2021 IRP Modeling Results

ENTERGY ARKANSAS, LLC

SEPTEMBER 2021

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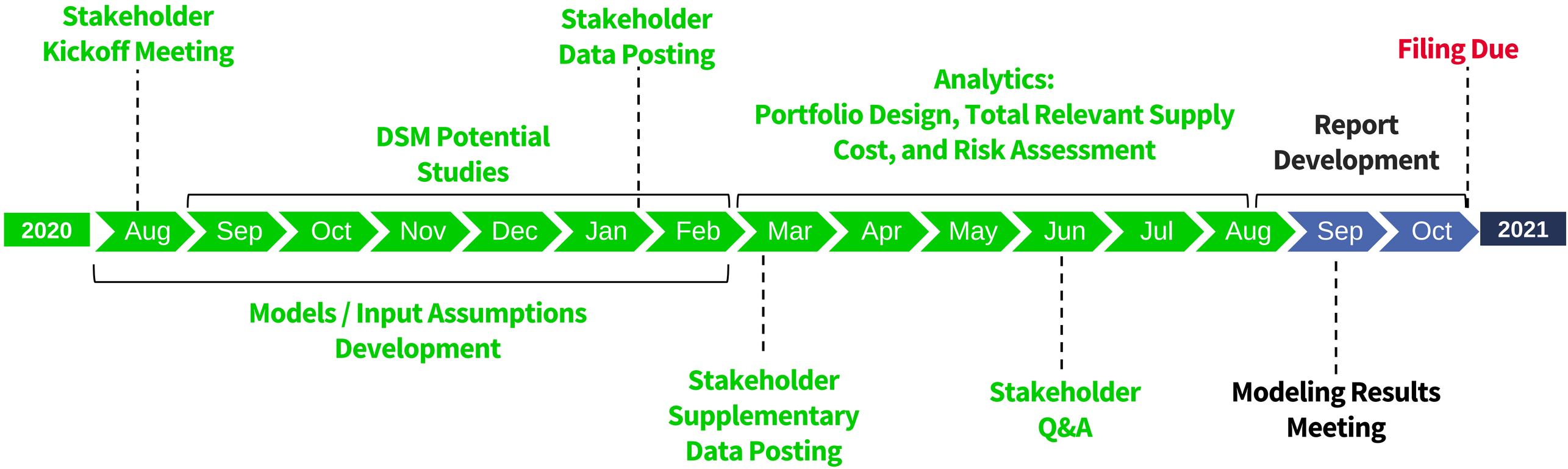
Creating sustainable value for all

Meeting Agenda

Discussion centers around AURORA portfolio modeling results and Next Steps

- Project Schedule Update
- AURORA Modeling Results
  - MISO Market Capacity Expansion Modeling
  - EAL Capacity Expansion Results
  - Production Cost Modeling Results (TRSC)
- IRP Action Plan
- Stakeholder Report

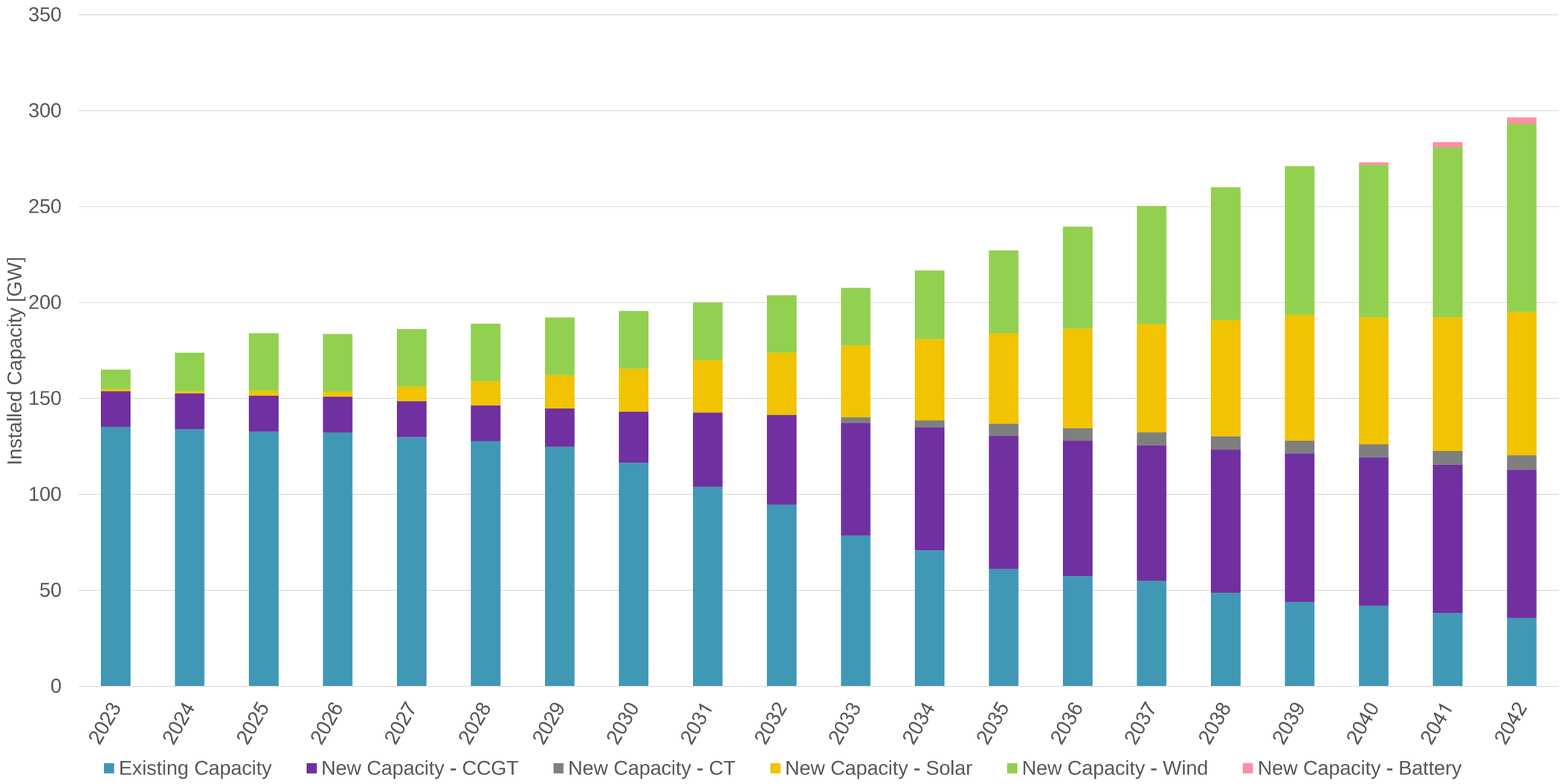
Project Schedule Update (Major Milestones)



- AURORA modeling substantially complete; results follow in this presentation
- IRP report is currently under development
- Stakeholder Committee report

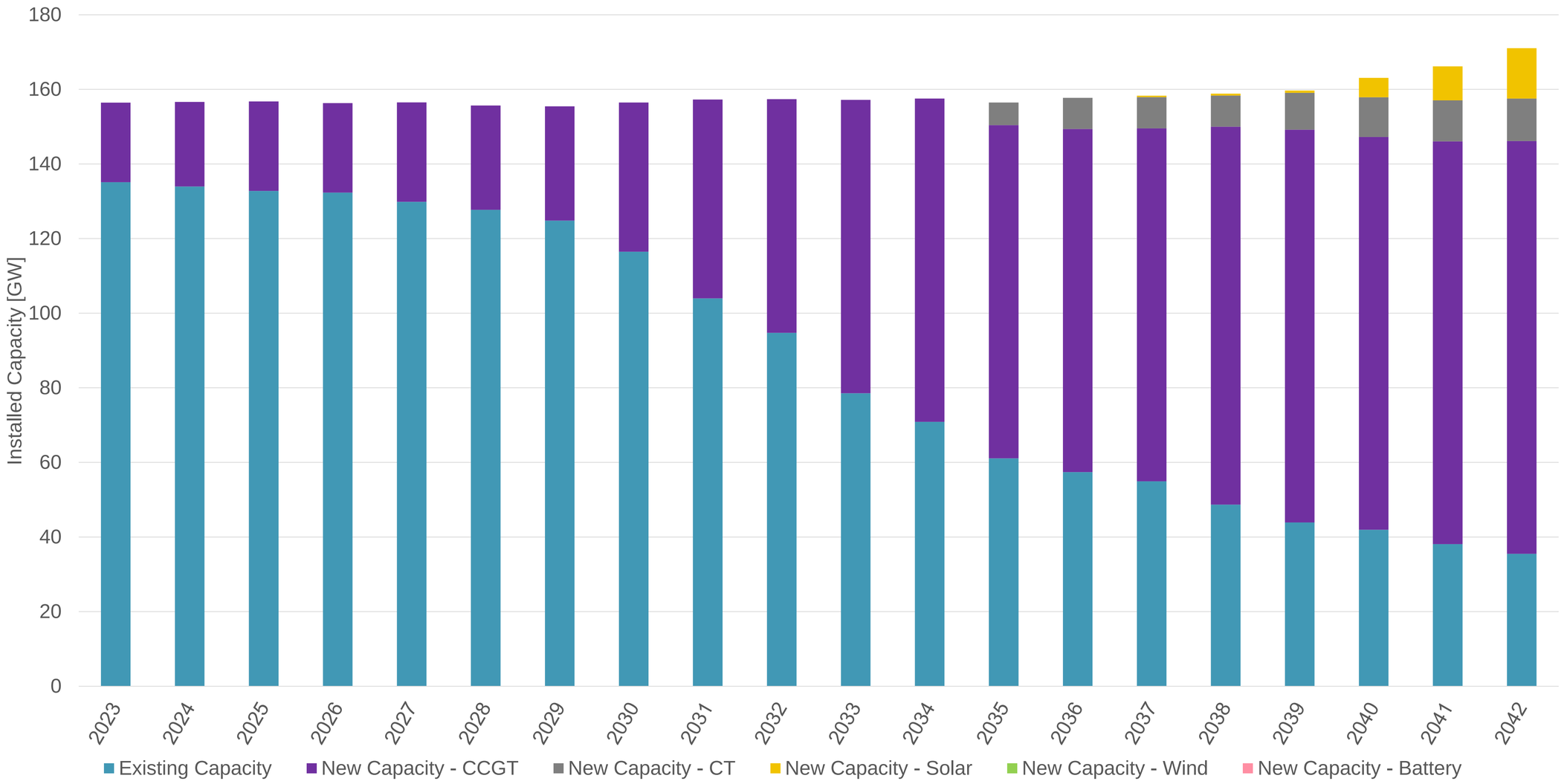
MISO Market Capacity Expansion Summary

MISO Market Model Build Future 1 (Ref Gas, Ref CO_2)



**The market build capacity expansion targeted meeting a MISO annual peak plus 18% reserve margin*

MISO Market Model Build Future 2 (Low Gas, No CO_2)



**The market build capacity expansion targeted meeting a MISO annual peak plus 18% reserve margin*

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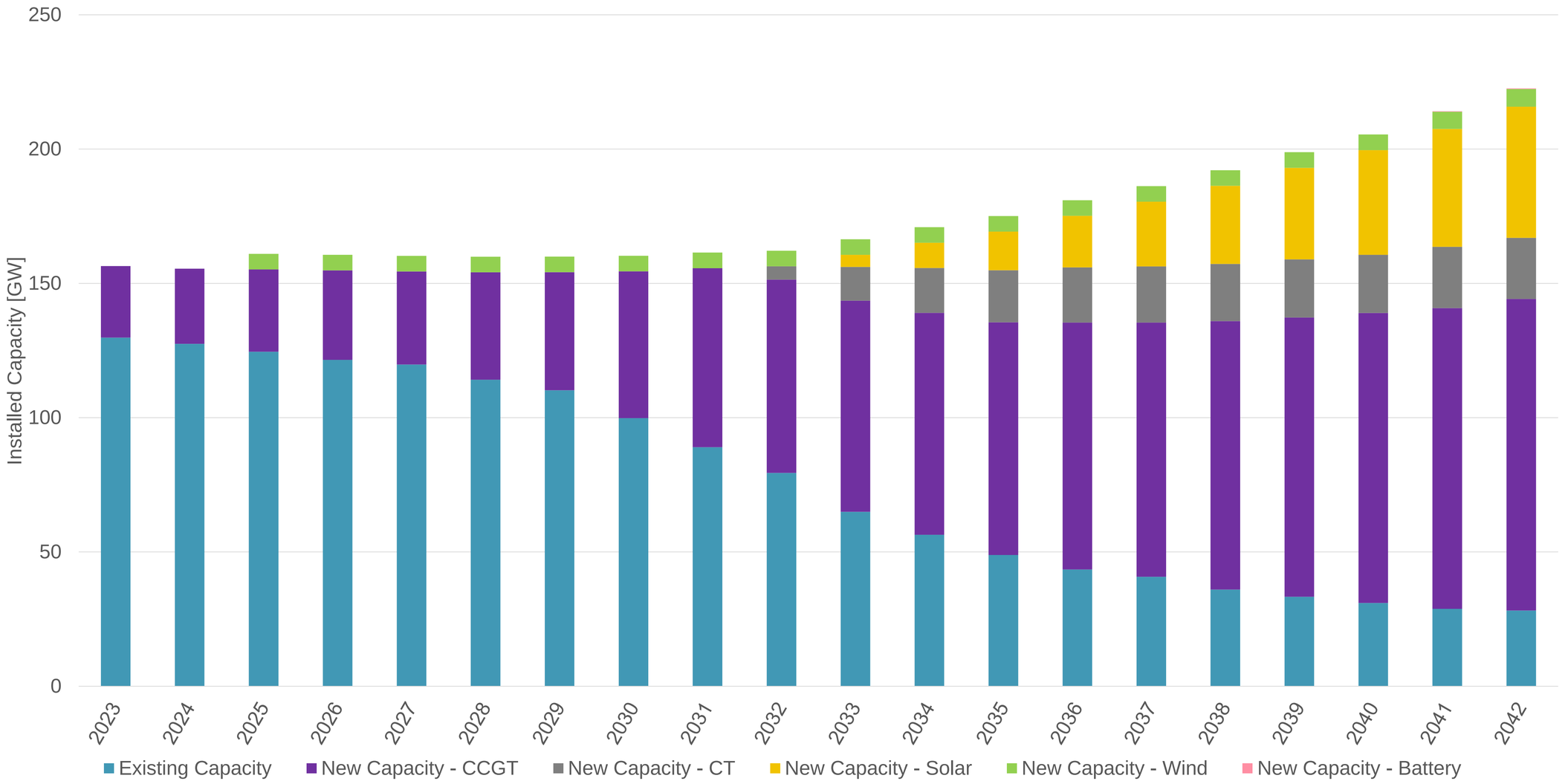
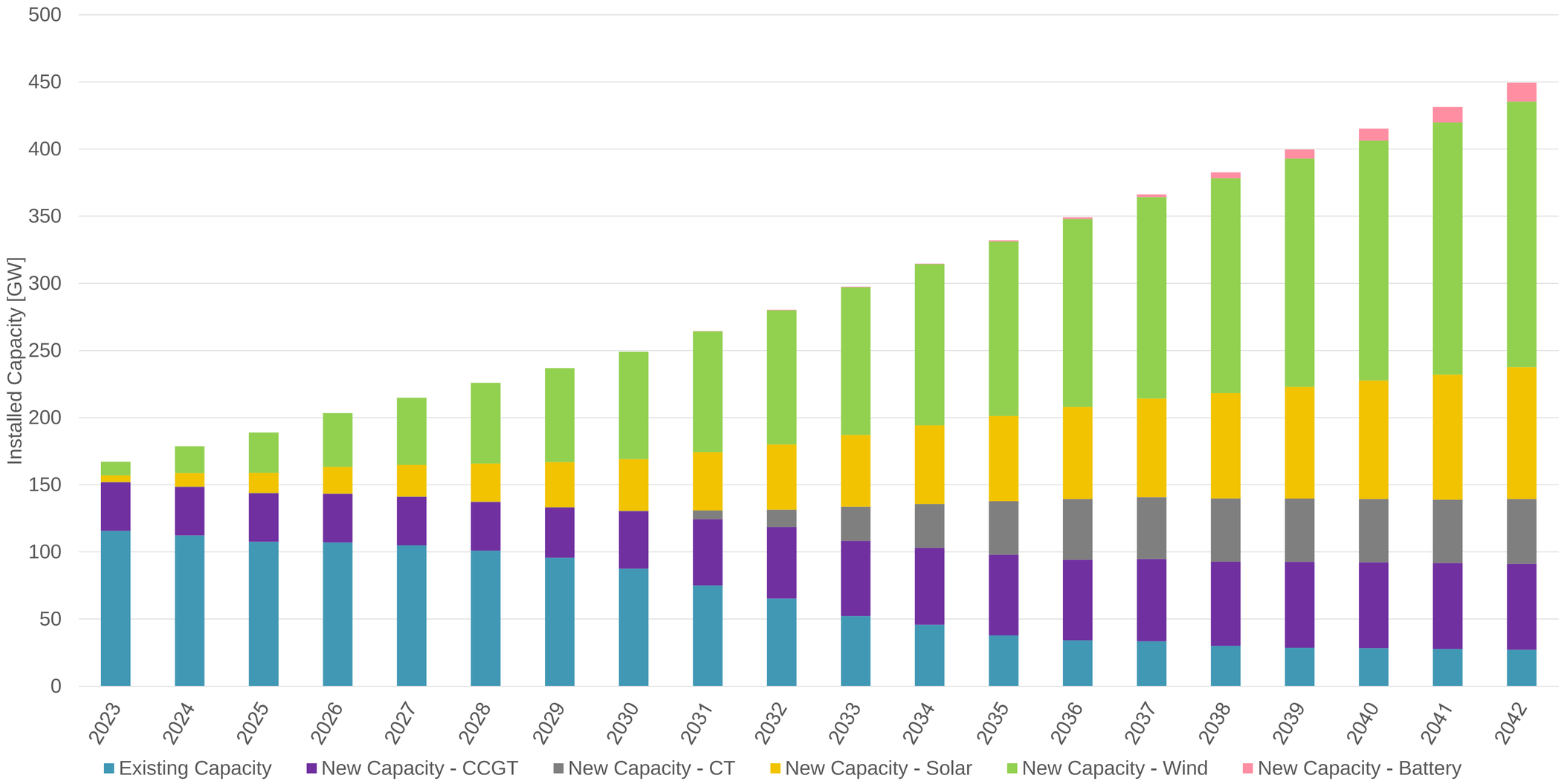
MISO Market Model Build Future 3 (Low Gas, Ref CO_2)



**The market build capacity expansion targeted meeting a MISO annual peak plus 18% reserve margin*

MISO Market Model Build Future 4 (High Gas, High CO_2)



**The market build capacity expansion targeted meeting a MISO annual peak plus 18% reserve margin*

MISO Market Model Build Summary

Installed Capacity (MWs)	Future 1	Future 2	Future 3	Future 4
Battery	3,350	0	200	13,950
1x1 CCGT	0	0	0	0
2x1 CCGT	80,494	115,190	120,742	66,616
CT	7,922	11,884	23,767	50,307
Solar	74,700	13,500	48,800	98,200
Wind	98,000	0	6,600	197,800
Total MWs Built	**264,467**	**140,574**	**200,109**	**426,873**

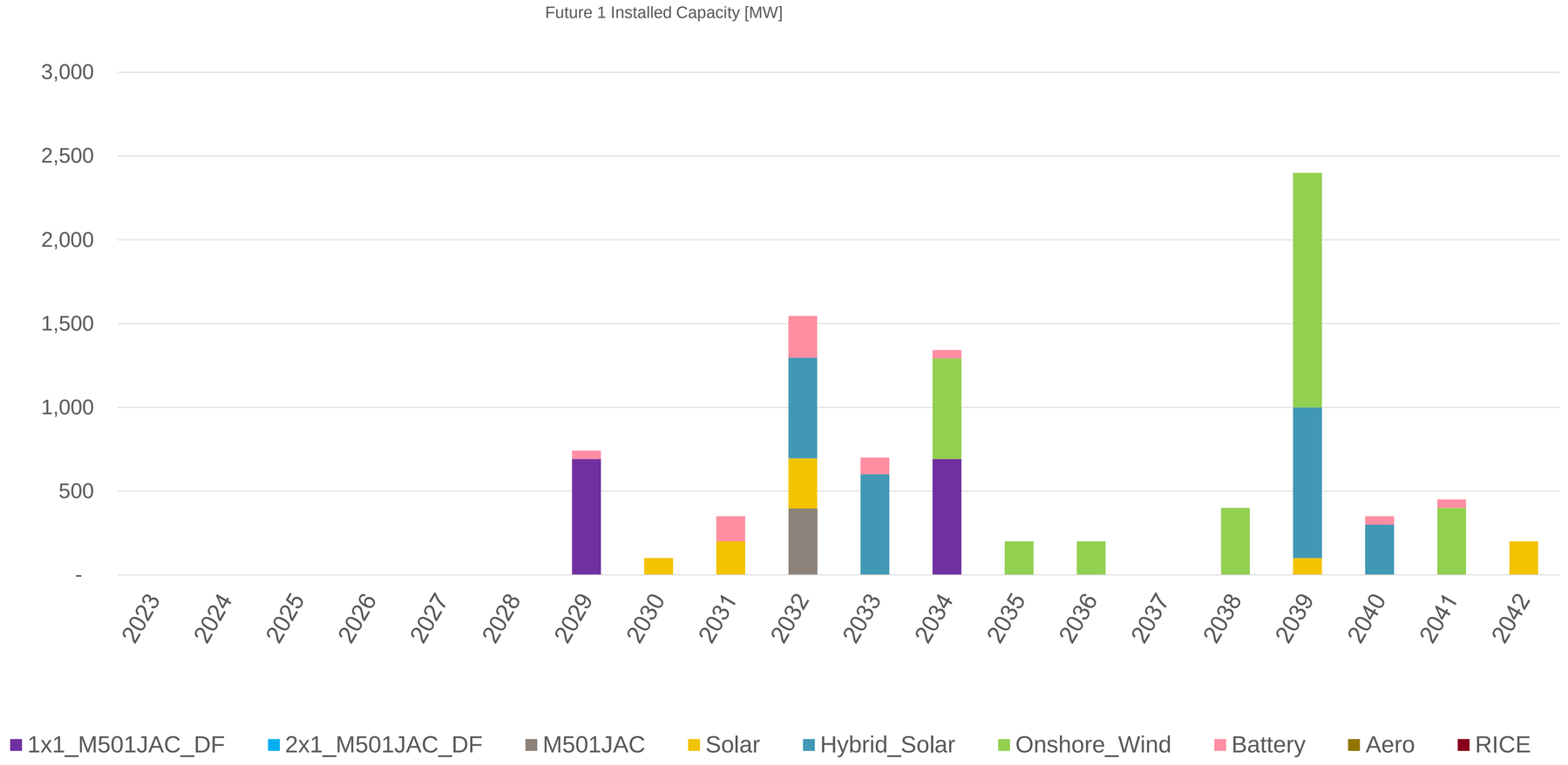
Effective Capacity (MWs)	Future 1	Future 2	Future 3	Future 4
Battery	3,350	0	200	13,950
1x1 CCGT	0	0	0	0
2x1 CCGT	77,314	110,639	115,971	63,984
CT	7,600	11,400	22,800	48,260
Solar	22,410	4,050	14,640	29,460
Wind	14,896	0	1,003	30,066
Total MWs Built	**125,570**	**126,089**	**154,614**	**185,720**

- Capacity expansion was performed for the MISO market without EAL
- Annual limit of 5GWs of solar and 10GWs of wind allowed each year
- The market build capacity expansion targeted meeting a MISO reserve margin of 18%
- Solar has effective capacity credit of 50% initially and starts declining by 2% each year starting 2026, stopping at 30%
- Wind has effective capacity credit of 16.6%
- Values in the chart represents cumulative capacity additions for 2023-2042

EAL Capacity Expansion Summary

EAL Optimized Portfolio Future 1 (Ref Gas, Ref CO_2)

Future 1 (Installed MW)	
Solar	900
Hybrid	2,400
Onshore Wind	3,200
Battery	700
1x1 CCGT	1,300
2x1 CCGT	0
CT	372
Total	**8,872**

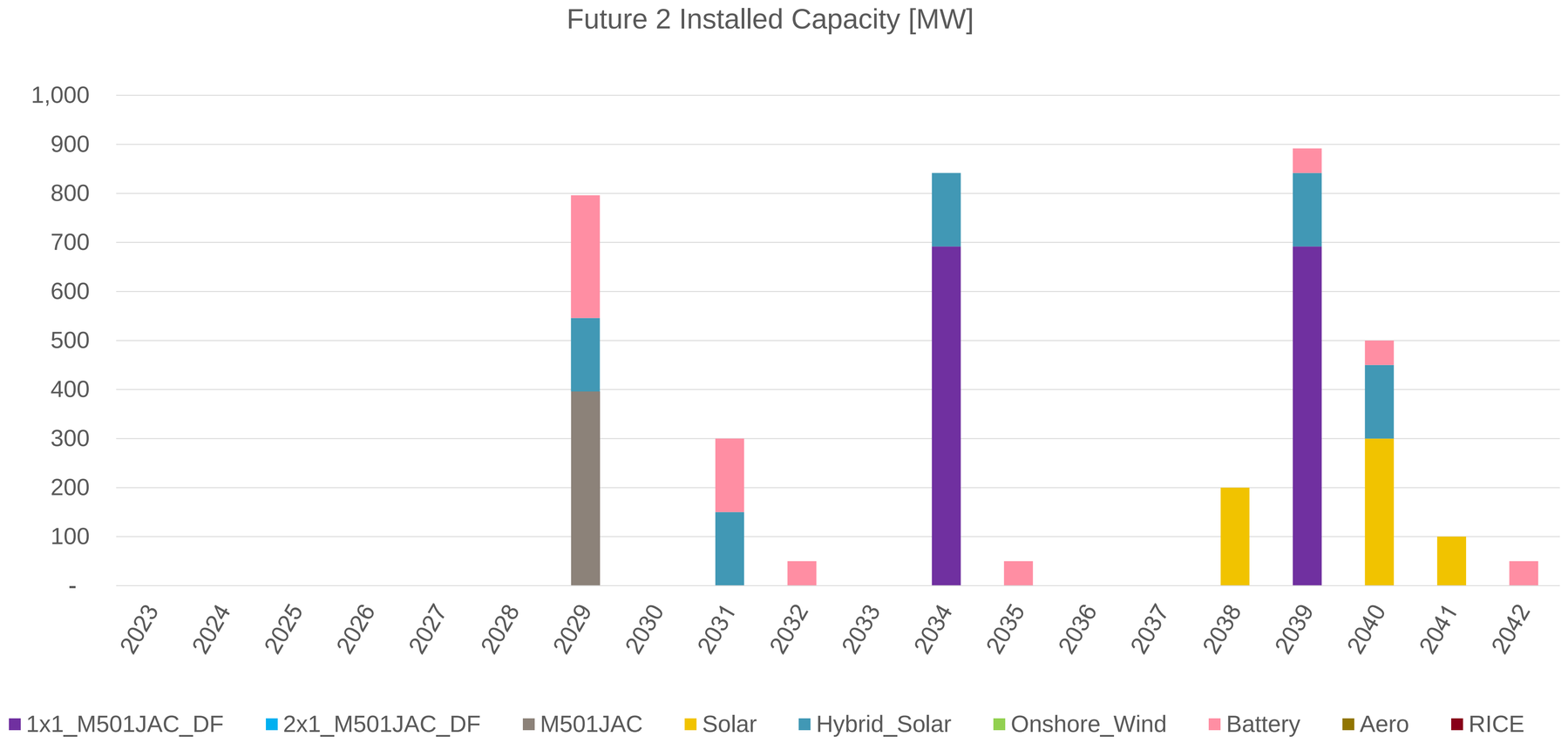


	EAL Selected DR Annual Impact to Peak Load (MW)*																		
	2023	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**	**2040**	**2041**	**2042**
Agricultural Irrigation Load Smart Thermostat (Res)	107	133	147	144	131	127	122	118	106	114	123	114	110	111	103	93	90	76	71	63

*DR MW shown represents the gross MW saving in load after the programs selected was applied to the original peak

EAL Optimized Portfolio Future 2 (Low Gas, No CO_2)

Future 2 (Installed MW)	
Solar	600
Hybrid	750
Onshore Wind	0
Battery	650
1x1 CCGT	1,300
2x1 CCGT	0
CT	372
Total	**3,672**

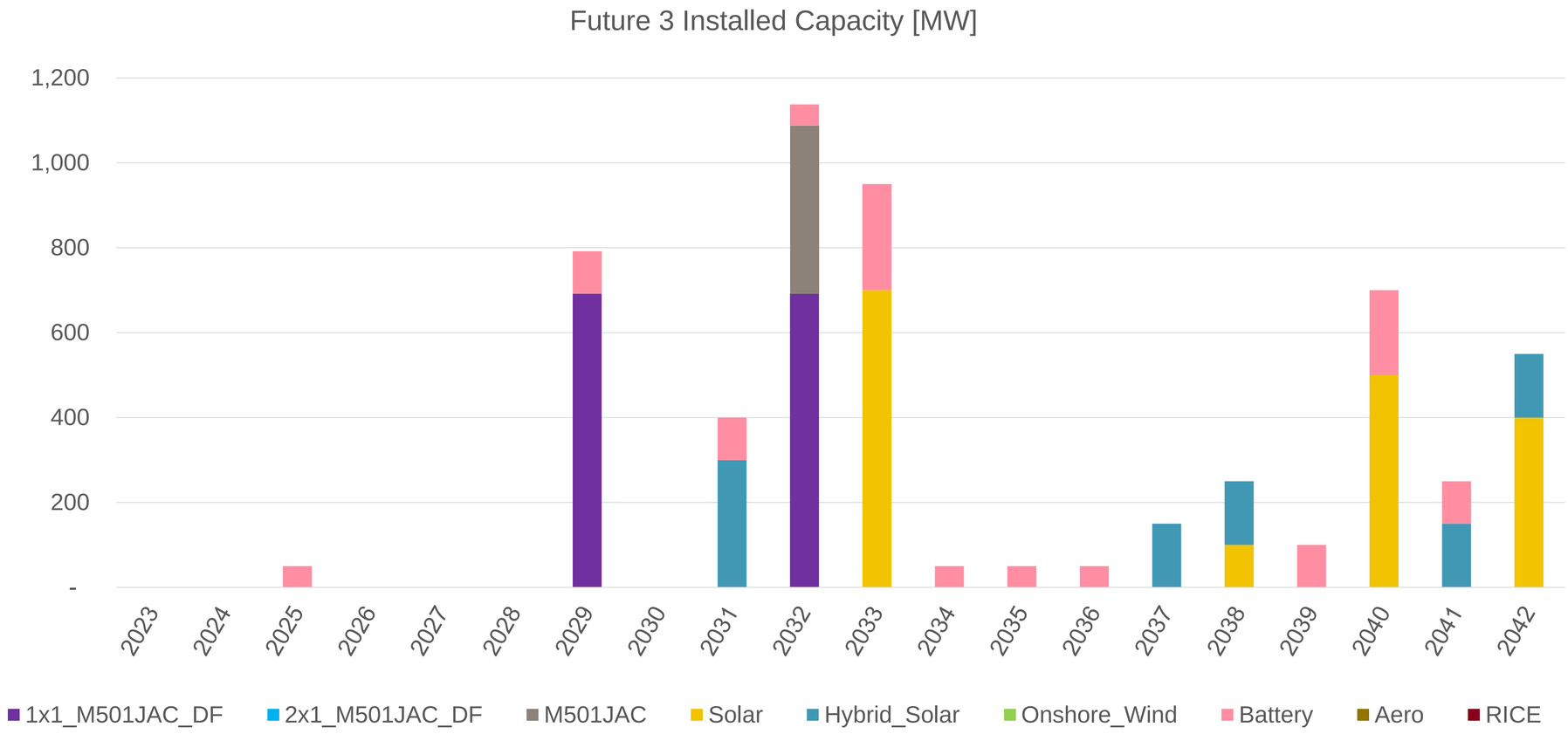


	EAL Selected DR Annual Impact to Peak Load (MW)*																		
	2023	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**	**2040**	**2041**	**2042**
Agricultural Irrigation Load Smart Thermostat (Res) Interruptible (Ind)	62	63	56	53	40	35	30	25	14	14	21	23	30	14	25	17	28	34	33	17

*DR MW shown represents the gross MW saving in load after the programs selected was applied to the original peak

EAL Optimized Portfolio Future 3 (Low Gas, Ref CO_2)

Future 3 (Installed MW)	
Solar	1,700
Hybrid	900
Onshore Wind	0
Battery	1,100
1x1 CCGT	1,300
2x1 CCGT	0
CT	372
Total	**5,372**

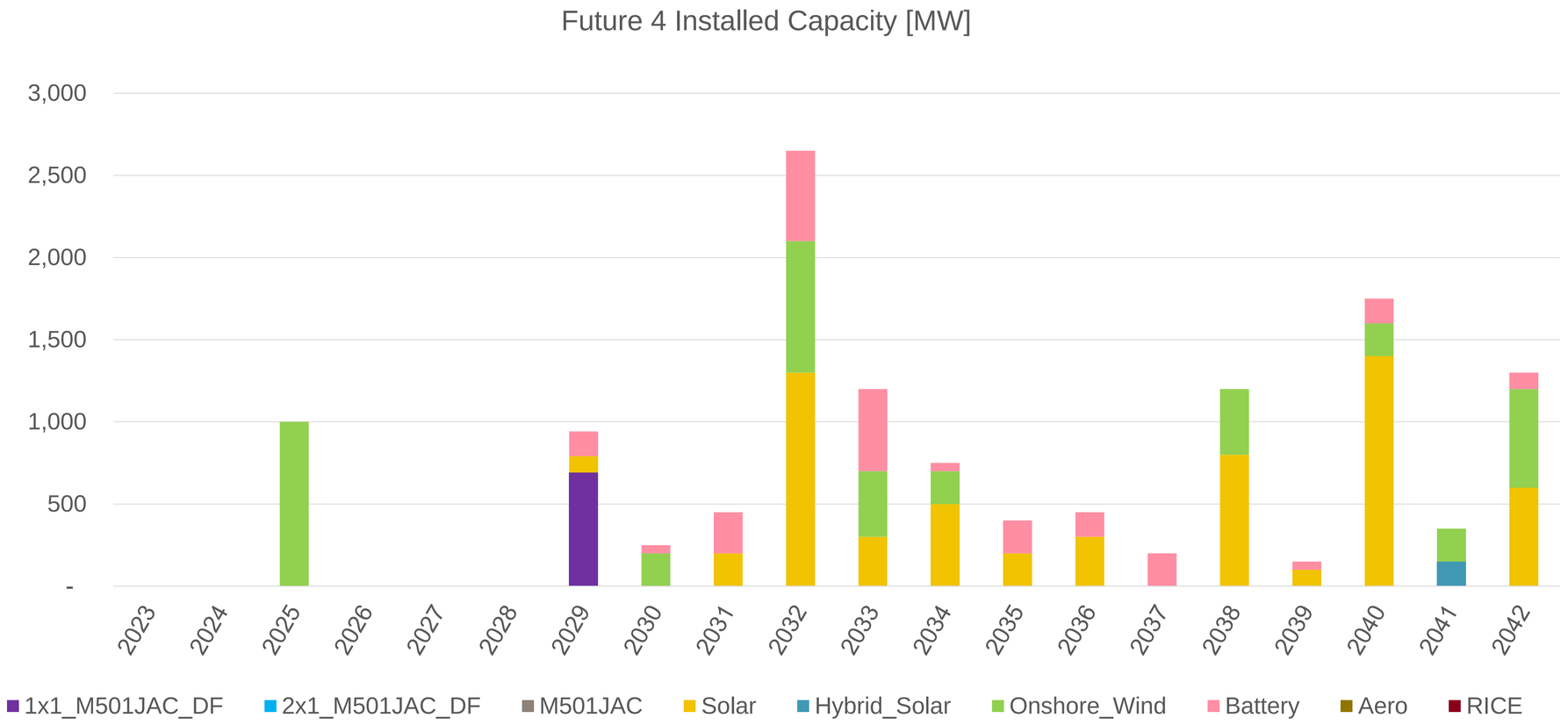


	EAL Selected DR Annual Impact to Peak Load (MW)*																		
	2023	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**	**2040**	**2041**	**2042**
Agricultural Irrigation Load	61	68	76	87	100	113	124	131	139	126	107	138	140	142	143	146	149	139	138	141

*DR MW shown represents the gross MW saving in load after the program selected was applied to the original peak

EAL Optimized Portfolio Future 4 (High Gas, High CO_2)

Future 4 (Installed MW)	
Solar	5,800
Hybrid	150
Onshore Wind	4,000
Battery	2,400
1x1 CCGT	650
2x1 CCGT	0
CT	0
Total	**13,000**



	EAL Selected DR Annual Impact to Peak Load (MW)*																			
	2023	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**	**2040**	**2041**	**2042**
Agricultural Irrigation Load	61	68	76	87	100	113	120	91	112	145	148	147	139	142	143	134	107	74	53	36

*DR MW shown represents the gross MW saving in load after the program selected was applied to the original peak

EAL Sensitivity Portfolio Summary

EAL Future 1 - Sensitivity Portfolio Summary

Future 1 Optimized Portfolio Base Assumption	
Deactivation	
White Bluff #1	12/31/2028
White Bluff #2	12/31/2028
Independence #1	12/31/2030

Sensitivity Portfolio 1 Changes (Installed MW)	
Deactivation	
White Bluff #1	5/31/2026
White Bluff #2	5/31/2023
Independence #1	No Change
Removal	
2028 1x1 CCGT	650
2029 Battery	50
Additions	
Solar	1,400
Wind	1,300
Battery	100

Sensitivity Portfolio 2 Changes (Installed MW)	
Deactivation	
White Bluff #1	5/31/2026
White Bluff #2	5/31/2026
Independence #1	No Change
Removal	
2028 1x1 CCGT	650
2029 Battery	50
Additions	
Solar	1,800
Wind	1,300
Battery	-

Sensitivity Portfolio 3 Changes (Installed MW)	
Deactivation	
White Bluff #1	No Change
White Bluff #2	No Change
Independence #1	5/31/2026
Removal	
2028 1x1 CCGT	650
2029 Battery	50
Additions	
Solar	1,400
Wind	1,500
Battery	100

Sensitivity Portfolio 4 Changes (Installed MW)	
Deactivation	
White Bluff #1	No Change
White Bluff #2	No Change
Independence #1	No Change
Removal	
2028 1x1 CCGT	650
2029 Battery	50
Additions	
Solar	1,800
Wind	1,200
Battery	-

Total Relevant Supply Cost Results

Total Relevant Supply Cost Results

The Total Relevant Supply Cost (TRSC) for each portfolio was calculated for the future for which it was developed. The TRSC is calculated using:

- ***Variable Supply Cost*** – The variable output from the AURORA model for all of Entergy Arkansas' fleet, which includes fuel costs, variable O&M, emissions costs, startup costs, energy revenue, make-whole payments, and uplift revenue
- ***Levelized-Real Non-Fuel Fixed Costs*** – Return of and on capital investment, fixed O&M, and property tax for the incremental resource additions in each portfolio, calculated on a levelized real basis
- ***Demand Side Management (DSM) Costs*** – Costs associated with DSM programs less any capacity value associated with the program
- ***Capacity Purchases/(Benefit)*** – The capacity above or below the target reserve margin in each portfolio multiplied by the assumed capacity value

Portfolio Name	TRSC Results [$MM, 2021$ NPV]
Future 1 Portfolio	$6,452
Future 2 Portfolio	$4,175
Future 3 Portfolio	$5,232
Future 4 Portfolio	$7,565

Note: the above portfolios are not directly comparable to each other as each portfolio was optimized for the future for which it was developed

Total Relevant Supply Cost Results

In addition to the total relevant supply cost components detailed on the previous slide, the sensitivity portfolios include the following cost component:

- ***Coal Unit Avoided Costs*** – The return of and on capital expenditure and O&M spend that may be avoided by ceasing to use coal at Independence and/or White Bluff earlier than the reference case. These costs are based on preliminary planning estimates that exclude other key costs and risks associated with operating the coal units through their current assumed deactivation dates and otherwise may be avoided in the early cessation to use coal scenarios

Portfolio Name	TRSC Results [$MM, 2021$ NPV]	Variance to Optimized Portfolio [$MM]
Future 1 Optimized Portfolio	$6,452	$-
Sensitivity 1 Portfolio	$6,457	$6
Sensitivity 2 Portfolio	$6,363	($89)
Sensitivity 3 Portfolio	$6,387	($65)
Sensitivity 4 Portfolio	$6,291	($161)

IRP Next Steps

2021 IRP Action Plan

Action Plan is currently under development

- EAL's action plan will include activities to take place prior to the next IRP that are supported by the 2021 IRP analysis, such as
  - Complete in-progress solar acquisitions
  - Seek incremental renewable capacity additions by 2025
  - Prepare for Lake Catherine Unit 4 deactivation
  - Potential demand-side opportunities
- Based on Stakeholder and Staff feedback, the IRP report will clearly identify EAL's "Preferred Resource Plan"

2021 IRP Stakeholder Committee Report

Stakeholder Committee report will be filed with IRP no later than October 31, 2021

- EAL plans to file its 2021 IRP as scheduled no later than October 31, 2021
- Stakeholder Committee Report will be included as part of this filing
  - 2018 IRP Stakeholder Report was received by EAL on October 24, 2018
  - Send to EALIRP@ entergy.com