SOUTHWESTERN PUBLIC SERVICE COMPANY
2023 NEW MEXICO INTEGRATED RESOURCE PLAN

July 6, 2023

Note: The Modeling Contained in this Presentation is for Demonstrative Purposes Only

FOR DEMONSTRATIVE PURPOSES

As discussed during previous stakeholder meetings, SPS intends to update several critical inputs to the EnCompass modeling (e.g., NREL cost data), therefore, the results shown today are for demonstrative purposes only – actual results will likely change significantly

The purpose of presenting draft results today is intended to simply show how the EnCompass model will (1) solve the most cost-effective portfolio of resources ("MCEP"), and (2) drive further discussion and conversations

ENCOMPASS FUNDAMENTALS

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WHAT IS THE MOST COST-EFFECTIVE PORTFOLIO OF RESOURCES?

- Portfolio of existing, and new, generating resources that results in the lowest total system-wide cost, on a present value basis, over the 20-year planning period
- Costs are categorized as 'fixed' costs and 'variable / production' costs.
  - Fixed costs ($), such as capital investment, labor, maintenance, etc. generally do not vary with the short-term output of the generator
  - Variable / production costs ($/MWh) vary with the energy produced or purchased e.g., fuel, chemicals, market energy purchases / sales etc.
- Annual total system-wide costs = Fixed Costs ($) + Production Costs ($/MWh) – Production Revenue (e.g.) Market Sales ($/MWh)
- EnCompass creates the most cost-effective portfolio of resources to meet SPS's energy and capacity needs

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SELECTING THE MOST COST-EFFECTIVE PORTFOLIO OF RESOURCES

- **Common Misconception #1:** EnCompass will solve for the MCEP to meet SPS's capacity need inc. the planning reserve margin requirement ("PRM"). Stated differently, EnCompass will select the lowest cost portfolio resources that results in a 15% PRM
- **Reality:** EnCompass will solve for the MCEP that meets, *or exceeds,* SPS's PRM requirement. The accredited capacity of the MCEP could far exceed the 15% PRM

- **Common Misconception #2:** Retiring resources are directly 'replaced'
- **Reality:** Retiring generation does increase the capacity need in EnCompass, however, EnCompass is still solving for the MCEP portfolio of resources that meets, or exceeds, SPS's capacity need. This is an important distinction, as new generation may be acquired years in advance of a retiring generator

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EXAMPLE COST CALCULATION

Planning Period – 20 Years

PVRR Production Cost	NPV ($M) 2023-2042	2023 ($,000)	2024 ($,000)	2025 ($,000)	2026 ($,000)
Example	$12,507	$989,067	$1,010,569	$1,129,218	$1,004,691

Solving to Lowest Cost

Fixed Cost + Variable Cost
(Cost – Revenue)

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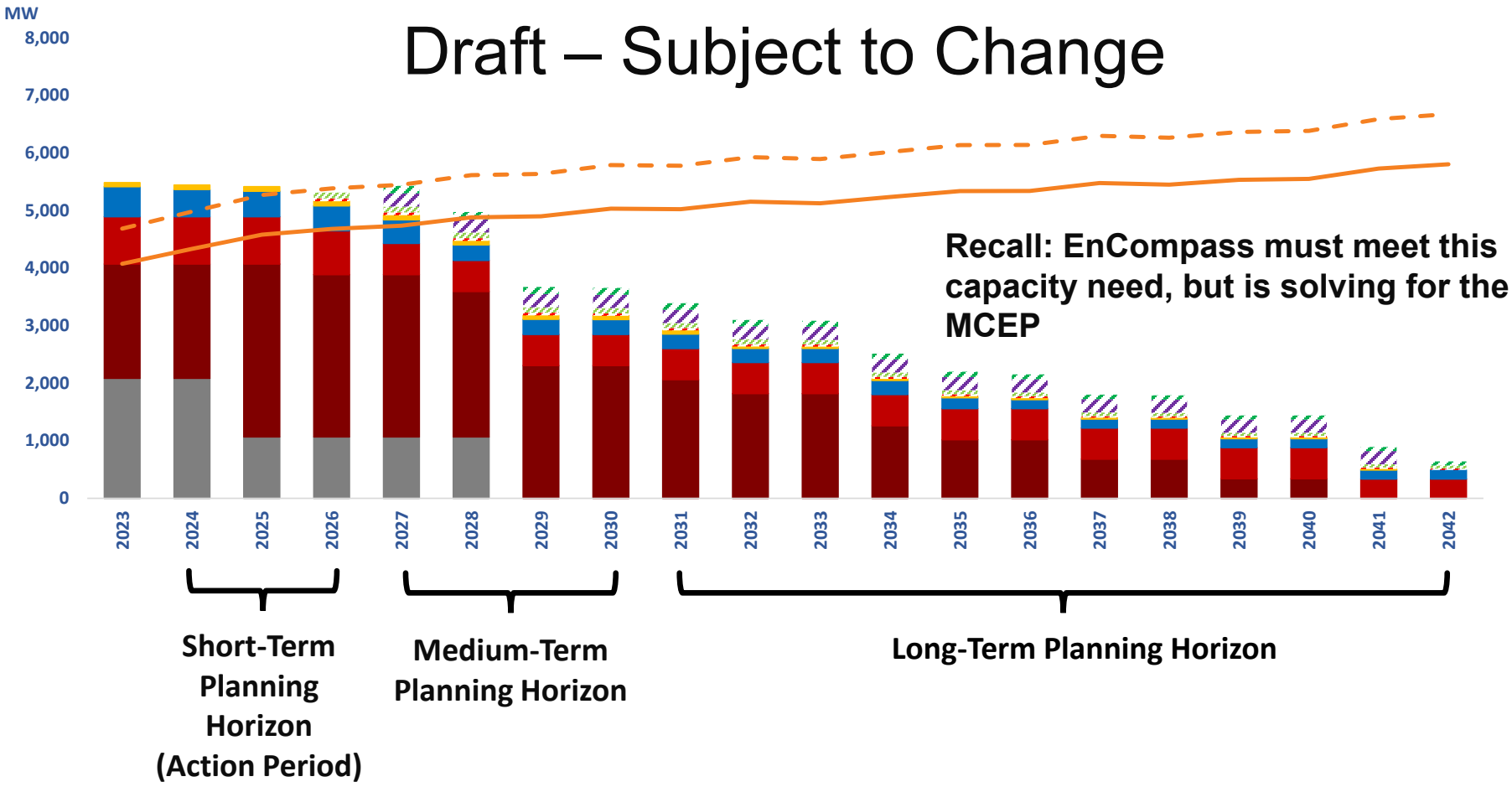
SPS's Capacity Need – Planning Forecast



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DRAFT MOST COST-EFFECTIVE PORTFOLIO OF RESOURCES

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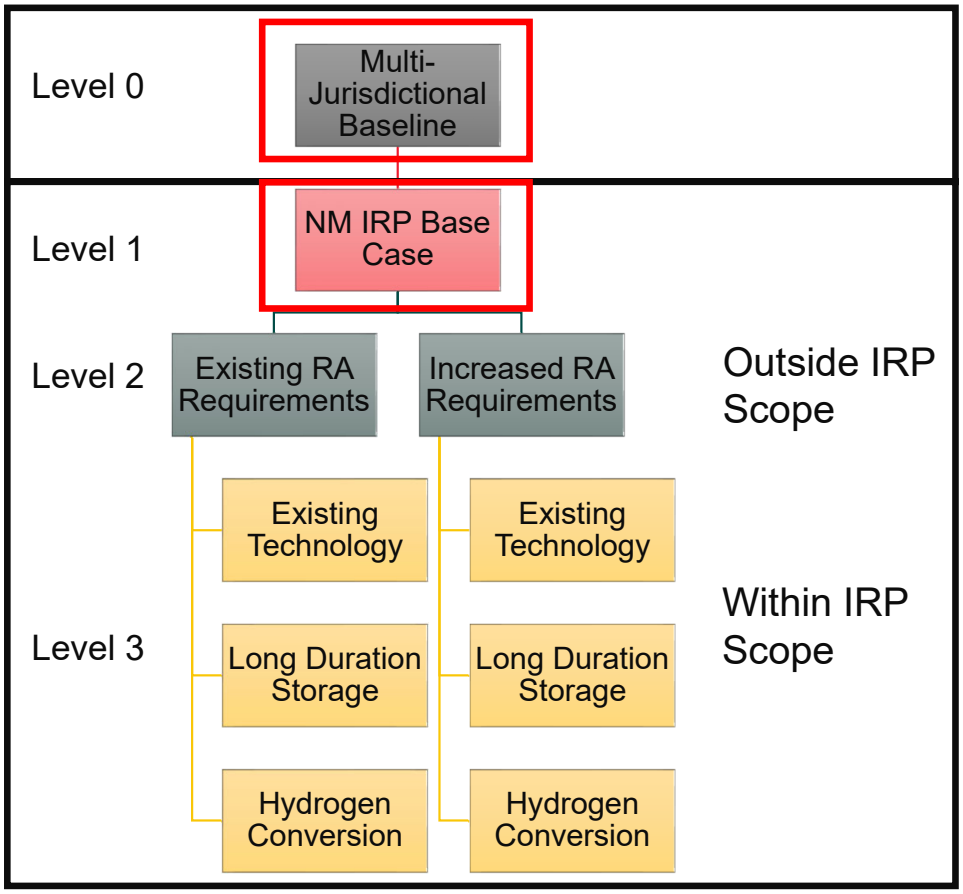
SPS – Modeling Hierarchy



Drafts of Level 0 and Level 1 are Previewed Today

Existing Technology Available for Selection

- Solar
- Wind
- 4-hour BESS (lithium-ion battery energy storage systems)
- 6-hour BESS
- 8-hour BESS
- Hybrid - Solar + 4-hour BESS
- New gas units are *not* included in Level 1

Future Sensitivities:

- Increased Resource Adequacy Requirements
  - In the summer 18% & 20% in the Winter
- Long Duration Storage
  - Addition of 100-hour long duration BESS
- Hydrogen Conversion
  - Allow new firm and dispatchable gas generation assuming conversion to 100% hydrogen before 2040

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LEVEL 0

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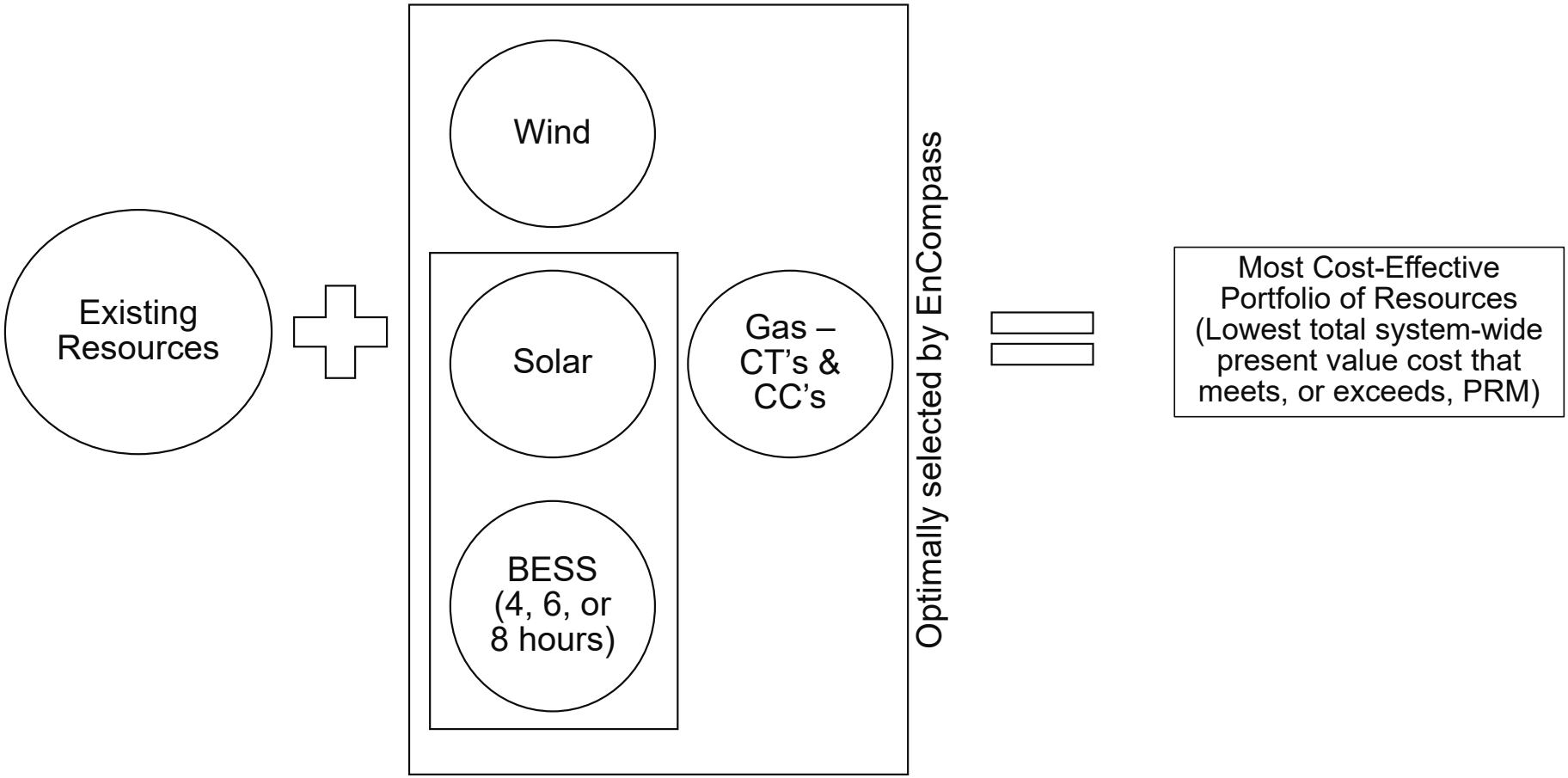
Existing 'Commercially Viable' Technology



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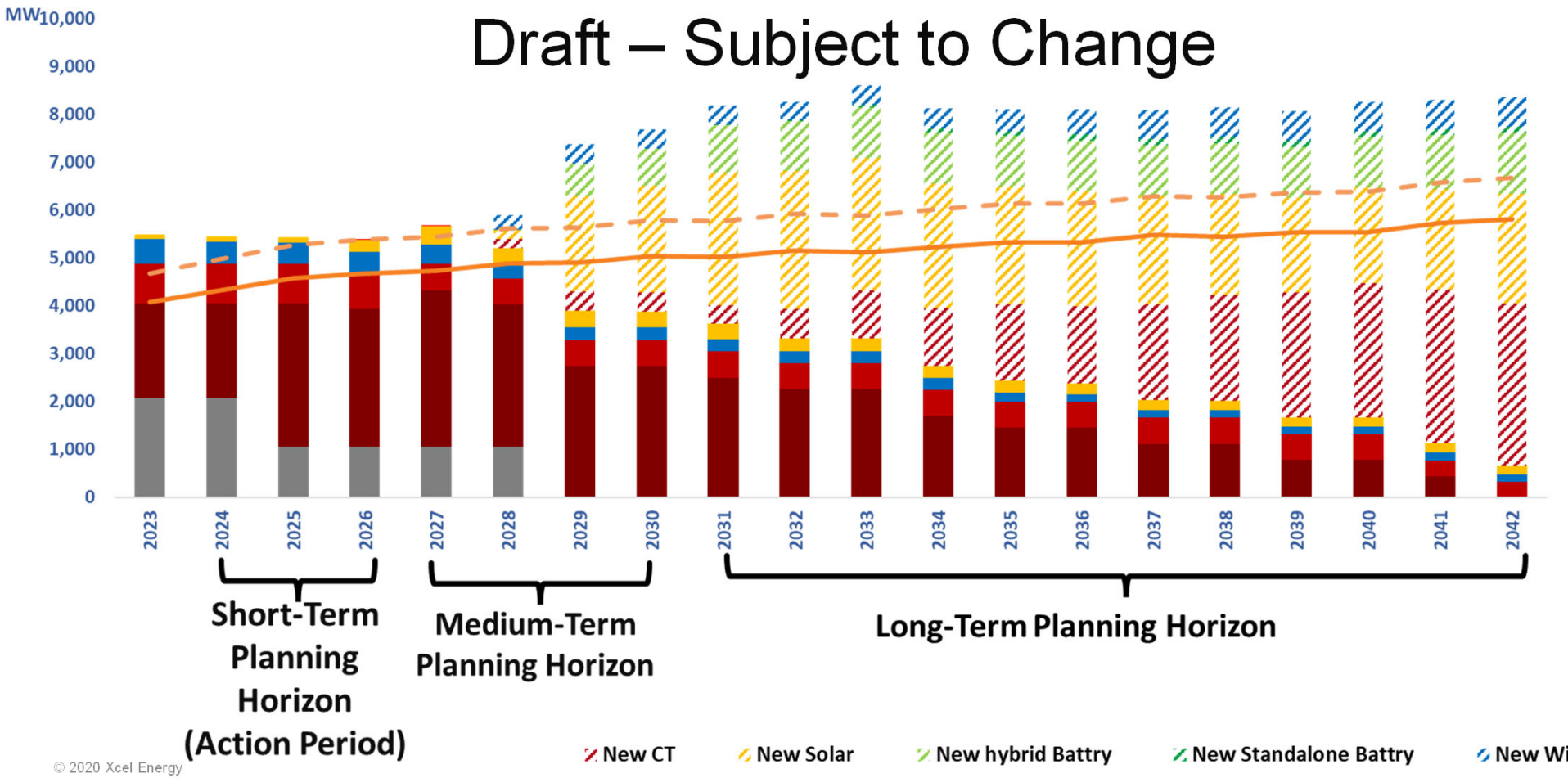
SPS's Capacity Need – Planning Forecast



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LEVEL 1

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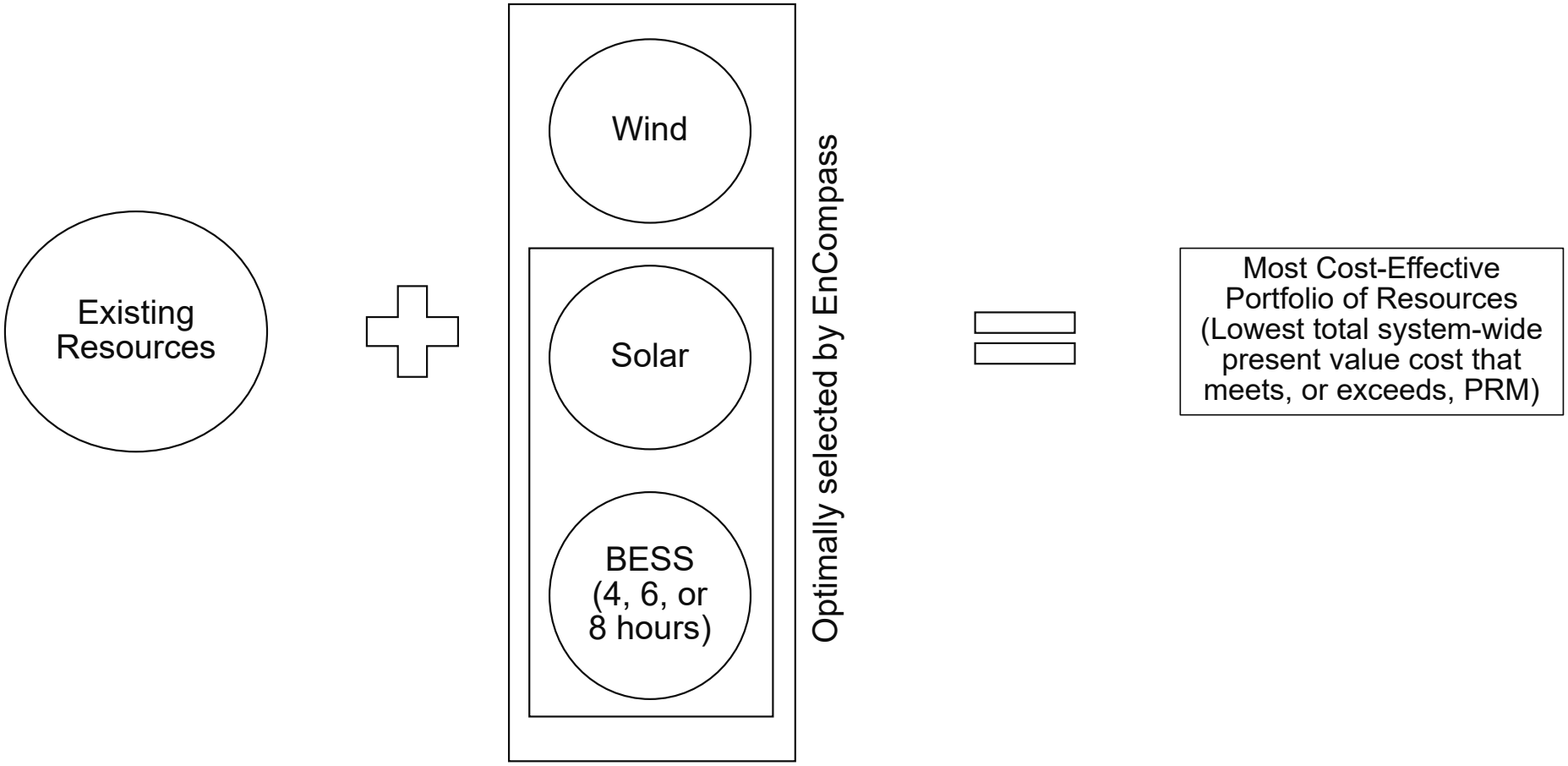
Existing 'Commercially Viable' Technology



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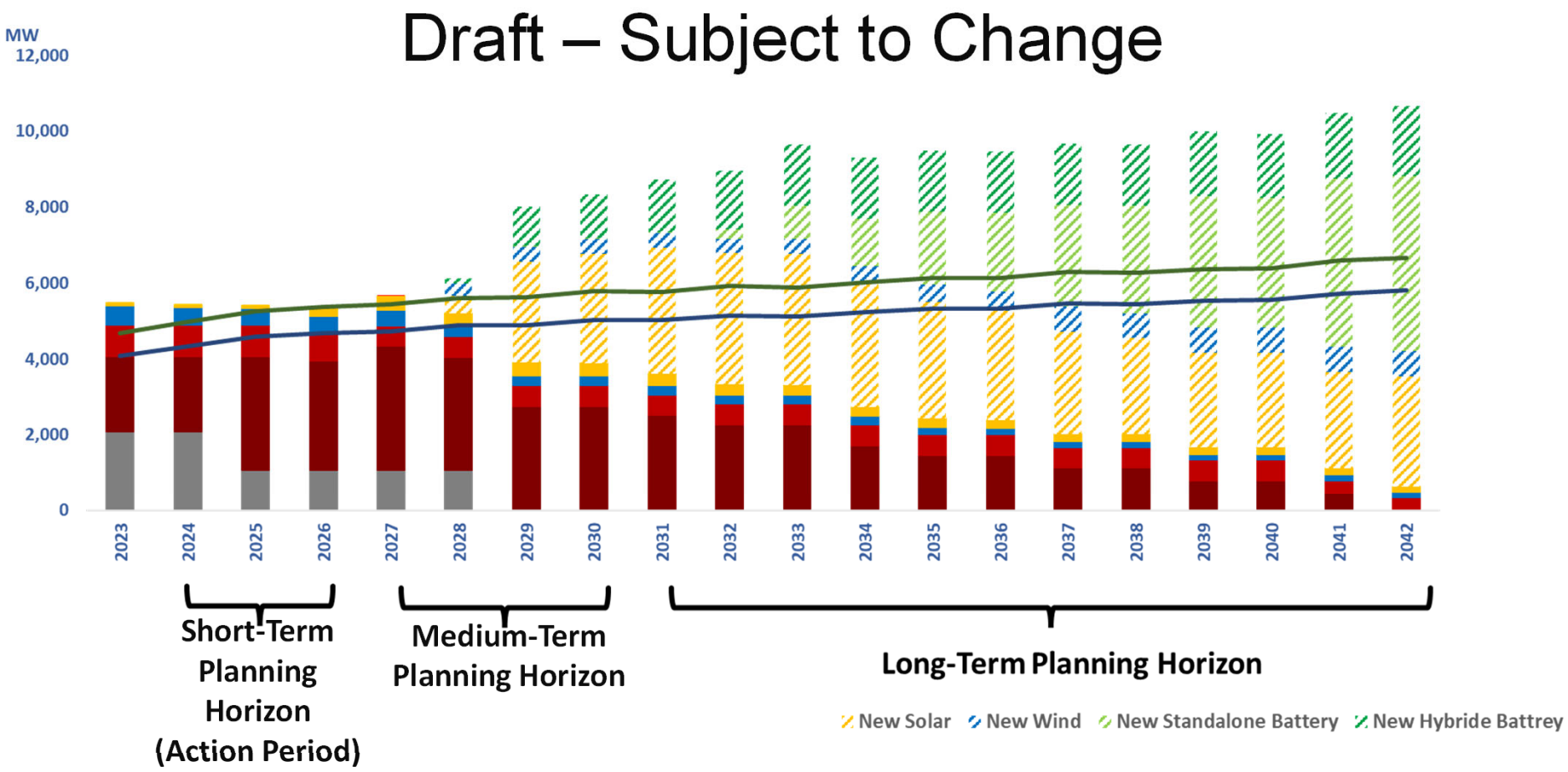
SPS's Capacity Need – Planning Forecast



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COMPARE: LEVEL 0 VS. LEVEL 1

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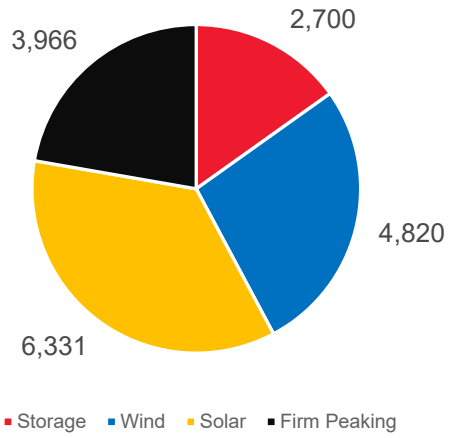
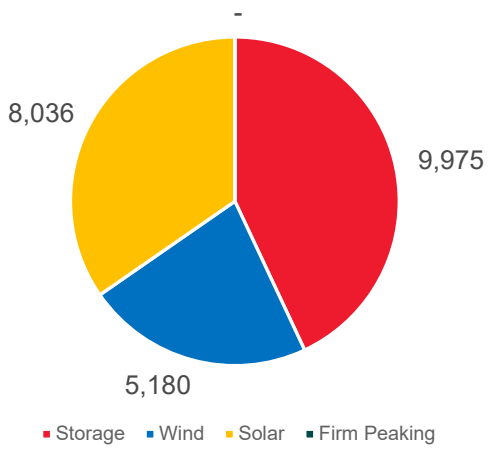
Expansion Plan

Nameplate capacity (MW) of new generating resources added by year and type for the Level 0 and Level 1 scenarios

Level 0 Total Nameplate Capacity (MW) Additions from 2028-2042



Level 1 Total Nameplate Capacity (MW) Additions from 2028-2042



Difference (MW)	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	Total
Storage	305	430	25	60	420	790	430	800	200	790	240	1,050	-	1,345	390	7,275
Wind	80	(80)	(50)	(80)	(80)	80	280	(70)	(110)	390	-	-	-	-	-	360
Solar	421	634	50	(144)	97	260	-	-	(243)	-	-	340	-	(190)	480	1,705
Firm Peaking	(233)	(233)	-	-	(233)	(467)	(233)	(467)	-	(467)	(233)	(467)	(233)	(467)	(233)	(3,966)
Total	**573**	**751**	**25**	**(164)**	**204**	**663**	**477**	**263**	**(153)**	**713**	**7**	**923**	**(233)**	**688**	**637**	**5,374**

Draft Results – Subject To Change

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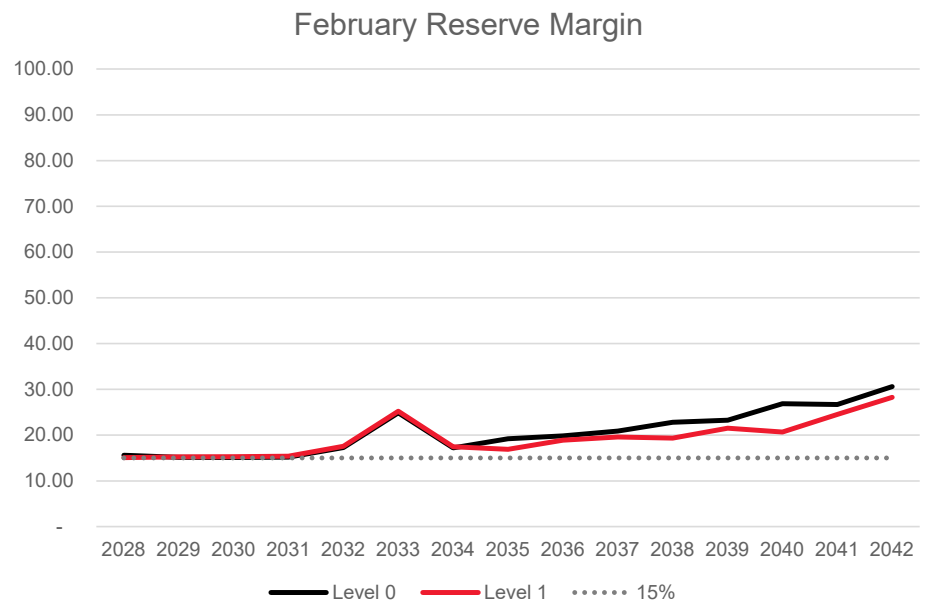
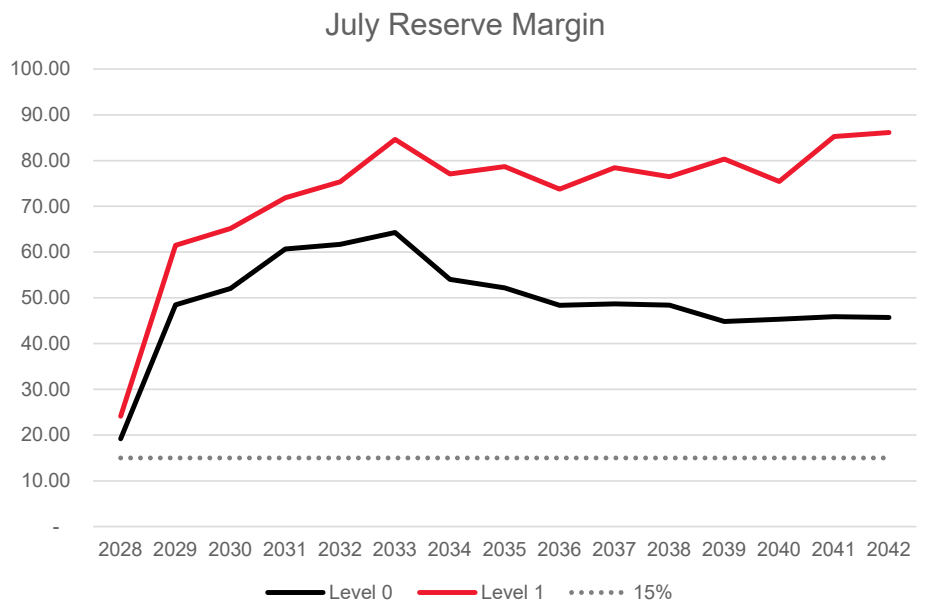
Reserve Margin

The reserve margin varies by month. As we add more renewables it tends to be higher in the summer months and closer to the required 15% reserve margin in the winter months.





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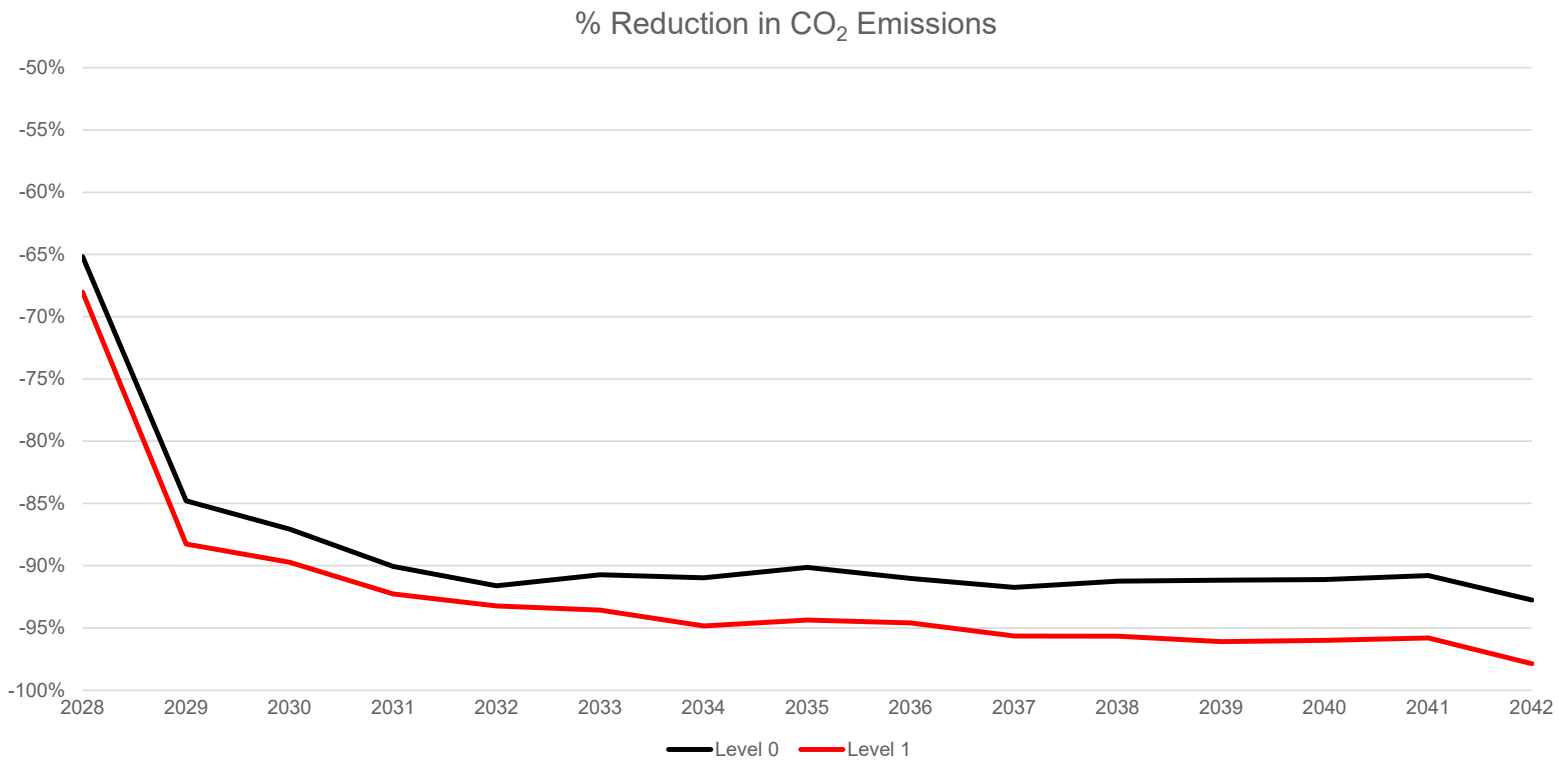
% Reduction in CO_2 Emissions from 2005 Levels



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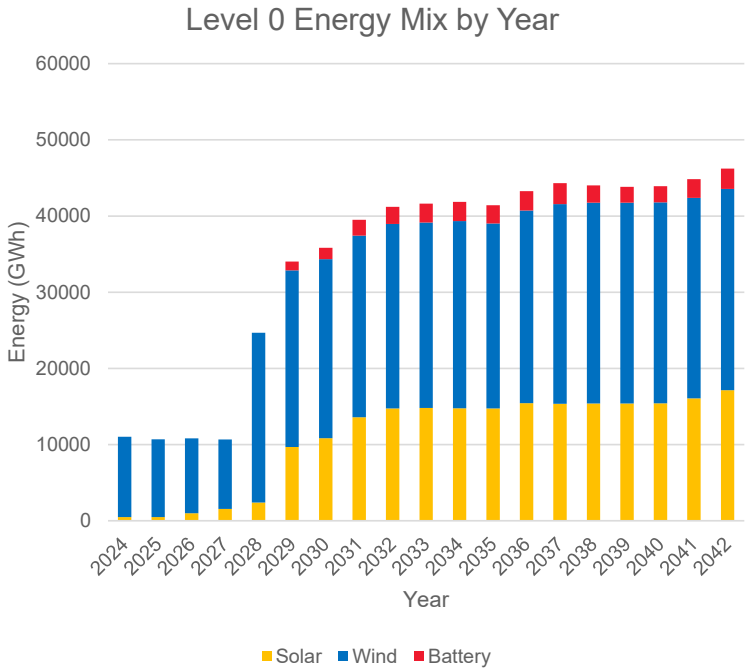
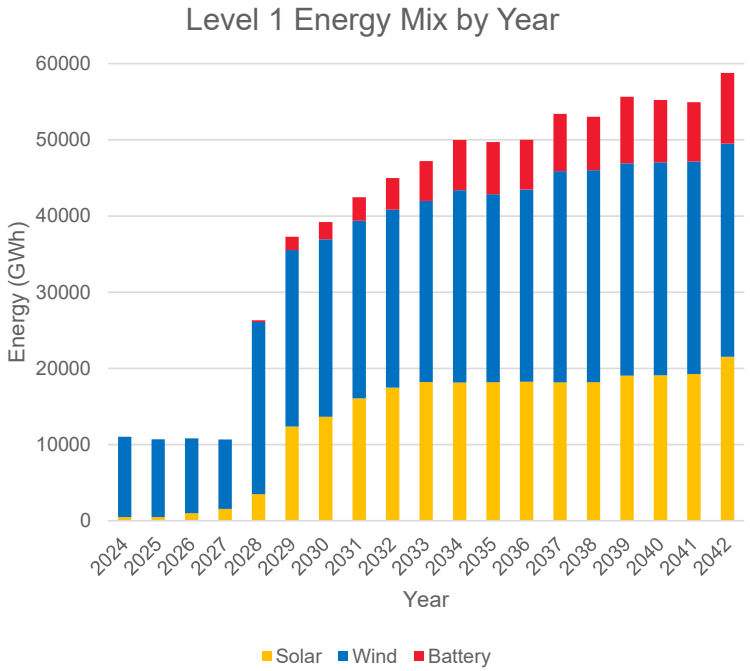
Increased Renewables in Energy Portfolio





Of the energy we produce **88%** will come from renewable resources by 2030 and **100%** by the year 2042 for the Level 1 modeling scenario

Renewable Energy (%)	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Level 0	31%	42%	36%	37%	67%	83%	85%	89%	91%	90%	92%	92%	92%	93%	93%	93%	93%	93%	97%
Level 1	31%	42%	36%	37%	70%	86%	88%	91%	92%	93%	96%	96%	96%	97%	97%	97%	97%	97%	100%

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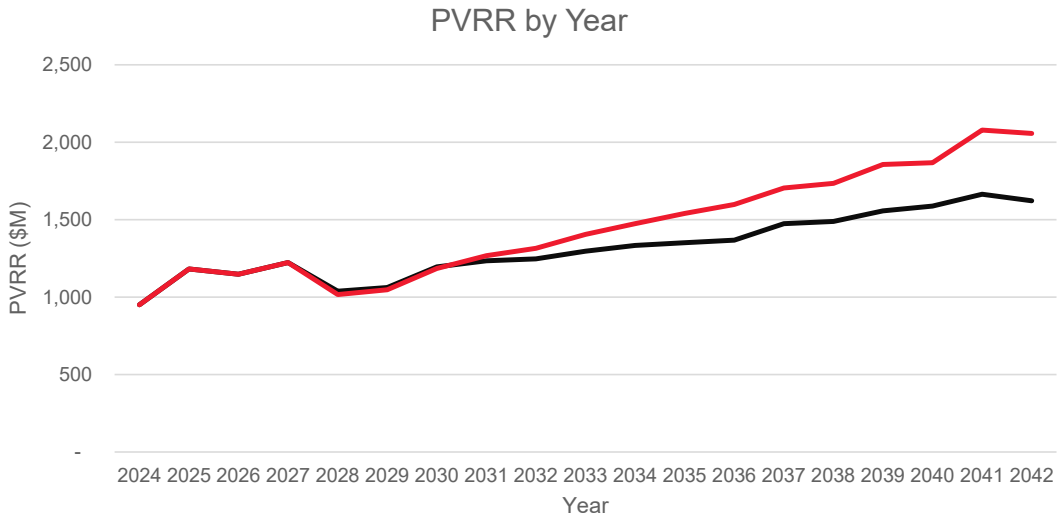
Present Value of Revenue Requirements (PVRR)

Present Value
value in the present of a sum of money

Revenue Requirements
total amount of money a utility must collect from customers to pay all its costs

$935m Increase
in PVRR from renewable expansion over the next 20 years



Draft Results – Subject To Change

PVRR ($M)		NPV 2023-2042	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Level 0	**$**	**12,926**	950	1,182	1,148	1,223	1,039	1,063	1,196	1,235	1,247	1,297	1,334	1,351	1,368	1,475	1,489	1,557	1,589	1,664	1,623
Level 1	**$**	**13,862**	950	1,182	1,148	1,223	1,017	1,048	1,185	1,268	1,315	1,405	1,475	1,541	1,598	1,704	1,733	1,856	1,867	2,078	2,056
Delta	*$*	***935***	*0*	*0*	*(0)*	*(0)*	*(22)*	*(14)*	*(10)*	*33*	*68*	*108*	*141*	*190*	*230*	*229*	*244*	*299*	*279*	*414*	*433*

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