Action and Adaptation Plan](#) (CAAP), the City of San Antonio set a necessarily ambitious goal of becoming carbon neutral by 2050. To reach this goal, it will be crucial for San Antonio to work with CPS Energy (CPS), the largest municipally-owned electric and gas utility in the country, to accelerate emissions reductions.

CPS has made meaningful progress in the past decade. It's saved 845 MW of energy since 2009 through CPS' Save for Tomorrow Energy Plan (STEP); San Antonio ranked as the 5th city nationwide in 2019 for having installed the most local solar energy; and CPS' previous efforts to retire 840 MW of coal in 2018 have reduced emissions from its electricity supply. Furthermore, CPS' desire to seek "flexible generation" solutions to achieve a cleaner portfolio by 2040 recognizes that technology and customer needs will evolve. Yet, CPS and the City also have significant energy decisions to face in the coming decade, including the potential retirement of up to 3 GW of coal and natural gas power generation, resilience challenges and grid stressors, and an increasing urgency to reduce emissions. CPS' Flexible Path Resource Plan is the next step in reevaluating its resource portfolio in alignment with CAAP and ensure that rate structures support this transition.

Now, San Antonio has an opportunity to encourage effective resource planning and reshape how its municipally-owned utility plans for the region's climate and energy future – even as CPS navigates a major leadership transition and continued fallout from Winter Storm Uri. By engaging with CPS on resource planning, San Antonio would join an increasing number of major U.S. cities with climate and energy goals, [from Atlanta and Charlotte to Indianapolis and Minneapolis](#), that have engaged directly on their utilities' resource plans to help accelerate the transition to a cleaner electricity supply and more equitable programs for lower-income customers.

The following technical review is intended to establish an understanding of resource planning best practices, detail the shortcomings of CPS' approach, and offer recommendations to guide the City's future discussions with CPS.

The Purpose of a Resource Plan

Utilities develop resource plans to inform near-term decision-making and guide longer-term strategic direction. Most resource plans offer details about planned capacity additions (i.e., new power plants), power plant retirements, and expected growth in customer electricity and fuel consumption. Resource plans also consider the costs of maintaining existing assets, risk management, and potential customer rate impacts.

Effective resource plans should be accurate, aligned with policy targets, and trusted:

- **Accurate:** Utilities should use up-to-date inputs and assumptions, along with the best available models, to project costs and grid needs. Data, assumptions, and sources should be presented and documented clearly to allow stakeholders to review key inputs.
- **Aligned with Policy Targets:** The resource plan should connect to utility and community goals and consider multiple scenarios and forecasts that inform potential future pathways to achieve such goals. In addition to formal targets, utilities should encourage greater stakeholder participation to provide input on specific values, outcomes, and key modeling assumptions.

- **Trusted:** Customers, stakeholders, and the utility should be involved throughout the development of the plan and have confidence in the process to produce the analysis and the results. Utilities should clearly justify specific generation needs, resource procurement and retirement decisions, and timeline for implementation – in other words, walking stakeholders through their thought process. Accuracy and policy alignment also contribute to building trust in resource planning.

Ultimately, an effective resource plan – one that is accurate, aligned with policy targets, and trusted – should increase confidence in the utility’s plans and decision-making, better serve customers, and reduce risk in the face of an uncertain future.

CPS’ Resource Plan Falls Short of Best Practices

I. Misleading Communication on Customer Affordability

CPS presents misleading charts on Customer Affordability and inaccurately emphasizes the net costs of efficiency and conservation programs. “Customer Affordability” is, rightfully so, a critical pillar for CPS and essential for an equitable energy transition in San Antonio. However, CPS should not distort potential cost implications of planning decisions if it genuinely seeks a constructive, informed conversation on how resource planning impacts customer bills. Such communication directly hinders the ability for customers and other stakeholders to thoughtfully participate in CPS’ stakeholder engagement process. This casts doubt on the entire resource plan’s credibility and may decrease trust in CPS.

1. Best Practices

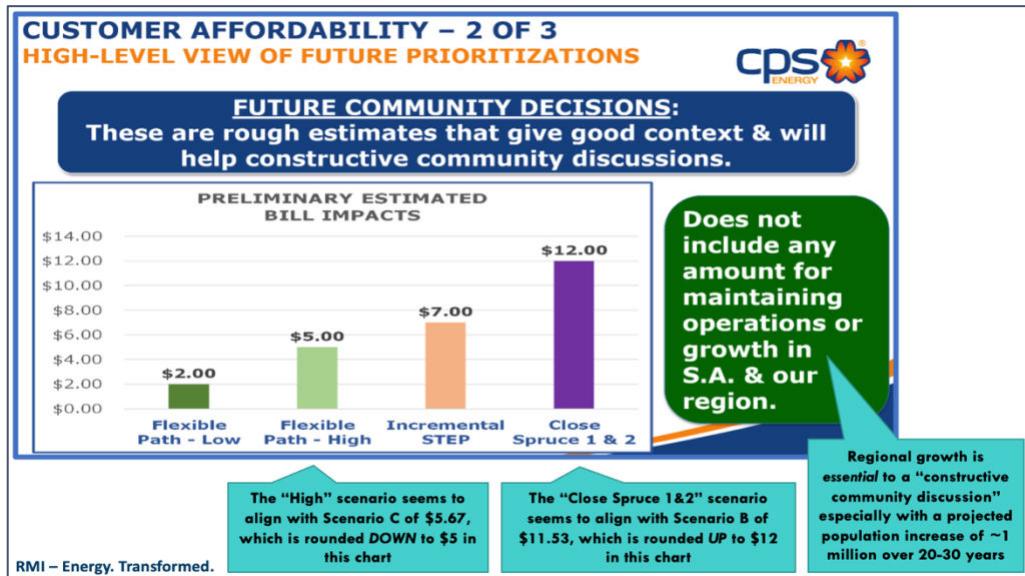
- a. **Clearly and Accurately Present Data and Model Outputs to Inform Stakeholders:** A resource plan should transparently communicate a utility’s methodology, assumptions, and the costs and benefits of different strategies to further general understanding, enable constructive debate, and increase customer confidence. Accordingly, data and information should be presented clearly and accurately to inform stakeholders throughout the process and justify the utility’s decisions.

2. Shortcomings of CPS’ Approach

- a. **Misleading Communication Inhibits a Constructive Conversation on Customer Affordability:** Rate impact and customer affordability is a critical component of any resource plan and utility decision-making. Unfortunately, all three of the main charts focused on “Customer Affordability” in the “Letter to San Antonio” that precedes the resource plan contain misleading information. Two of these charts were also featured in [CPS’ CEO presentation on January 25, 2021](#), which introduced this resource plan. In fact, not one of these three charts credibly positions the San Antonio community for an accurate or constructive conversation.¹ This undercuts fundamental elements of an effective resource plan: *building trust in utility decision-making with accurate information.*

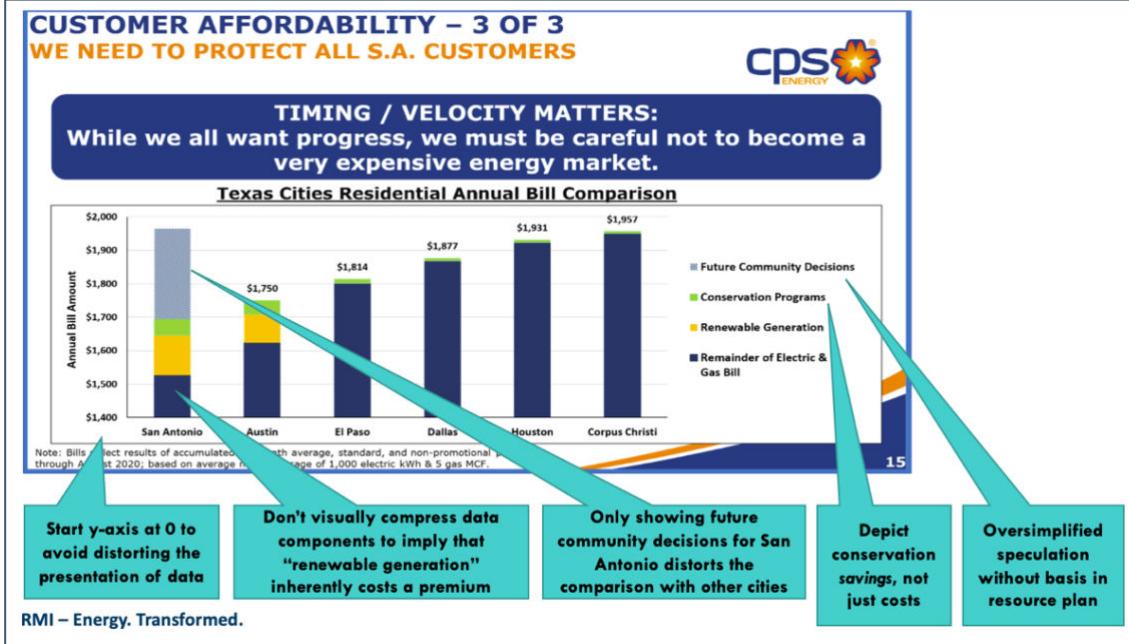
¹ Note: The three Customer Affordability charts show in the next sections are unchanged from the resource plan but for blue callout boxes added by RMI to highlight misleading areas and statistical inconsistencies.

- i. **Discussing Future Community Decisions Absent Growth:** In the chart *Customer Affordability – 2 of 3*, CPS attempts to outline potential bill impacts based on future community decisions. Yet, this comes with a major caveat from CPS that the chart does not account for growth in San Antonio and the region. But regional growth is essential to a constructive community discussion – especially since CPS acknowledges in its plan that the San Antonio community will add another 1 million people over the next 20-30 years. This is approximately a 50% increase in population – which has major implications for planning future electricity and fuel needs.
- ii. **Improper and Inconsistent Rounding:** In the chart *Customer Affordability – 2 of 3*, CPS appears to round the amount of \$5.67 down to \$5.00 and round \$11.53 up to \$12.00 in order to artificially inflate the estimated costs of closing the Spruce Coal plants.² This is not only inconsistent but also mathematically incorrect. This results in a misleading cost differential of \$7.00 compared to a more accurate estimate of \$5.86 (or \$6.00 if rounded correctly).



- iii. **Representing Seemingly Arbitrary "Future Community Decisions" Without Basis:** In the chart *Customer Affordability – 3 of 3*, CPS presents the gray bar of undefined "Future Community Decisions" without context or justification for how the gray bar was calculated and overly simplifies a number of complex trade-offs that the San Antonio community does need to consider. This chart also only shows this stacked gray bar for San Antonio without any relative comparison for other cities which inevitably also have future community decisions to make – which the chart does not at all acknowledge.
- iv. **Distorting Program Proportions:** In the chart *Customer Affordability – 3 of 3*, CPS manipulates the data visualization by not starting the Y-axis (annual bill amount) at zero. This compresses the comparison to suggest a disproportionate impact of the cost of renewable energy, conservation programs, and future community decisions.

² [Flexible Path Resource Plan, Part 2: Financial & Other Key Information – Page 6.](#)



b. **Incorrectly Suggesting Energy Efficiency Programs Have a Net Cost:** CPS' primary efficiency and conservation program, STEP, has led to *\$553 million in net benefits* to its customers. In November 2019, a third-party firm, ICF, reviewed the STEP program. ICF's findings, which are publicly available on CPS' website, include the following findings – none of which appear to be considered in the CPS' resource plan and customer affordability communications:

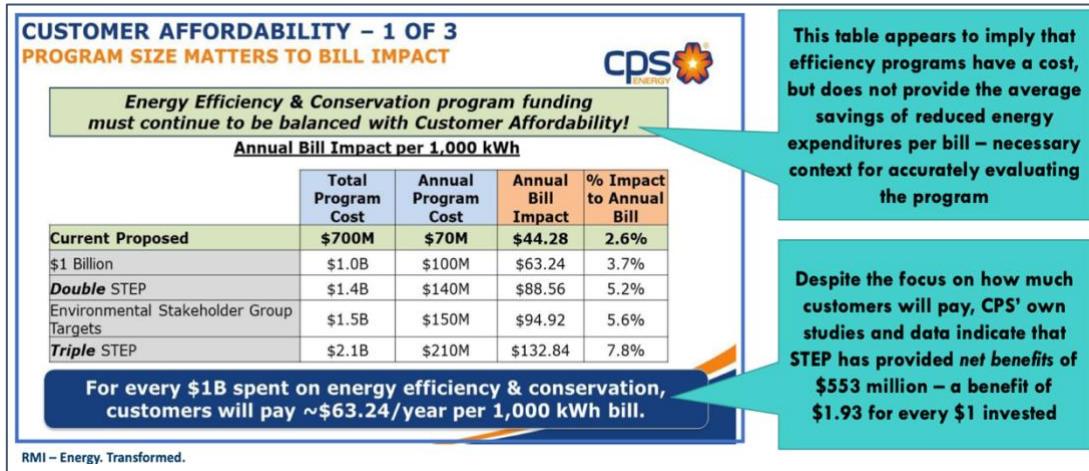
Net Benefits of CPS' STEP Program³

Cost Efficacy (Return on Investment)	"Over the FY 2009 to FY 2019 time period, STEP had a Utility Cost Test (UCT) benefit cost ratio of 1.9, indicating that STEP provided \$1.93 of benefit for every \$1 invested by CPS Energy... The UCT ratio for the STEP portfolio has been above 1.0 in all years, averaging 1.9 across all years, and has been trending steadily upward."
Net Energy Benefits	"STEP has provided over \$553 million in net benefits (the difference between the present value of the energy and capacity savings and the program cost)."
Labor & Local Economy	"Over the duration of STEP, it has cumulatively generated 7,500 local job years, \$312 million in labor income, and \$362 million in added value in addition to the utility net benefits noted above."

Instead, CPS *routinely emphasizes only the costs of STEP without acknowledging these benefits*. In fact, all three Customer Affordability charts in the "Letter to San Antonio" imply that there is a net cost of efficiency and conservation efforts. Nowhere in the "Letter to San Antonio" are the net benefits mentioned. For example, in the *Customer Affordability 1 of 3* chart below, there is no mention of savings to customers or CPS from the various STEP scenarios.⁴

³ [ICF. CPS Energy: Save for Tomorrow Energy Plan \(STEP\) Program Review – Page iv, viii.](#)

⁴ [Flexible Path Resource Plan – Page 8](#)



The net benefits of the STEP Program should be a featured success story for CPS, given that CPS notes in its resource plan that STEP “exceeded its initial planned goal of saving 771 MW by achieving 845 MW saved by CY2019... came in almost \$130 million under budget... and saved a cumulative 7.9 TWh of electricity.”⁵ Furthermore, CPS states STEP was “very effective” in reducing residential electricity use and is part of the strategy of keeping customer bills reasonable by reducing approximately 1,500 kWh per year for residential bills.⁶ Despite this, CPS’ resource plan still concludes its discussion focused on the program costs: “This assumption recognizes the STEP program has a cost implication for customer bills.” CPS’ statement implies that there is a net cost to CPS and its customers – which, again, according to CPS’ own program review, is not true.

3. Technical Recommendations

Recommendation	Description	Impact
<i>Revise Key Affordability Charts & Correct the Record</i>	CPS should immediately revise its Customer Affordability charts to not distort the perceived cost of key decisions and to better inform the public of the very real, challenging choices CPS and San Antonio need to make. Accordingly, CPS should publicly acknowledge these mistakes and correct the record to rebuild trust with customers and key stakeholders.	High
<i>Accurately Promote the Net Benefits and Costs of Energy Efficiency & Conservation Programs</i>	Creating the false perception that CPS’ energy efficiency and conservation programs have a net cost depresses enthusiasm for what are, in reality, cost-effective, well-managed, and successful programs. Energy efficiency programs can also provide important community resilience in extreme weather, as well-insulated homes will reduce strain on the grid due to lower energy needs and enhance the comfort and safety of occupants in the event of a power outage.	High

⁵ [Flexible Path Resource Plan – Page 7.8](#)

⁶ [Flexible Path Resource Plan – Page 8](#)

II. Overly Narrow Scenario Modeling and Forecasting

CPS' limited analyses of scenarios and forecasts unnecessarily exposes San Antonio customers, CPS, and the City to greater operational risks, unanticipated costs, and suboptimal investment and retirement decisions. No customer should expect CPS to have a crystal ball. Rather, producing a range of robust scenarios and forecasts would provide insight into how key decisions could impact the community across multiple plausible scenarios. This would help optimize decision-making to help CPS respond flexibly to a range of uncertainties. More extensive modeling can also enhance customer confidence, strengthen community trust, and better inform CPS' own decision-making.

1. Best Practices

- a. ***Embrace Comprehensive Scenario Analyses and Forecasts to Manage Uncertainty and Risk:*** Utilities face inherent uncertainty and risk when projecting resource costs, customer technology adoption, fuel prices, policy, and program design. To account for the range of uncertainty and risks, utilities analyze **scenarios** and use different **forecasts** (also called sensitivity analysis) to examine their options under a range of different assumptions. While a forecast projects how a single variable may change over time (e.g., customer load, fuel price, etc.), a scenario is a set of assumptions used to define one version of the future. For example, different scenarios could consider varying rates of electrification, strength of environmental regulations, or degrees of future prevalence for specific generation resources (e.g., high gas, high renewables, etc.). Since no set of assumptions can completely capture all factors relevant to resource planning, utilities should define and include the variables most aligned with their overall objectives and clearly note any key variables that they are simplifying or omitting. By building scenarios, utilities can evaluate their menu of options for plausible futures and increase confidence that they are thoroughly informing procurement, retirement, and program management decisions.
- b. ***Other Utilities Already Use Robust Scenarios to Enhance Decision-Making:*** Below are three examples from Minnesota, Indiana, and California that outline how utilities model uncertainties and risks relevant to their objectives and customers:
 - i. ***Xcel Minnesota Outlined 15 Scenarios to Optimize for 4 Power Plant Decisions:*** In its 2019 integrated resource plan, Xcel Minnesota evaluated 15 different permutations for the retirement or extended life of two coal plants and two nuclear plants to optimize its decision-making.⁷
 - ii. ***The Northern Indiana Public Service Company (NIPSCO) Evaluated 8 Preferred Scenarios for 3 Power Plant Decisions:*** In its 2019 resource plan, NIPSCO evaluated the 30-year cost of eight different scenarios for 3 of its coal plants.⁸ As shown below, the utility considered multiple costs, risks, environmental factors, and retirement options to ultimately determine: "Combination 6... was the lowest cost option that held acceptable reliability risk for customers and the system. The analysis shows that Combination 6 saves customers over \$1.5 billion relative to NIPSCO's 2016 IRP preferred plan."⁹

⁷ [Xcel Minnesota. Upper Midwest Integrated Resource Plan 2020-2034. Pages 97-98.](#)

⁸ [NIPSCO. 2018 Integrated Resource Plan. Pages 150-155.](#)

⁹ [NIPSCO. 2018 Integrated Resource Plan. Figure 9-9. Pages 155.](#)

NIPSCO Retirement Portfolio Scorecard

Preferred Retirement Path								
	1	2	3	4	5	6	7	8
Portfolio Transition Target:	65% Coal through 2035	40% Coal in 2023	15% Coal by 2028 w/ ELG	15% Coal by 2028 w/o ELG	15% Coal in 2023 (Mich. City 2035)	15% Coal in 2023 (Mich. City 2028)	15% Coal by 2023 (Schfr.17/18 2021)	0% Coal in 2023
Retire:	None	Schfr.17,18 (2023)	Schfr.17,18 (2023) Schfr.14,15 (2028)	Schfr.17,18 (2023) Schfr.14,15 (2028)	Schfr.17,18 (2023) Schfr.14,15 (2023)	Schfr.17,18 (2028) Schfr.14,15 (2023)	Schfr.17,18 (2028) Schfr.14,15 (2023)	Schfr.17,18 (2023) Schfr.14,15 (2023)
Retain beyond 2023:	Mich. City: 12 Schfr.14,15,17,18	Mich. City: 12 Schfr.14,15	Mich. City: 12 Schfr.14,15	Mich. City: 12 Schfr.14,15	Mich. City: 12 (2035)	Mich. City: 12 (2028)	Mich. City: 12 (2028)	Mich. City: 12 (2023)
Env. Compliance	CCR ELG: non-ZLD	CCR ELG: non-ZLD	CCR ELG: non-ZLD	CCR ELG: Extended Retirement	CCR ELG: Retirement	CCR ELG: Retirement	CCR ELG: Retirement	CCR ELG: Retirement
Cost To Customer	\$15,400 +\$4,426 40.3%	\$12,911 +\$1,937 17.7%	\$12,455 +\$1,481 13.5%	\$12,336 +\$1,361 12.4%	\$11,454 +\$479 4.4%	\$11,343 +\$369 3.4%	\$11,187 +\$213 1.9%	\$10,974 -\$ -%
Cost Certainty	\$15,840 +\$4,708 42.3%	\$13,158 +\$2,026 18.2%	\$12,622 +\$1,490 13.4%	\$12,502 +\$1,370 12.3%	\$11,634 +\$502 4.5%	\$11,504 +\$372 3.3%	\$11,295 +\$163 1.5%	\$11,132 -\$ -%
Cost Risk	\$17,406 +\$5,750 49.3%	\$14,123 +\$2,467 21.2%	\$13,225 +\$1,569 13.5%	\$13,105 +\$1,449 12.4%	\$12,252 +\$596 5.1%	\$12,045 +\$389 3.3%	\$11,750 +\$93 0.8%	\$11,656 -\$ -%
Reliability Risk	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Unacceptable	Unacceptable
Employees	0	125	125	125	276	276	276	426
Local Economy	+\$118M +47%	\$0M -%	(\$23M) (9%)	(\$31M) (12%)	(\$65M) (26%)	(\$74M) (29%)	(\$74M) (29%)	(\$94M) (37%)

iii. California Energy Commission (CEC) Modeled 3 Future Technology Scenarios and 30 Forecasts:

Forecasts: Because the technologies and fuels of the future are uncertain, the CEC used three potential technology-based “framing scenarios”: *high electrification, high biofuels, and high hydrogen*. Each of these is meant to capture insights from a different technology pathway to achieve deep decarbonization and were complemented by another 30 forecasts on load (i.e., high/low behind-the-meter solar, high/low EV adoption and charging, high building electrification), energy costs (i.e., high/low gas price, high/low battery storage costs, etc.), and other policy and economic factors (i.e., out of state transmission, export limits, etc.). Such forecasting creates a range representing potential adoption rates of new, flexible technologies aligned with the state’s objectives.¹⁰

2. Shortcomings of CPS’ Approach

- Limited Modeling for Coal Retirement Scenarios:** Modeling for different technology futures like the CEC or NIPSCO did could be an ideal approach given CPS’ “flexible” approach to power generation technologies and evolving customer needs in and around San Antonio. However, CPS failed to model for any scenarios other than coal retirement and replacement. The three retirement options CPS assessed in its resource plan are summarized below:¹¹

BASE CASE: <ul style="list-style-type: none"> • Spruce 1 – Replace with an Additional FlexPOWER BundleSM offering in 2029 • Spruce 2 – Continue to Operate as a Coal Plant 	REPLACE SPRUCE 1 & 2 COAL UNITS: <ul style="list-style-type: none"> • With Renewables & Batteries 	REPLACE & CONVERT: <ul style="list-style-type: none"> • Spruce 1 – Replace with an Additional FlexPOWER BundleSM • Spruce 2 – Convert to Natural Gas
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¹⁰ [CPUC Proposed Scenarios for the 2019 Reference System Plan. Page 4.](#)

¹¹ [CPS Energy. Letter to San Antonio – January 2021. Page 7.](#)

*Even if you only consider CPS' narrow retirement-focused approach, scenario planning could have compared a more comprehensive range of retirement scenarios – comparing across different technology replacements and timelines. See below for an example of 13 scenarios CPS could have considered to better optimize its retirement planning:*¹²

Optimizing CPS' Spruce Retirement Planning													
Scenario	Baseline			Replace Spruce with Renewables/Storage				Replace Spruce 1 & Gas Conversion Spruce 2					
	A1	A2	A3	B1	B2	B3	B4	C1	C2	C3	C4	C5	C6
Description	Spruce 1: FlexPower	Spruce 1: RE/storage	Spruce 1: Converted to gas	Both Spruce units: RE/storage	Both Spruce units: RE/storage	Both Spruce units: RE/storage	Both Spruce units: RE/storage	Spruce 1: RE/storage	Spruce 1: FlexPower	Spruce 1: RE/storage	Spruce 1: FlexPower	Both Spruce units: convert to gas	Both Spruce units: convert to gas
	Spruce 2: Business as usual	Spruce 2: Business as usual	Spruce 2: Business as usual					Spruce 2: convert to gas	Spruce 2: convert to gas	Spruce 2: converted to gas	Spruce 2: converted to gas		
Spruce Conversion & Retirement Timeframe	Unit 1: 2029 Retired	Unit 1: 2029 Retired	Unit 1: 2029 Retired	Unit 1: 2023 Retired	Unit 1: 2023 Retired	Unit 1: 2029 Retired	Unit 1: 2029 Retired	Unit 1: 2023 Retired	Unit 1: 2023 Retired	Unit 1: 2023 Retired	Unit 1: 2023 Retired	Unit 1: 2029 Retired	Unit 1: 2029 Retired
	Unit 2: Continues through study period	Unit 2: Continues through study period	Unit 2: Continues through study period	Unit 2: 2023 Retired	Unit 2: 2027 Retired	Unit 2: 2023 Retired	Unit 2: 2027 Retired	Unit 2: 2023 Gas conversion, running through	Unit 2: 2023 Gas conversion, running through	Unit 2: 2027 Gas conversion, running through	Unit 2: 2027 Gas conversion, running through	Unit 2: 2023 Retired	Unit 2: 2027 Retired
<p><i>Note: Bolded scenarios are the three that CPS modeled for in its resource plan. The other scenarios are illustrative to highlight the potential opportunity for optimization.</i></p>													
RMI – Energy. Transformed.													

- b. **Reliance on Single Forecasts for Key Planning Decisions:** CPS' reliance on singular forecasts for gas, coal, CO2, battery storage, and clean energy prices in the resource plan neglects very real uncertainties that influence CPS' near-term resource planning decisions. For example, Portland General Electric (PGE) modeled for 6 different gas price futures.¹³ The consequences of CPS' reliance on a single natural gas price forecast discussed further in Section III.2.c. In addition, CPS used a customer load forecast developed by third-party company, Itron, for residential and retail customer consumption of electricity and gas. This forecast was developed in October 2017 and shared with CPS in February 2018, which is old data for a 2021 Resource Plan.
- c. **No Modeling of Economy-Wide Decarbonization and Electrification Scenarios:** San Antonio approved a CAAP in Fall 2019 which targeted carbon neutrality by 2050, but CPS did not include any scenarios that directly align with this goal. More specifically, CPS does not comprehensively evaluate how economy-wide decarbonization and electrification would influence CPS' operations. This should have been reflected in one or more scenarios because vehicle and building electrification trends, in particular, are accelerating and are in line with the City's broader CAAP goals. These trends will challenge even the best of CPS' internal forecasts. However, CPS only mentions electrification *once* in the context of vehicles and equipment (with no mention of building electrification) and states "we cannot be certain about how fast that transition will occur."¹⁴ It is in these types of situations of uncertainty that utilities should be, and many are, analyzing different potential scenarios.¹⁵

¹² Note: Even this mock-up of 13 retirement scenarios is not complete because it fails to consider technology scenarios and forecasts that would account for future uncertainty.

¹³ [Portland General Electric Integrated Resource Plan, 2019, Page 75.](#)

¹⁴ [CPS Energy Letter to San Antonio – January 2021, Page 9.](#)

¹⁵ CPS acknowledges that EVs and behind-the-meter solar and battery storage will increase by 2045, but CPS offers only one projection without context of assumptions or explanation of how that impacted their modeling. Regardless, CPS should model a range of forecasts given the uncertainty (i.e., low, medium, and high EV adoption). [Flexible Path Resource Plan – Page 6](#)

d. **Insufficient Justification of CPS' Assumptions:** CPS inadequately documents the assumptions informing their forecasts. This makes it virtually impossible for any stakeholder to evaluate whether CPS' near-term decisions are reasonably justified. For instance, while CPS notes that it used different scenario inputs to assess results under different conditions, there is no discussion elsewhere in the resource plan or appendices of how CPS varied these inputs, how these inputs impacted the results of the production cost modeling, what sources were used, or how those results impacted the financial model.

3. Technical Recommendations

Recommendation	Description	Impact
<i>Embrace a Range of Scenarios and Forecasts to Model Uncertainty</i>	For future resource plans, CPS should significantly expand its set of scenarios to optimize for the retirement of the two Spruce units. CPS should also embrace a wide array of scenarios and forecasts to model for the uncertainties, decarbonization pathways, and risks CPS already acknowledges as well as multiple potential technology futures.	High
<i>Provide All Data and Sources</i>	CPS should be transparent and provide its data, sources, and methodologies related to each of its scenarios and forecasts. This will also build trust among customers and other key stakeholders.	Medium
<i>Clarify How Retirement Scenarios Were Selected</i>	At the very least, CPS should publicly clarify why it decided to only model and compare the three retirement scenarios that were included in the resource plan.	Low

III. Suboptimal Analysis of Clean Energy Market Data and Natural Gas Price Forecasts

CPS should address assumptions that may have 1) limited the ability for renewable energy resources to accurately compete and 2) inhibited an understanding of CPS' potential exposure to natural gas price risk. Using high-quality projections and market data which consider the continuing decrease in renewable energy costs is especially important to accurately model Spruce replacement scenarios. Instead, CPS seemingly makes blanket assumptions about the future costs of renewable energy without justification. Moreover, CPS continues to assume a low price for natural gas which increases risk for future planning and affordability should the price of gas exceed the singular forecast that is modeled. These assumptions further decrease stakeholder confidence in CPS' planning process and decisions.

1. Best Practices

a. **Use Insights from "All-Source" Procurement to Inform Planning When Possible:** An all-source request for proposals (RFP) is a *resource agnostic, competitive, market-based solicitation* that seeks to align proposed resource portfolios of both utility-scale and distributed generation with key objectives. This is contrary to an RFP for a specific type of generation (e.g., coal, natural gas, nuclear, solar, etc.). An all-source approach enables utilities to better understand market conditions and receive competitive bids across resources that meet the stated RFP objectives.

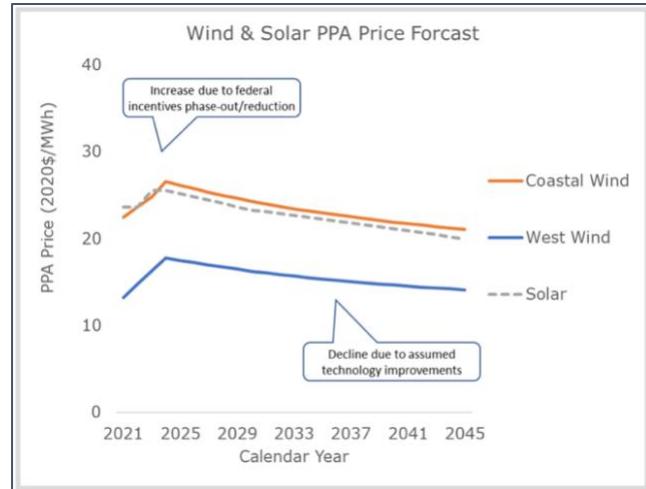
Instead of relying on internal estimates, utilities should issue RFPs to seek bids and up-to-date market data prior to selecting a portfolio for procurement to ensure that decisions are based on

up-to-date pricing.¹⁶ For example, NIPSCO's RFP was used to directly inform its 2019 resource plan. NIPSCO found that a portfolio of wind, solar, storage, and demand-side management would be the most cost-effective path to replacing its coal capacity: this strategy is expected to save its customers an estimated \$4 billion over 30 years. If pursuing an all-source procurement is not an option, utilities should, at a minimum, use the best available data and document their sources to increase the accuracy and transparency of results in the resource plan.

2. Shortcomings of CPS' Approach

a. **No Justification of Renewable Energy Cost Projections:**

Cost Projections: CPS neither employs best practices nor adequately sources its renewable energy cost forecasts. Other than the unsourced chart on page 27 of its resource plan (pictured right), CPS does not seem to share any data that supports its wind and solar PPA price forecasts. Moreover, the absence of clearly sourced wind and solar cost assumptions calls into question CPS' repeated statements that replacing Spruce units and retiring gas plants with renewable energy will be costly to the community. With no justification of its renewable energy cost projections, there is no way to confirm the accuracy of CPS' approach. This decreases confidence in their results.

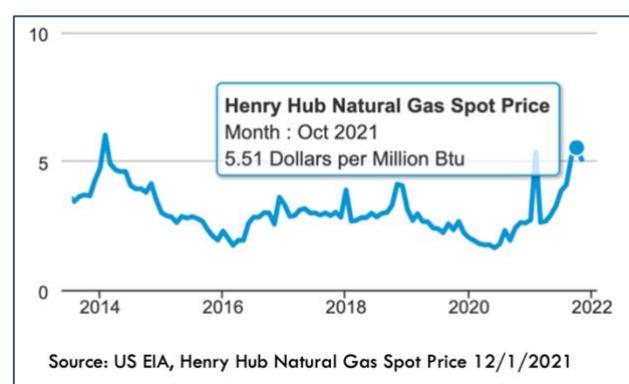


b. **Lack of Alignment Between FlexPOWER Process and Resource Planning:**

Best practice would be to use all-source procurement data to ground price forecasts in current market conditions. However, CPS did not align its timelines of procurement with its resource planning. CPS' February 1, 2021 [deadline for CPS' FlexPOWER proposals](#) was six days after the January 25, 2021-dated resource plan. As a result, CPS' resource plan could neither be informed by market insights in FlexPOWER responses. To be clear, this is not at all an indictment of CPS' FlexPOWER RFP, which has many strengths on its own that RMI has publicly acknowledged in a May 2021 blog "[Grading Your Utility's Shopping Habits](#)".

c. **CPS Faces Greater Exposure to Price Risk on Natural Gas:**

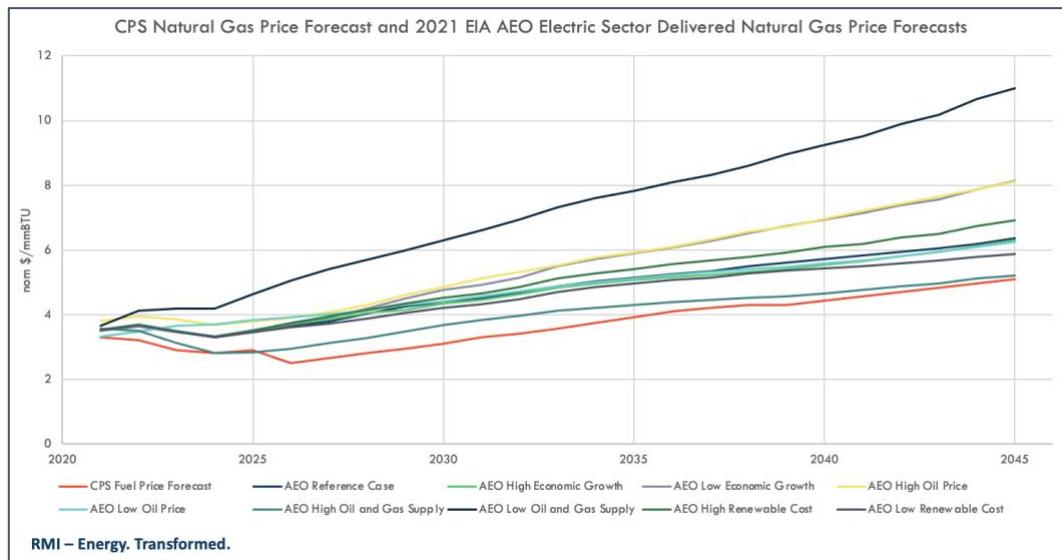
CPS' emphasis on natural gas in its portfolio, coupled with its singular, low forecasts for natural gas pricing, exposes CPS and its customers to significant future risk. Although the market prices over the past seven years have consistently been lower than forecasts by the U.S. Energy Information Administration's Annual Energy Outlook (AEO), this is not guaranteed in the



¹⁶ [How to Build Clean Energy Portfolios: A Practical Guide to Next-Generation Procurement Practices](#), RMI, 2020.

future. The current [spike in natural gas prices](#) provides a tangible example of just how quickly global markets can shift – [prices have now reached a high not seen since 2014 \(as pictured above\)](#). Thus, an overreliance on natural gas-based generation would leave CPS customers facing bill increases in the event of high, sustained natural gas prices in the future.

Looking ahead, the sole natural gas forecast CPS uses in its resource plan falls below every 2021 AEO forecast range, as shown in the chart below (CPS is the red line):



Natural gas currently plays a prominent role in CPS' portfolio and in its Gas Conversion retirement scenario for Spruce. Because of this, it is in the best interests of CPS, the City, and the community to understand the implications of future gas price uncertainty and, in particular, CPS' financial exposure should gas prices exceed CPS' forecast. Considering a range of scenarios (as discussed in Section II) and a range of potential gas price forecasts would help CPS make better strategic decisions that take into account the inherent price volatility of fossil fuels.

3. Technical Recommendations

Recommendation	Description	Impact
<i>Model Additional Forecasts for Natural Gas, Especially for High Price Scenarios</i>	CPS should model multiple gas price forecasts to account for future price uncertainty – especially a high gas price forecast to understand its own exposure should gas prices not remain low. Assuming a continued low price jeopardizes customer affordability and CPS' own planning since natural gas currently plays a prominent role in CPS' existing portfolio and in its Gas Conversion retirement scenario for Spruce.	High
<i>Embrace "All-Source" Procurements</i>	Going forward, CPS should embrace all-source FlexPOWER solicitations to not only competitively procure its energy supply but also to directly inform future resource planning. CPS also has an opportunity to improve future FlexPOWER procurements by 1) including all supply-side resources (wind was excluded in the 2020-2021 solicitation); 2) integrating demand-side management resources to compare solutions at a system level; and 3) increasing data transparency for respondents and stakeholders without compromising confidential developer data.	High

<i>Reassess Price Forecasts with New Incentives</i>	CPS should reevaluate its price forecasts as multiple federal incentives have changed since the release of its resource plan, including Investment Tax Credit and Production Tax Credit extensions. A proposed Direct Pay incentive structure and other incentives are also in the 2021 federal budget reconciliation package that has already passed the U.S. House of Representatives and is likely to pass the U.S. Senate. This is <i>not</i> a critique of CPS' resource plan; rather this is simply a note that federal incentives have meaningfully changed.	Medium
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IV. Inadequate Financial Considerations for Coal Retirement

How and when CPS retires the two Spruce coal plants are central questions in CPS' resource plan, but the plan does not sufficiently consider potential financial strategies that could make this process more affordable. CPS should consider solutions that other regulated utilities are exploring (i.e., creating a "regulatory asset") to allow for a more responsible retirement of Spruce with minimal rate shocks.

1. Best Practices

- a. **Evaluate Financial Tools That May Offer Flexible Asset Retirement:** Dramatic shifts in US energy markets in the past few decades have led many coal plants to become "stranded assets" (power plants that are retired earlier than originally planned). To address related financial losses of what was previously considered a valuable asset, both investor-owned and municipal utilities (e.g., JEA in Florida) are turning to financial tools and strategies that offer more flexible financial management.¹⁷ An emerging strategy is to create a "regulatory asset", which is a financial tool that allows for cost recovery to continue for a period of time for a stranded asset which is retired ahead of schedule. This strategy can reduce spikes in payments or rate shocks in situations, such as San Antonio's, where the financial loss of an asset would otherwise be passed on to utility customers when it occurs.¹⁸

2. Shortcomings of CPS' Approach

- a. **Not Considering Financial Tools That May Offer More Flexibility for Coal Retirement:** A major factor that seems to challenge the affordability of the early retirement of the Spruce units is how the asset depreciation is accounted for and how that impacts customer rates. CPS states that early closures of the Spruce assets will "require" accelerating depreciation to FY2024. This would allow CPS to recognize the financial loss of retiring those plants early. Based on CPS' modeling, passing this loss along to customers would create a near-term rate shock of more than \$22 per monthly bill for 2025 and 2026.¹⁹ This is understandably a concern. However, CPS fails to outline strategies, such as creating a regulatory asset, that may dramatically decrease or virtually eliminate near-term rate shocks. For instance, in the "Retire and Replace" scenario, CPS

¹⁷ JEA, the community-owned, municipal utility of Northeast Florida, describes its use of regulatory assets in its [2018 Annual Report](#) (see pages 59-61).

¹⁸ Another financial tool CPS could explore is "asset securitization", which replaces current interest rates on an asset with a low-interest bond paid back over a longer period of time. [Securitization is akin to refinancing a mortgage](#). Utilities have [used securitization for decades](#) to lower customer costs for unanticipated expenses, including recently to support early coal retirements. Unfortunately, securitization is currently only allowed in certain states – and not Texas.

¹⁹ [Flexible Path Resource Plan, Part 2: Financial & Other Key Information – Page 6.](#)

could create a regulatory asset in 2024 (the final depreciation year of Spruce according to CPS) and continue to depreciate the asset as though it were still in service. The table to the right illustrates how this approach could spread out the depreciation costs in a manner similar to the baseline scenario.²⁰

The use of these types of structures to address stranded assets is increasingly common in

the industry. The utility American Electric Power (AEP) indicated its intent to use this approach when it retired its [coal-fired Oklaunion Power Station in 2020, based in Vernon, Texas](#). Also, the Brattle Group found in a [recent report](#) that utilities have successfully recovered more than \$5 billion in undepreciated costs through existing regulatory tools (e.g., regulatory assets) over the past decade. If there is a legal or regulatory reason why this strategy or others are not viable, it would be in CPS' best interests to convey that upfront in its resource plan so customers and stakeholders understand that CPS has evaluated a range of options.

3. Technical Recommendations

Recommendation	Description	Impact
<i>Explore Creating a Regulatory Asset to Avoid Rate Shock</i>	CPS should seriously explore creating a “regulatory asset” to smooth out the depreciation schedule – and thus the customer bill impacts – for Spruce unit retirements.	High

V. Limited Discussion of the Impacts of Climate Change-Related Risks on Future Operations

Assessing and accounting for emerging system risks related to climate change is of increasing importance. CPS, like many utilities, has previously underestimated the impacts of extreme weather and temperature events. CPS now has an opportunity to responsibly integrate emerging risks into its analyses and modeling to better understand how such risks could impact CPS’ operations and future investment decisions. This will better serve and protect customers, enhance CPS’ own planning, and support grid reliability and resilience overall.

²⁰ The cost figures used in this mock-up are based on the Spruce Depreciation chart on page 31 of [Flexible Path Resource Plan, Part 2: Financial & Other Key Information](#). The regulatory asset columns are illustrative additions by RMI.

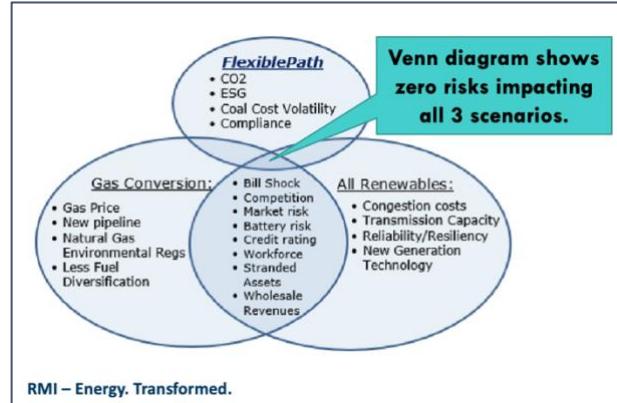
1. Best Practices

- a. **Consider Emerging Climate Change-Related Risks:** As previously noted in Section II, a resource plan should model for a range of uncertainties and risks to plan more comprehensively and weigh potential futures. Climate change-related risks – from extreme temperature events like heat waves and Winter Storm Uri to increasingly intense natural disasters such as hurricanes and wildfires – are increasing across the country and impacting utility operations. Utilities can prepare for these types of events through resiliency planning, which involves identifying risks and then considering how the community could prepare for different scenarios. As these risks become clearer, more regionally defined, and more severe, accounting for the range of these risks on customers, power plants and the grid is increasingly necessary.
- b. **Model for Peak Load Under Extreme Forecasts:** By understanding potential peak load scenarios under extreme conditions, utilities can better anticipate and plan for customer demand, how much power generation capacity will be needed to meet that demand, and whether the grid can currently support such demand (especially for prolonged extreme conditions). For example, in its [2021 Integrated Resource Plan](#), PacifiCorp considered increasingly extreme weather and the challenges such extreme weather poses to the grid in its resource planning process. The utility worked with the Northwest Power and Conservation Council to model how changing temperatures will affect peak load in its service area. PacifiCorp used these temperature projections to estimate changes in summer and winter peak loads driven by temperature change over the next three decades.

2. Shortcomings of CPS' Approach

- a. **No Acknowledgement of Operational Vulnerabilities:** Winter Storm Uri highlighted that CPS' operations are already threatened by climate change, but its resource plan does not acknowledge such vulnerabilities. In San Antonio's [2019 Vulnerability Risk Assessment](#), the City identified increased infrastructure damage as a priority risk for the community. This assessment specifically stated that "CPS Energy ensures that its infrastructure can cope with extreme temperatures and weather conditions." Unfortunately, this assurance was proven wrong just two years later with Winter Storm Uri, resulting in customers being on the hook for [at least \\$450 million](#). As Uri demonstrated, extreme weather events can compromise the reliability of all supply-side resources, including traditional "baseload" generation (natural gas, coal, and nuclear). Moreover, these events will likely only become more common and increasingly threaten Texas' energy system as the effects of climate change become more pronounced: there has already been a "[sharp increase](#)" in extreme weather-related disasters over the past two decades and an increase in [billion-dollar disaster events](#) across the United States.
- b. **Lack of Risks Associated with the FlexiblePath Scenario:** In its resource plan, CPS offers a Venn diagram (pictured right with comments added by RMI) that acknowledges numerous economic,

regulatory, financial, and technical risks for each of its three main scenarios and related operations.²¹ However, CPS fails to link certain risks, including, but not limited to, stranded assets, market risk, credit rating, and competition to the *FlexiblePath* scenario – all of which are justifiably already included for the *Gas Conversion* and *All Renewables* scenarios. Moreover, the *FlexiblePath* scenario seems to have zero overlap whatsoever with the otherwise shared risks. Perhaps this is merely an oversight in Venn diagram design, but, if so, it is a substantive oversight that may make the *FlexiblePath* scenario appear to be much less risky than the other two scenarios. Like other charts discussed previously, this could mislead stakeholders and reduce trust in CPS.



c. **Incomplete Discussion of Emerging System Risks:** CPS' risk discussion offers a solid framework to inform future modeling as discussed in Section II of this report, but it is incomplete. Emerging system risks, such as extreme temperatures and weather events, are not included in the Venn diagram shown above or CPS' resource plan generally. This directly impacts the peak load forecasts and reserve margin CPS needs to consider beyond normal weather conditions. Emerging system risks can also shape CPS' generation planning and procurement. Investments that may seem sound now may create substantial operational and affordability challenges in the future. Perhaps no situation better epitomizes this situation than CPS' 2006 construction of the second Spruce coal unit – [one of the last coal plants built in the US](#). While we have no doubt that this seemed to be a financially sound investment in the early 2000s, it was higher-risk due to the world's recognition that coal was likely to be phased out.²²

3. Technical Recommendations

Recommendation	Description	Impact
<i>Integrate Emerging Risks into Future Planning</i>	CPS should explicitly integrate extreme weather and temperature events and other climate change-related threats into future modeling and resource planning. This will enhance CPS' risk assessment and increase system-wide resilience and reliability.	High
<i>Acknowledge Operational Vulnerabilities</i>	CPS should be more open about system-wide vulnerabilities and the increasing frequency of extreme conditions that threaten its electric and gas systems. This will allow for more honest conversation with customers and key stakeholders about what CPS needs, the true cost of resilience and reliability, and how to prepare for the worst.	Medium
<i>Expand the Definition of Customer Affordability</i>	To fully consider the costs of natural disasters and extreme weather and temperature events, CPS should expand the definition of customer affordability. This pillar should include investments that reduce emergency response and recovery costs from extreme weather events and the potential costs of not investing in resilience and weatherization.	Low

²¹ [Flexible Path Resource Plan, Part 2: Financial & Other Key Information – Page 50](#).

²² An excerpt from the [IPCC's 2001 Third Assessment Report](#) highlights relevant industry knowledge to consider at the time.

Conclusion

As a final note, we recognize that the resource planning process is complex and challenging: utilities are being asked to adapt to changing community priorities and deliver ambitious emissions reductions, new generation resources, and more equitable programs, all while continuing to maintain affordable rates and reliable service. At the same time, this decade demands a transition unlike any in history. CPS must recognize that it cannot continue business as usual for operations or resource planning.

In addition to the 12 technical recommendations above (and listed in Appendix A), we encourage the City of San Antonio to consider one or more of the following 4 broader strategies in response, listed from highest to lowest impact:

1. ***Urge CPS to create a new resource plan*** that provides transparent inputs, assumptions, and modeling, follows best practices in resource planning, and is directly aligned with the City's CAAP goals. Given CPS' upcoming leadership transition, this would be a particularly opportune moment to hit the reset button and develop a new plan that is accurate, aligned with policy targets, and trusted. This would be a significant undertaking, but it would be far better than making major decisions impacting the San Antonio community based upon a plan that has clear deficiencies and falls short of best practices.
2. ***Encourage CPS to considerably revise its current resource plan*** based upon the technical recommendations and best practices listed above. This could also be a sizable effort given the need to significantly expand the number of scenarios considered, but it would result in a more transparent, robust planning process for CPS and the community.
3. ***Instruct CPS to improve its presentation and messaging*** of resource plan options and data. With relatively little effort, CPS could support a more honest conversation about its current programs, limitations in its scenarios and forecasts, and the very real trade-offs involved in an equitable, clean energy transition.
4. ***Request additional information to clarify CPS' planning process and assumptions***. This should be a relatively straightforward request for CPS to comply with, particularly if the current resource plan does continue to serve as the basis of decision-making in San Antonio (*which we cannot in good faith recommend*).

Thank you for the opportunity to help San Antonio evaluate CPS' resource plan. We hope this is a useful and timely report to support Mayor Nirenberg's climate action, resilience, equity, and affordability priorities. RMI welcomes the opportunity to further discuss this report as appropriate and help better align CPS' resource planning with the City's CAAP goals.

Appendix A: Summary of Technical Recommendations

Misleading Communication on Customer Affordability

Recommendation	Description	Impact
<i>Revise Key Affordability Charts & Correct the Record</i>	CPS should immediately revise its Customer Affordability charts to not distort the perceived cost of key decisions and to better inform the public of the very real, challenging choices CPS and San Antonio need to make. Accordingly, CPS should publicly acknowledge these mistakes and correct the record to rebuild trust with customers and key stakeholders.	High
<i>Accurately Promote the Net Benefits and Costs of Energy Efficiency & Conservation Programs</i>	Creating the false perception that CPS' energy efficiency and conservation programs have a net cost depresses enthusiasm for what are, in reality, cost-effective, well-managed, and successful programs. Energy efficiency programs can also provide important community resilience in extreme weather, as well-insulated homes will reduce strain on the grid due to lower energy needs and enhance the comfort and safety of occupants in the event of a power outage.	High

Overly Narrow Scenario Modeling and Forecasting

Recommendation	Description	Impact
<i>Embrace a Range of Scenarios and Forecasts to Model Uncertainty</i>	For future resource plans, CPS should significantly expand its set of scenarios to optimize for the retirement of the two Spruce units. CPS should also embrace a wide array of scenarios and forecasts to model for the uncertainties, decarbonization pathways, and risks CPS already acknowledges as well as multiple potential technology futures.	High
<i>Provide All Data and Sources</i>	CPS should be transparent and provide its data, sources, and methodologies related to each of its scenarios and forecasts. This will also build trust among customers and other key stakeholders.	Medium
<i>Clarify How Retirement Scenarios Were Selected</i>	At the very least, CPS should publicly clarify why it decided to only model and compare the three retirement scenarios that were included in the resource plan.	Low

Suboptimal Analysis of Clean Energy Market Data and Natural Gas Price Forecasts

Recommendation	Description	Impact
<i>Model Additional Forecasts for Natural Gas, Especially for High Price Scenarios</i>	CPS should model multiple gas price forecasts to account for future price uncertainty – especially a high gas price forecast to understand its own exposure should gas prices not remain low. Assuming a continued low price jeopardizes customer affordability and CPS' own planning since natural gas currently plays a prominent role in CPS' existing portfolio and in its Gas Conversion retirement scenario for Spruce.	High
<i>Embrace "All-Source" Procurements</i>	Going forward, CPS should embrace all-source FlexPOWER solicitations to not only competitively procure its energy supply but also to directly inform future resource planning. CPS also has an opportunity to improve future FlexPOWER procurements by 1) including all supply-side resources (wind was excluded in the 2020-2021 solicitation); 2) integrating demand-side management resources to compare solutions at a system level; and 3) increasing data transparency for respondents and stakeholders without compromising confidential developer data.	High

<i>Reassess Price Forecasts with New Incentives</i>	CPS should reevaluate its price forecasts as multiple federal incentives have changed since the release of its resource plan, including Investment Tax Credit and Production Tax Credit extensions. A proposed Direct Pay incentive structure and other incentives are also in the 2021 federal budget reconciliation package that has already passed the U.S. House of Representatives and is likely to pass the U.S. Senate. This is <i>not</i> a critique of CPS' resource plan; rather this is simply a note that federal incentives have meaningfully changed.	Medium
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Inadequate Financial Considerations for Coal Retirement

Recommendation	Description	Impact
<i>Explore Creating a Regulatory Asset to Avoid Rate Shock</i>	CPS should seriously explore creating a "regulatory asset" to smooth out the depreciation schedule – and thus the customer bill impacts – for Spruce unit retirements.	High

Limited Discussion of the Impacts of Climate-Change Related Risks on Future Operations

Recommendation	Description	Impact
<i>Integrate Emerging Risks into Future Planning</i>	CPS should explicitly integrate extreme weather and temperature events and other climate change-related threats into future modeling and resource planning. This will enhance CPS' risk assessment and increase system-wide resilience and reliability.	High
<i>Acknowledge Operational Vulnerabilities</i>	CPS should be more open about system-wide vulnerabilities and the increasing frequency of extreme conditions that threaten its electric and gas systems. This will allow for more honest conversation with customers and key stakeholders about what CPS needs, the true cost of resilience and reliability, and how to prepare for the worst.	Medium
<i>Expand the Definition of Customer Affordability</i>	To fully consider the costs of natural disasters and extreme weather and temperature events, CPS should expand the definition of customer affordability. This pillar should include investments that reduce emergency response and recovery costs from extreme weather events and the potential costs of not investing in resilience and weatherization.	Low