2022 JEA
IRP Stakeholder Engagement Meeting Series

IRP
INTEGRATED RESOURCE PLANNING

Welcome

Raynetta Curry Marshall

Chief Operating Officer

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INTEGRATED RESOURCE PLANNING

IRP Stakeholder Meeting Agenda – November 17, 2022

1) Welcome & Introductions

Raynetta Curry Marshall, Chief Operating Officer, JEA

2) Stakeholder Meeting Recap

Laura Schepis, Chief External Affairs Officer, JEA; Cantrece Jones, Black & Veatch Consultants

3) Scenarios and Preliminary Modeling Results

Brad Kushner, Black & Veatch Consultants; Pedro Melendez, VP Planning, Engineering & Construction

4) Open Discussion and Next Steps

Laura Schepis, Chief External Affairs Officer, JEA

5) Key Variables & Q/A – *Optional Discussion*

Black & Veatch Consultants, Stakeholders, JEA IRP Team

Presentation Overview

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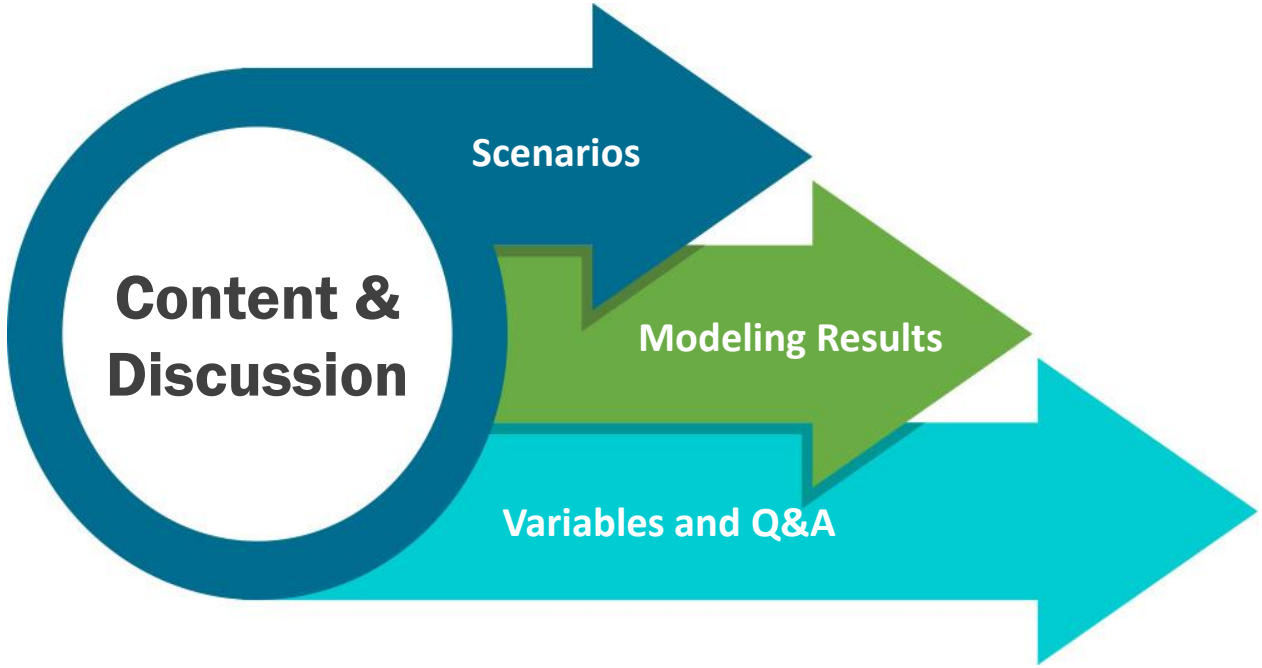
Preliminary results for all Scenarios

Incorporated market data to support modeling

- Inflation Reduction Act (“IRA”)
- Energy Storage cost
- Solar PV PPA Pricing

Please note that all results presented herein are preliminary and subject to change



Stakeholder Meeting Recap

Laura Schepis
Chief External Affairs Officer

Cantrece Jones
Black & Veatch Consultant

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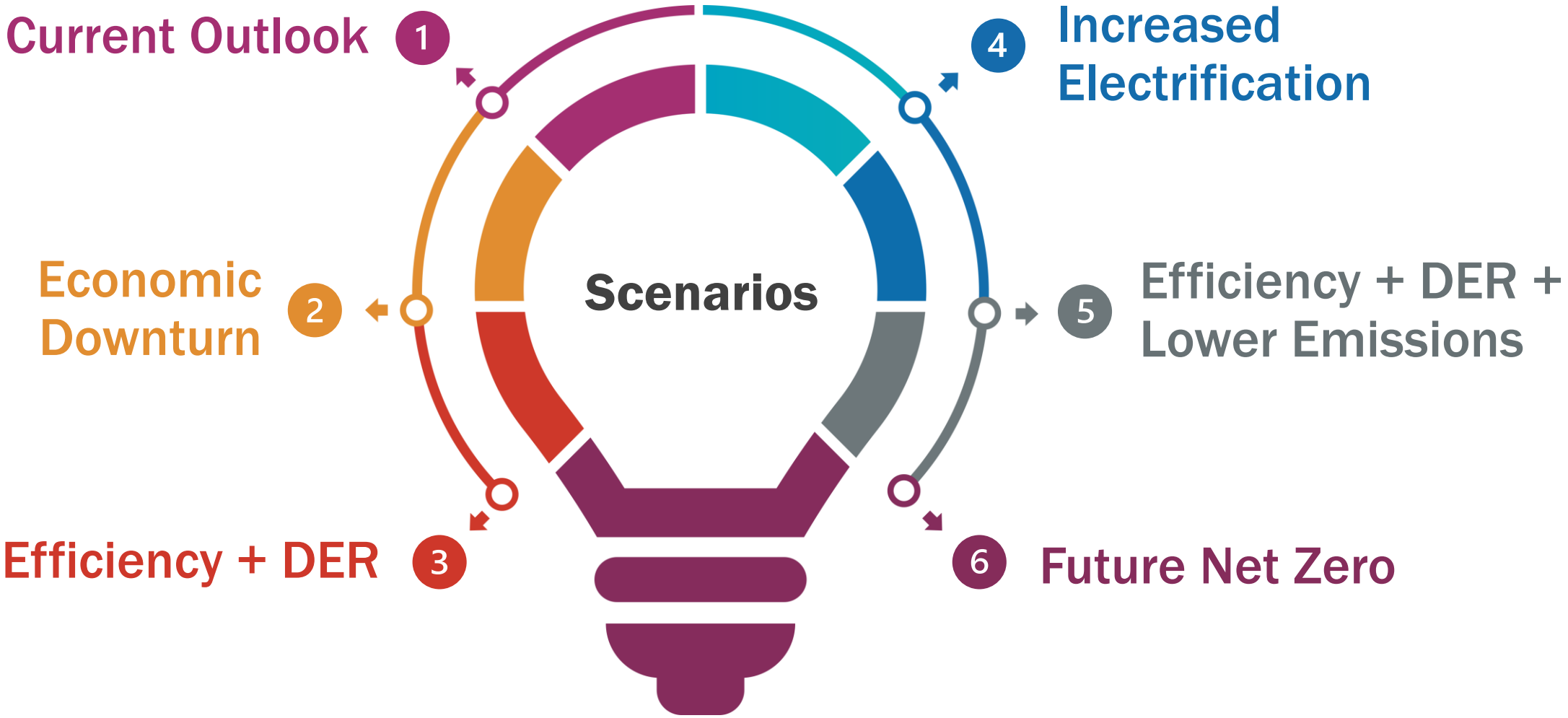
A Look Back at the Initial Scenarios



Scenarios and Preliminary Modeling Results

Bradley Kushner
Black & Veatch Consultants

Pedro Melendez
VP, Planning, Engineering & Construction

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Scenarios

Area	Variable	Current Outlook	Economic Downturn	Efficiency + DER	Increased Electrification	Future Net Zero	Supplemental Scenario
Financial	Interest During Construction & Discount Rate	4%	5%	4%	4%	4%	4%
	General Inflation Rate	3%	4%	3%	3%	3%	3%
	Capital Cost Escalation Rate	3%	4%	3%	3%	3%	3%
Demand	DSM/EE/Conservation	2% of Total Energy by 2030 7% of Total Energy by 2050	3% of Total Energy by 2030 8% of Total Energy by 2050	5% of Total Energy by 2030 13% of Total Energy by 2050	2% of Total Energy by 2030 6% of Total Energy by 2050	5% of Total Energy by 2030 13% of Total Energy by 2050	2% of Total Energy by 2030 7% of Total Energy by 2050
	Plug-In Electric Vehicles (PEV)	1% of Total Energy by 2030 6% of Total Energy by 2050	1% of Total Energy by 2030 7% of Total Energy by 2050	2% of Total Energy by 2030 15% of Total Energy by 2050	2% of Total Energy by 2030 14% of Total Energy by 2050	2% of Total Energy by 2030 15% of Total Energy by 2050	1% of Total Energy by 2030 6% of Total Energy by 2050
	Electrification	3% of Total Energy by 2030 8% of Total Energy by 2050	3% of Total Energy by 2030 9% of Total Energy by 2050	4% of Total Energy by 2030 18% of Total Energy by 2050	4% of Total Energy by 2030 17% of Total Energy by 2050	4% of Total Energy by 2030 18% of Total Energy by 2050	3% of Total Energy by 2030 8% of Total Energy by 2050
	Customer Sited Renewables (Distributed Energy Resources)	0.5% Total Energy by 2030	0.5% Total Energy by 2030	5% Residential by 2030 3% Commercial by 2030	5% Residential by 2030 3% Commercial by 2030	5% Residential by 2030 3% Commercial by 2030	5% Residential by 2030
Environmental Regulations	Carbon Regulations/Cost	None	None	None	None	$30/Ton in 2030, escalating 5% Annually	None
	Clean Energy Standard / Renewable Energy Targets	None	None	None	None	40% Clean Energy/Renewables by 2030 100% Clean Energy/Renewables by 2050	30% Clean Energy/Renewables by 2030 100% Clean Energy/Renewables by 2050
Fuel	Natural Gas and Fuel Oil	See Slide 19	See Slide 19	See Slide 19	See Slide 19	See Slide 19	See Slide 19
	Solid Fuel	See Slide 20	See Slide 20	See Slide 20	See Slide 20	See Slide 20	See Slide 20
Other	Construction Cost	See Slide 25	10% Higher than Current Outlook	See Slide 25	10% Higher than Current Outlook	See Slide 25	See Slide 25
	Unit Retirements	Northside 3: March 2029	Northside 3: March 2029	Northside 3: March 2029	Northside 3: March 2029	Northside 1: December 2029 Northside 2: December 2029 Northside 3: March 2029	Northside 1: December 2029 Northside 2: December 2029 Northside 3: March 2029

Common Resource Additions

300 MW Solar PV in 2026 timeframe

- Appears in 5 of 6 Scenarios
  (Does not appear in Current Outlook in 2026 timeframe)
- 300 MW Solar PV in 2030 timeframe in Current Outlook

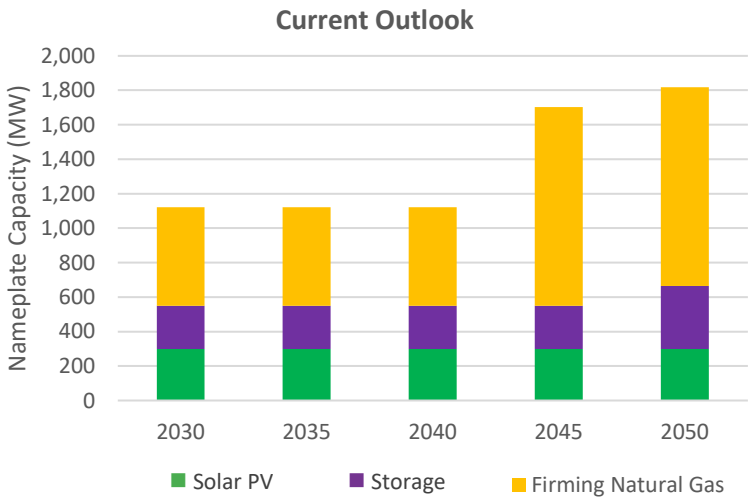
750 MW – 975 MW of Solar PV in 2030 timeframe

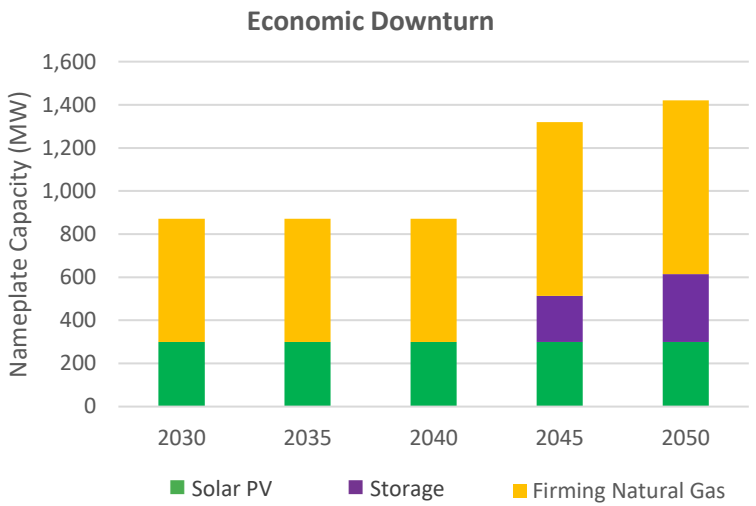
- Appears in 4 of 6 Scenarios
  (Does not appear in Current Outlook or Economic Downturn)
- Would be in addition to the 300 MW of Solar PV in 2026 timeframe noted above

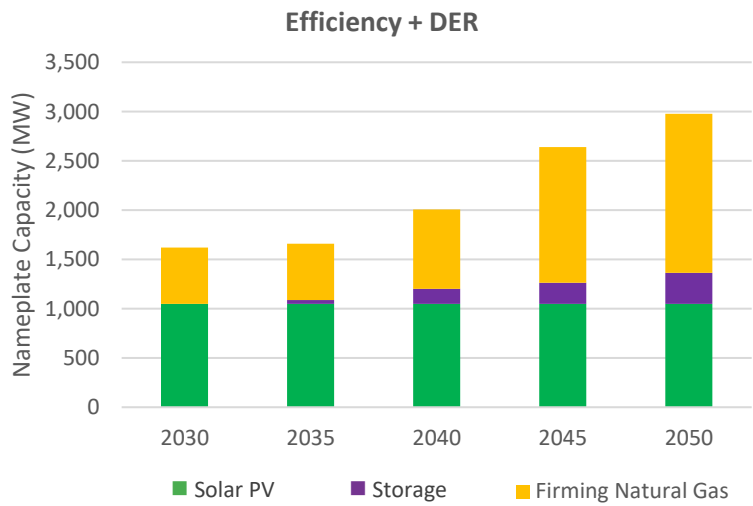
New Natural Gas 1x1 H-Class combined or simple cycle in 2029 timeframe

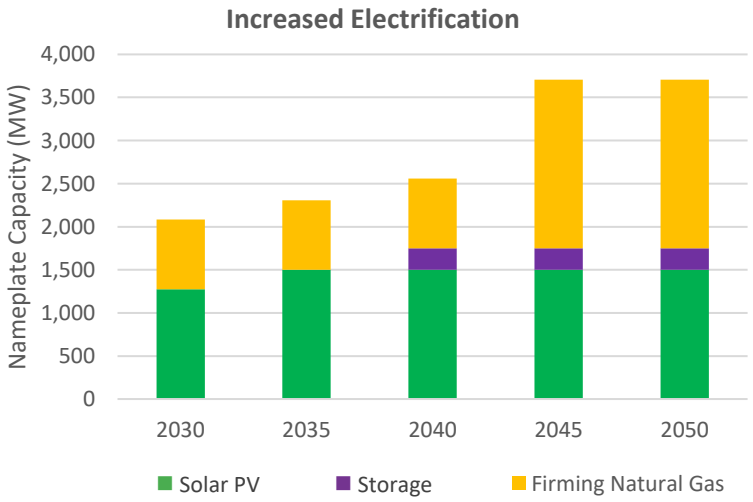
- Appears in 5 of 6 Scenarios
  (Does not appear in Future Net Zero)
- ~ 350 MW (simple cycle) to ~ 570 MW (combined cycle)

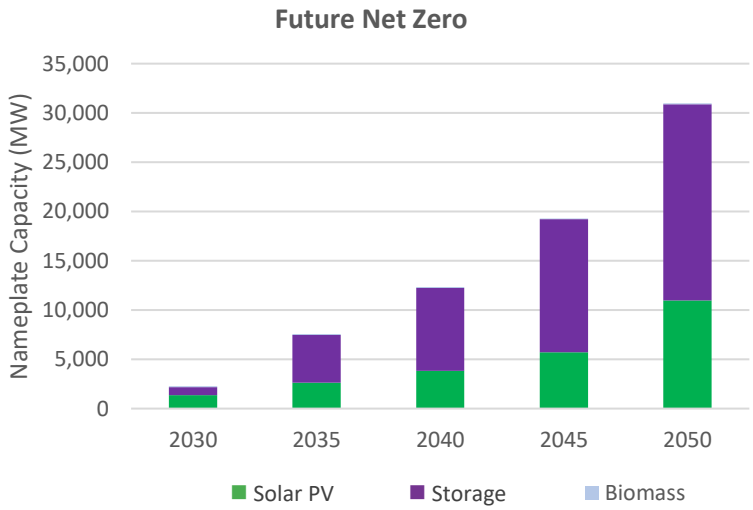
New Resource Additions - MW Capacity

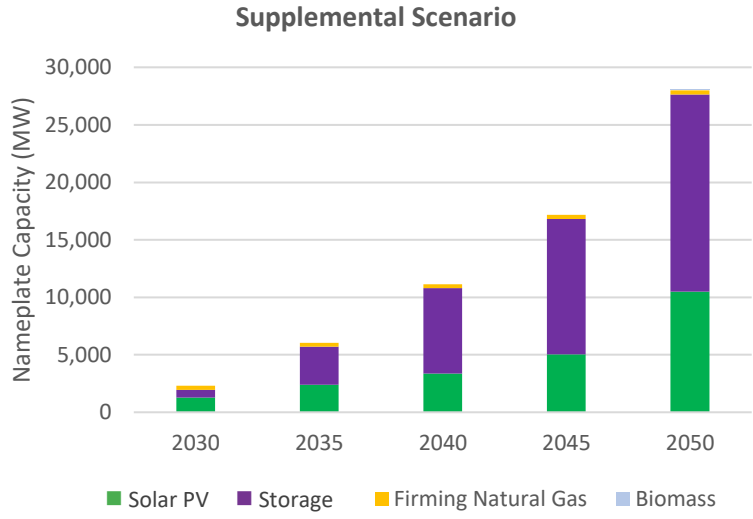






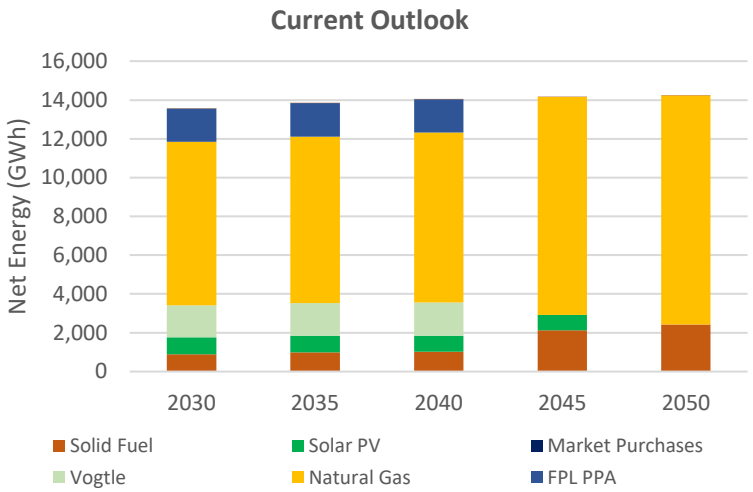


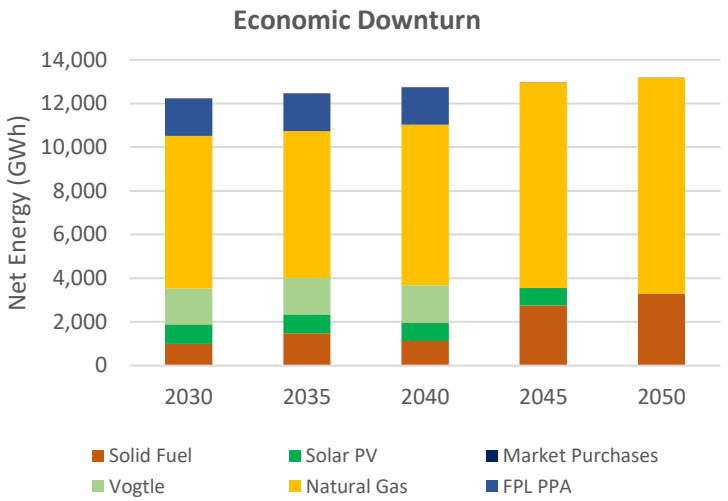


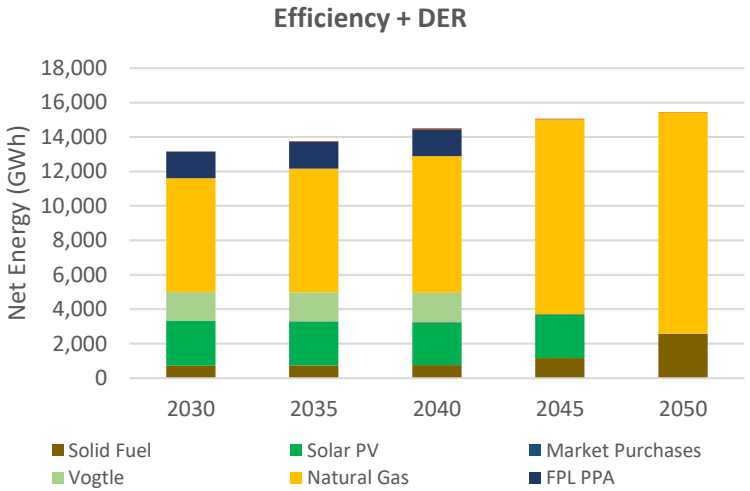


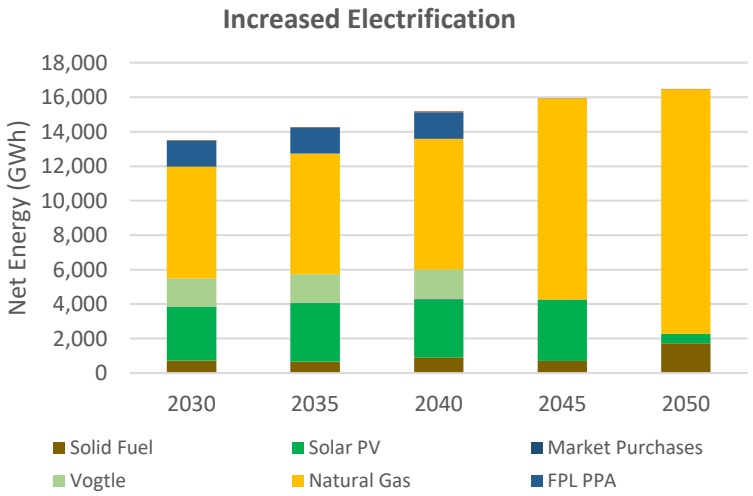
Note: Comparisons across scenarios are not consistent due to the difference in the variables as shown in slide 9.

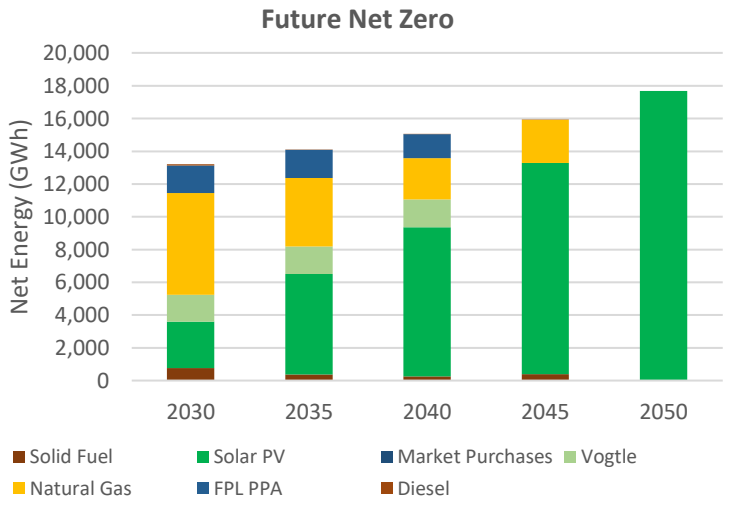
Net Energy (GWh) by Resource

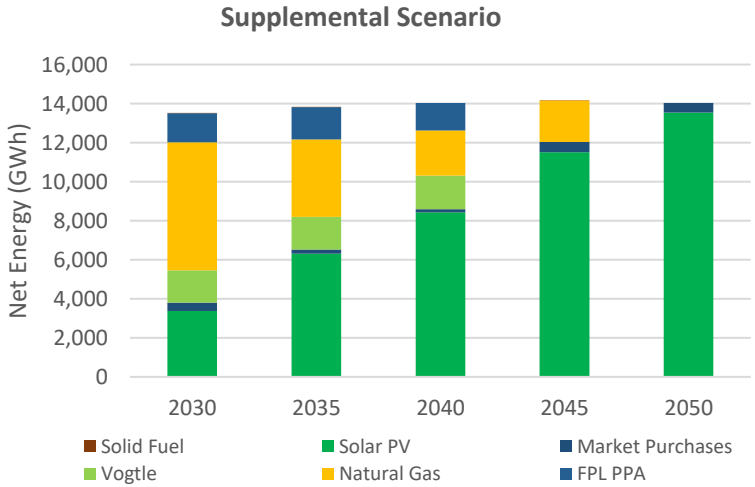












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CO_2 Emissions

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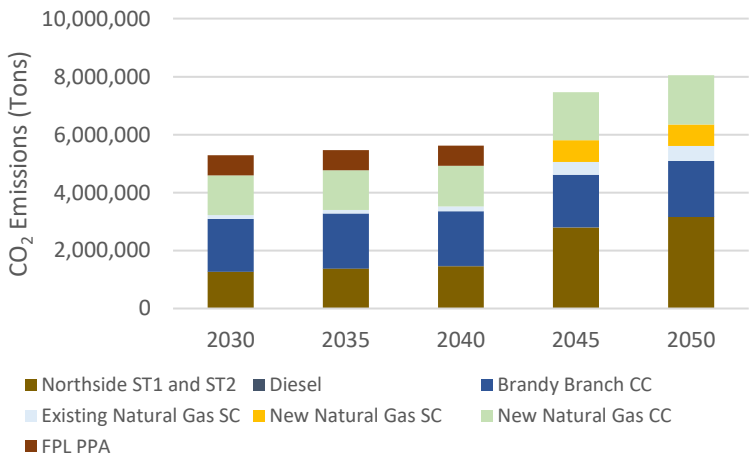
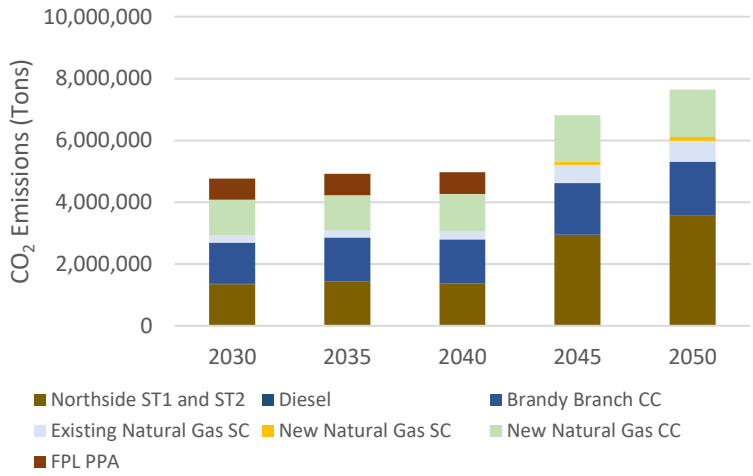
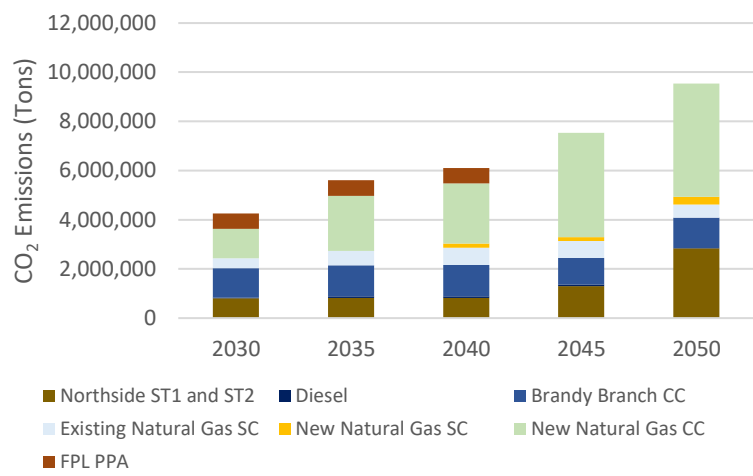
Current Outlook



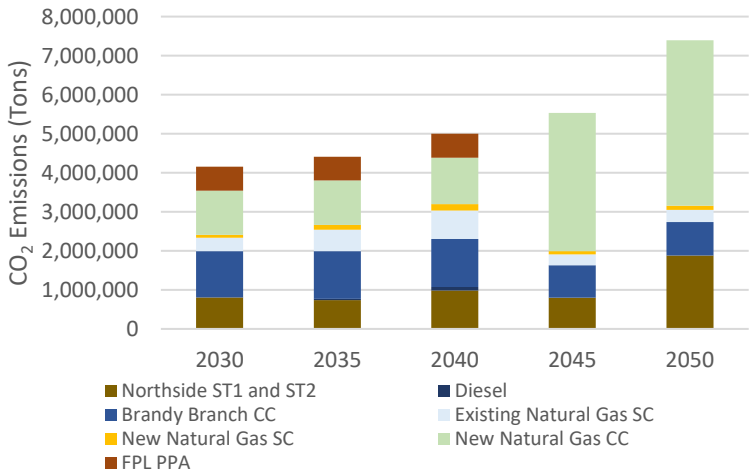
Economic Downturn



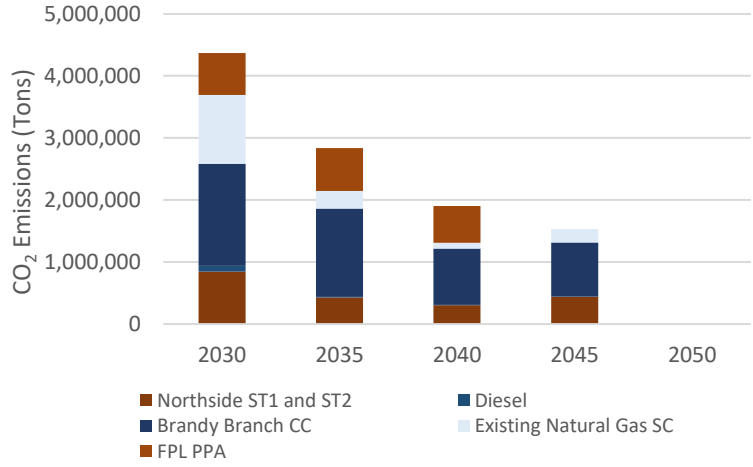
Efficiency + DER



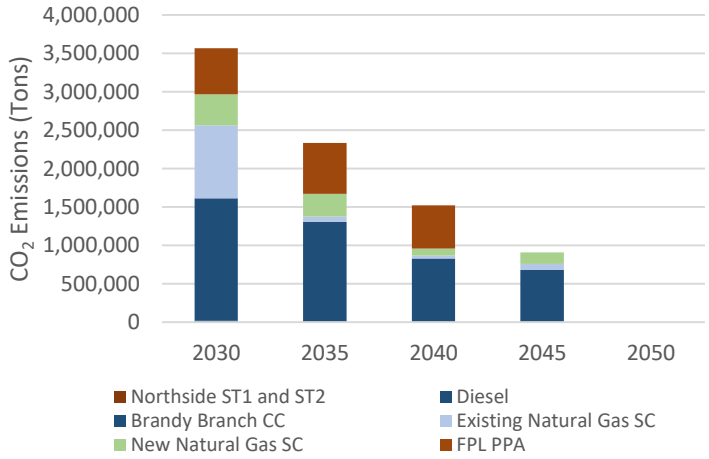
Increased Electrification



Future Net Zero

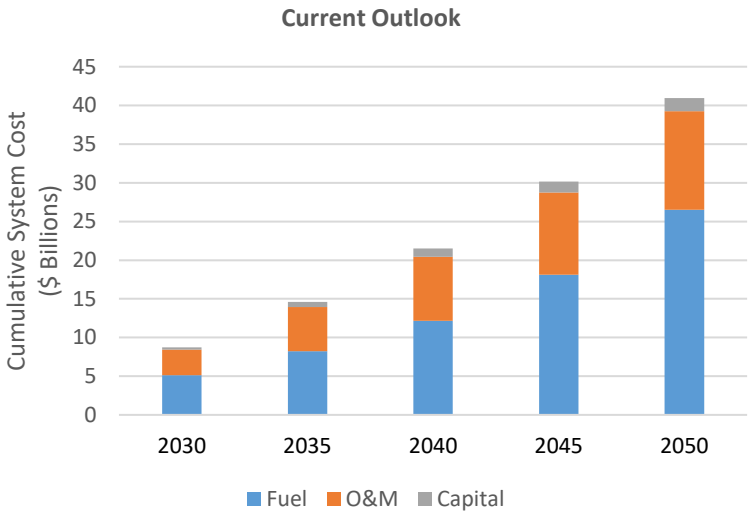


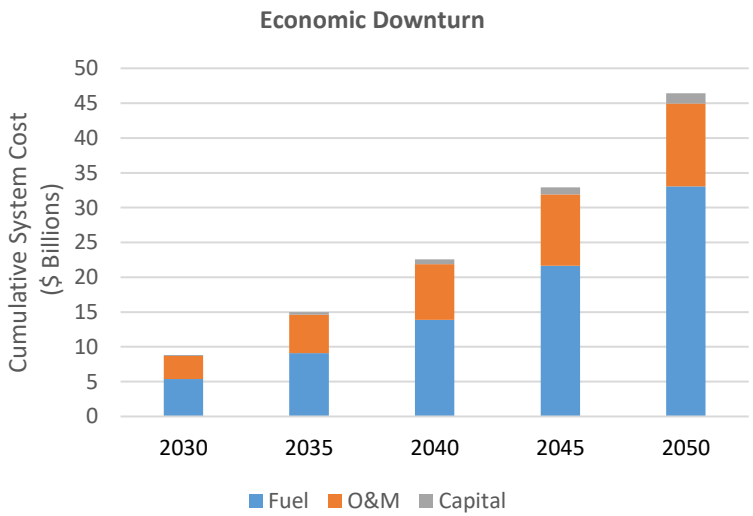
Supplemental Scenario

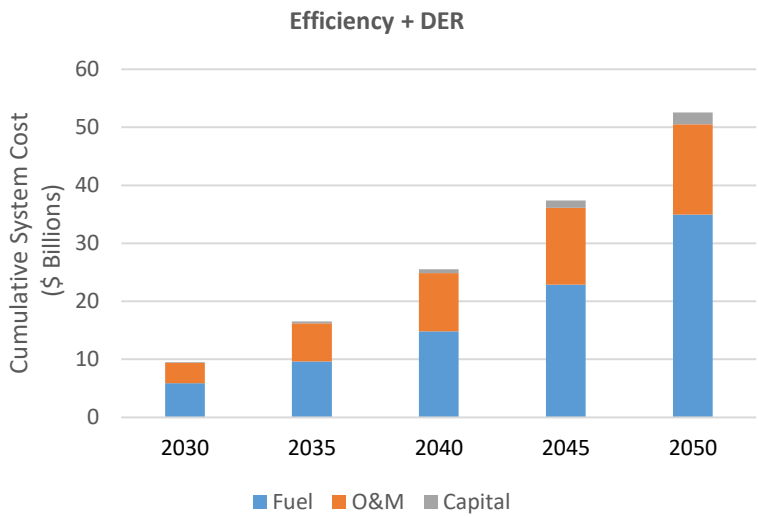


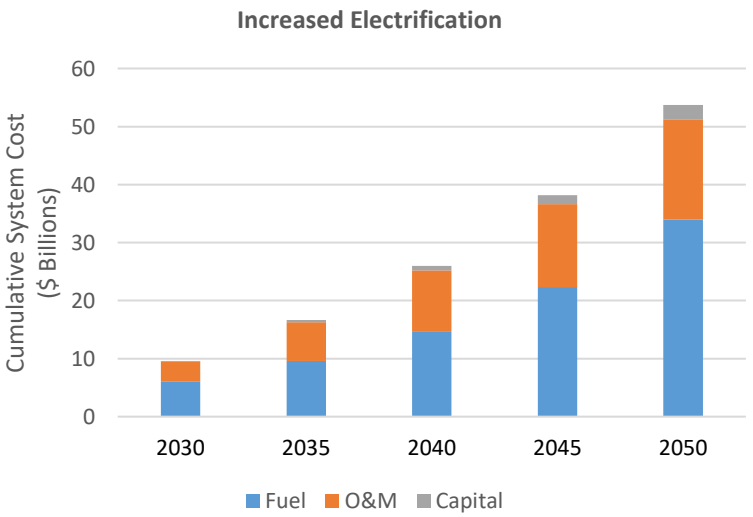
Note: Comparisons across scenarios are not consistent due to the difference in the variables as shown in slide 9.
JEA's CO_2 emissions in 2005 is approximately 15,000,000 Tons.

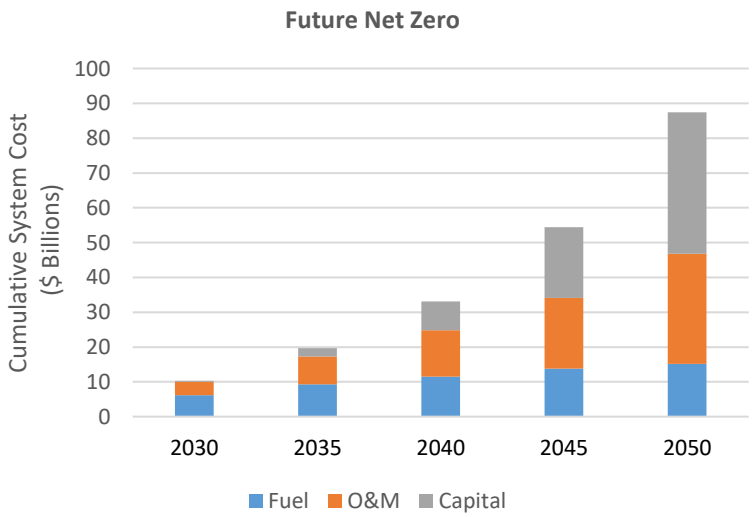
Cumulative System Costs

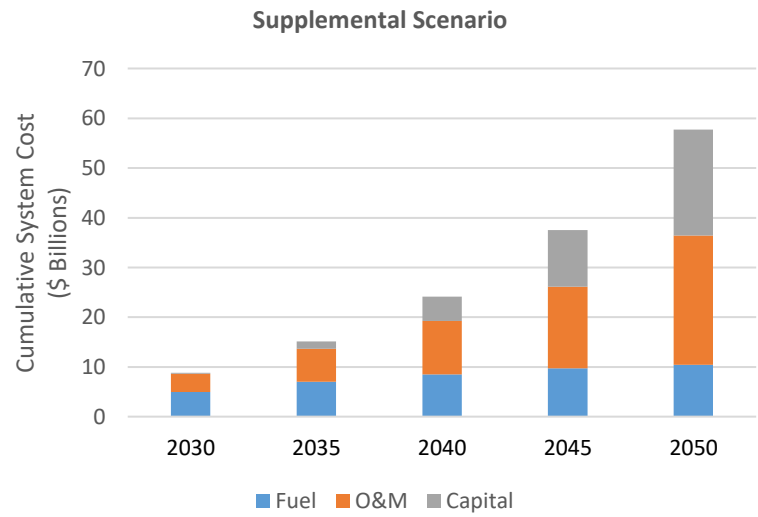












Note: Comparisons across scenarios are not consistent due to the difference in the variables as shown in slide 9.

Open Discussion and Next Steps

Laura Schepis

Chief External Affairs Officer

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Open Discussion and Next Steps

2023…

Presentation of Refined/Final Modeling Results

Presentation of IRP Report

Key Variables and Q&A

Black & Veatch Consultants, Stakeholders, and JEA IRP Team

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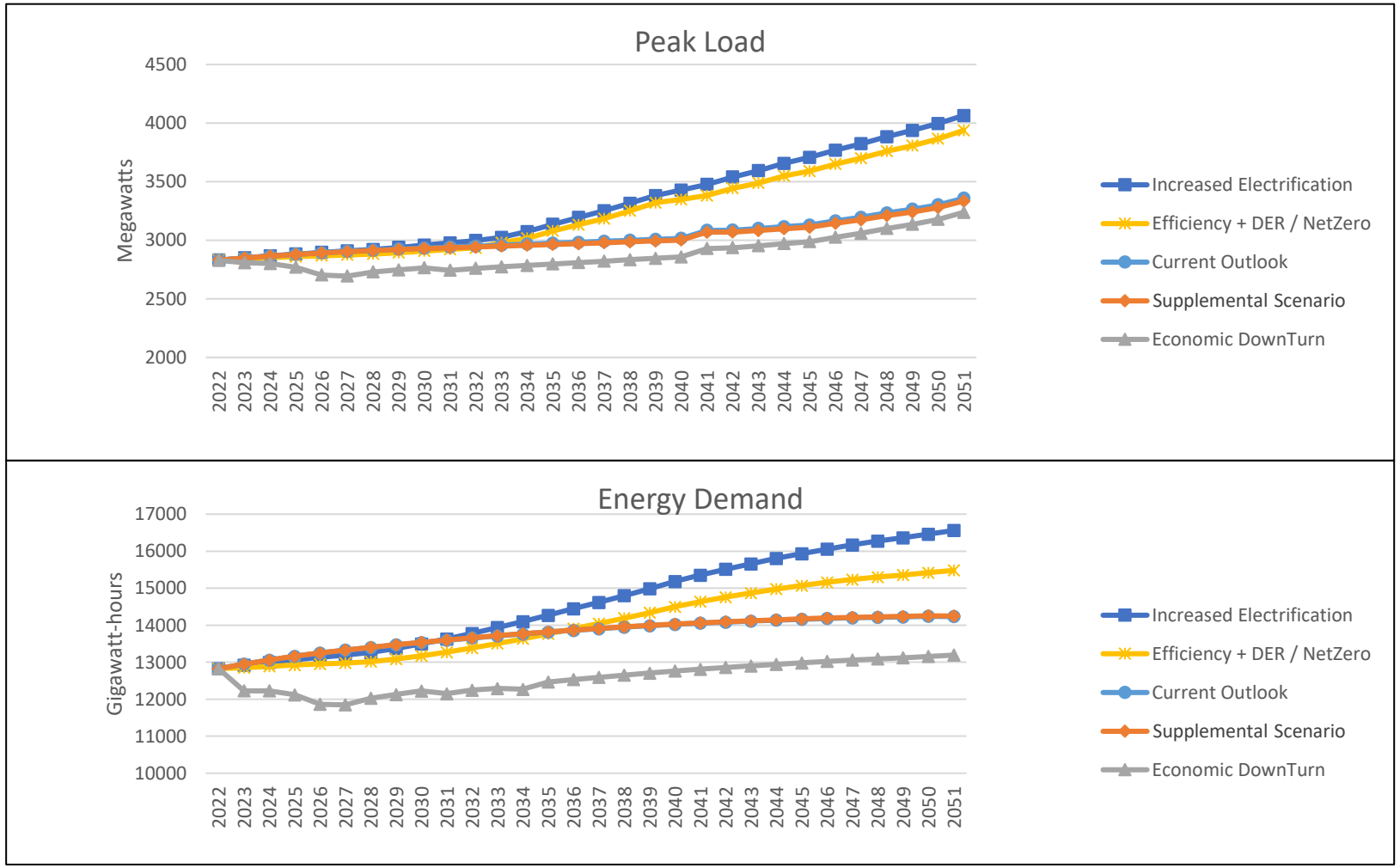
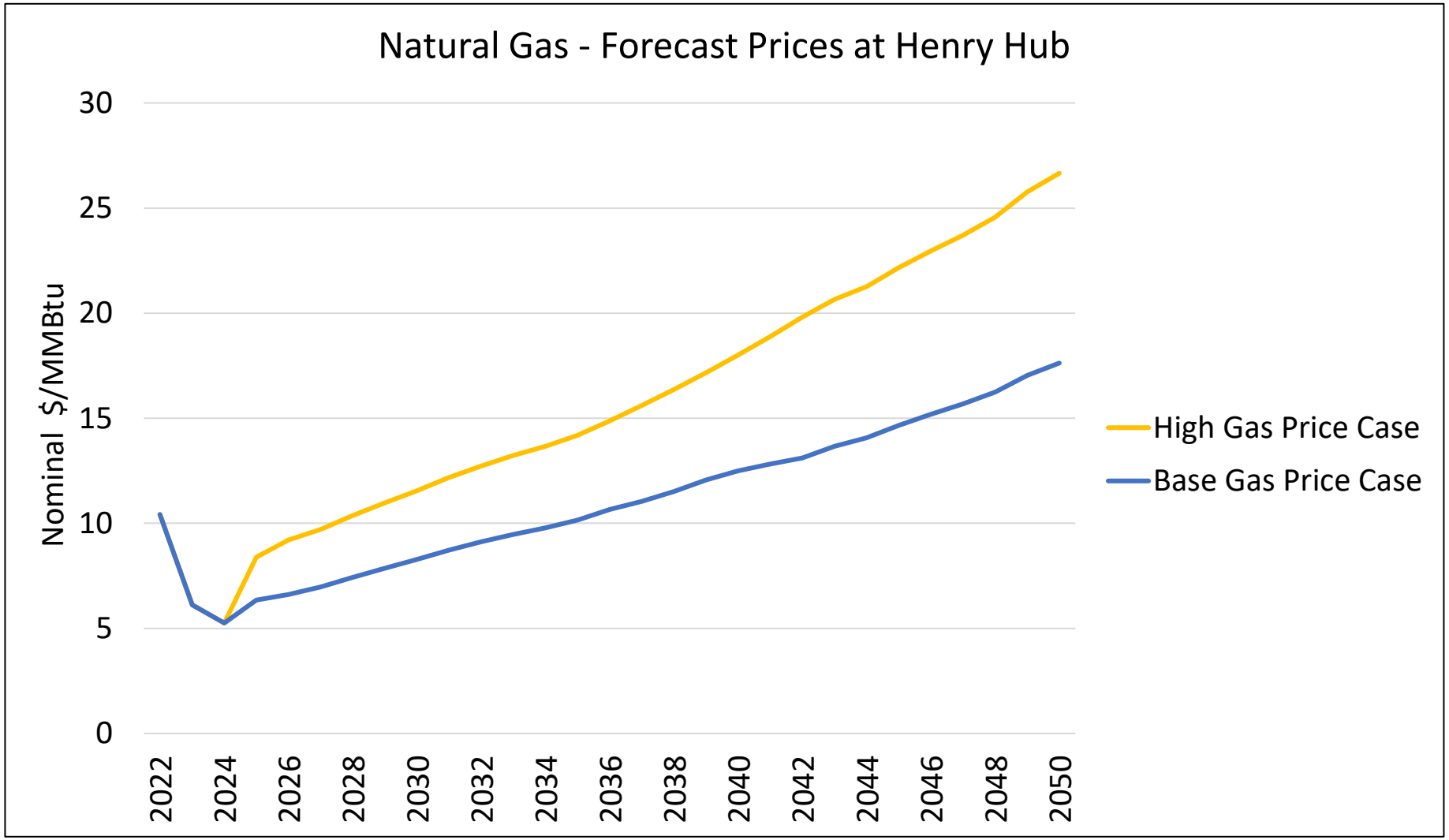
Key Variables – Load Forecasts

Loads - Peak and Energy Forecasts (Base)

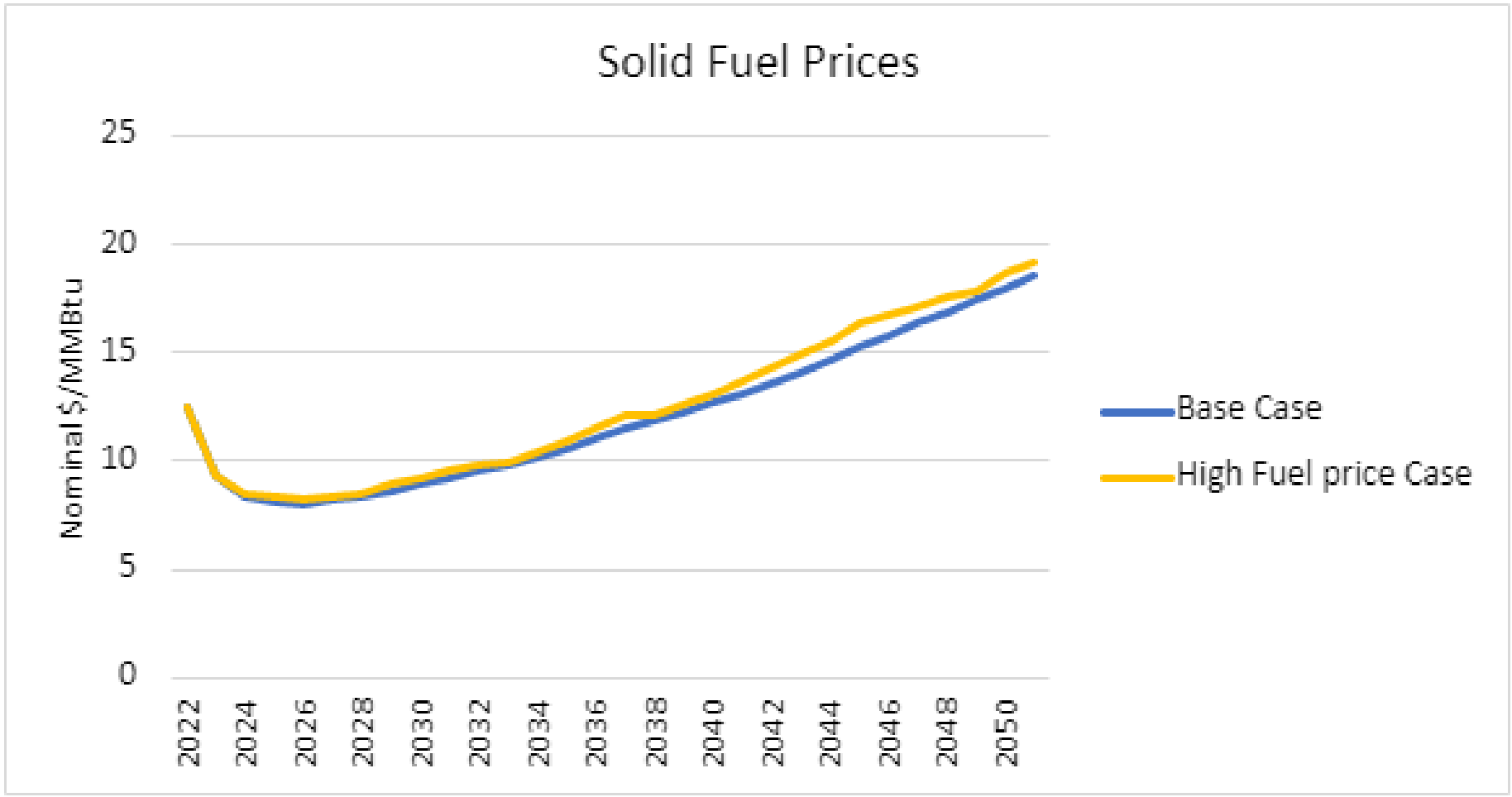
Year	Summer Peak	Winter Peak	Net Energy GWh
2022	2693	2830	12827
2023	2710	2848	12948
2024	2727	2865	13057
2025	2741	2879	13160
2026	2752	2893	13250
2027	2760	2904	13327
2028	2768	2913	13399
2029	2776	2924	13470
2030	2784	2933	13534
2031	2794	2941	13595
2032	2799	2949	13654
2033	2806	2958	13712
2034	2812	2966	13764
2035	2818	2974	13814
2036	2827	2982	13862
2037	2832	2991	13905
2038	2835	3000	13949
2039	2842	3007	13987
2040	2845	3016	14024
2041	2853	3083	14057
2042	2873	3086	14085
2043	2883	3100	14111
2044	2894	3116	14137
2045	2902	3130	14160
2046	2919	3165	14183
2047	2943	3195	14201
2048	2960	3232	14212
2049	2981	3264	14225
2050	3005	3302	14242



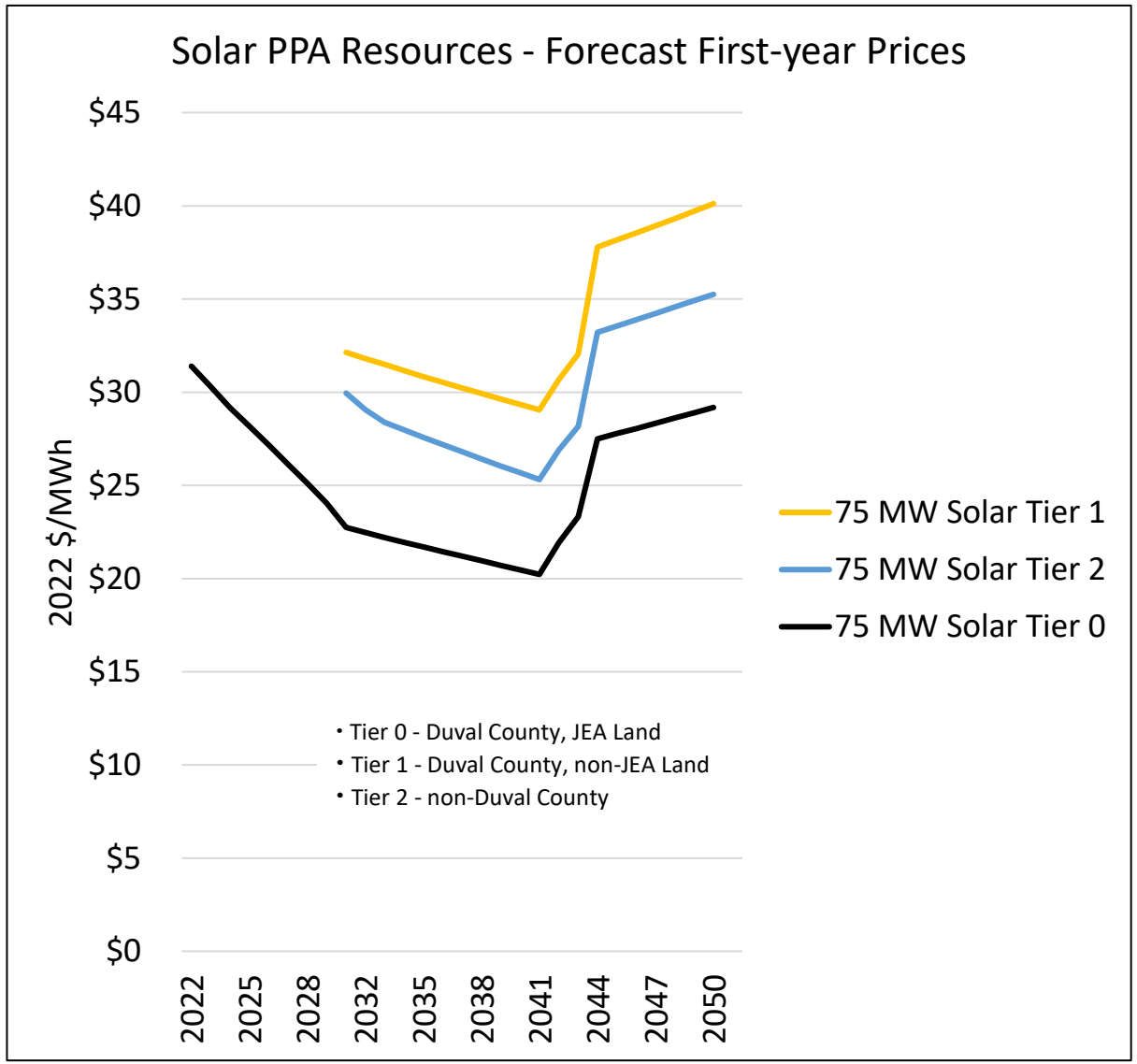
Key Variables – Natural Gas Prices

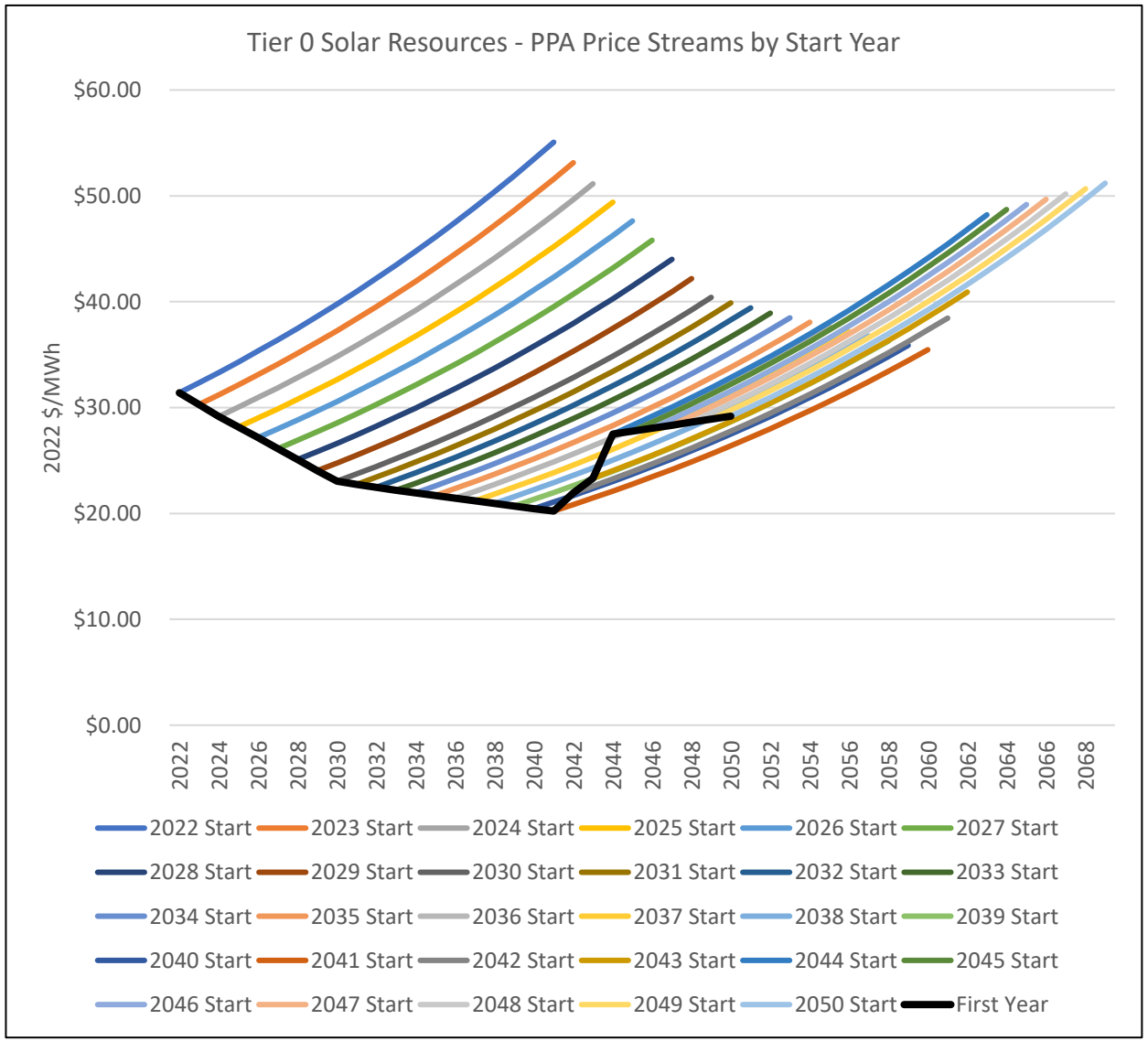


Key Variables – Solid Fuel Prices

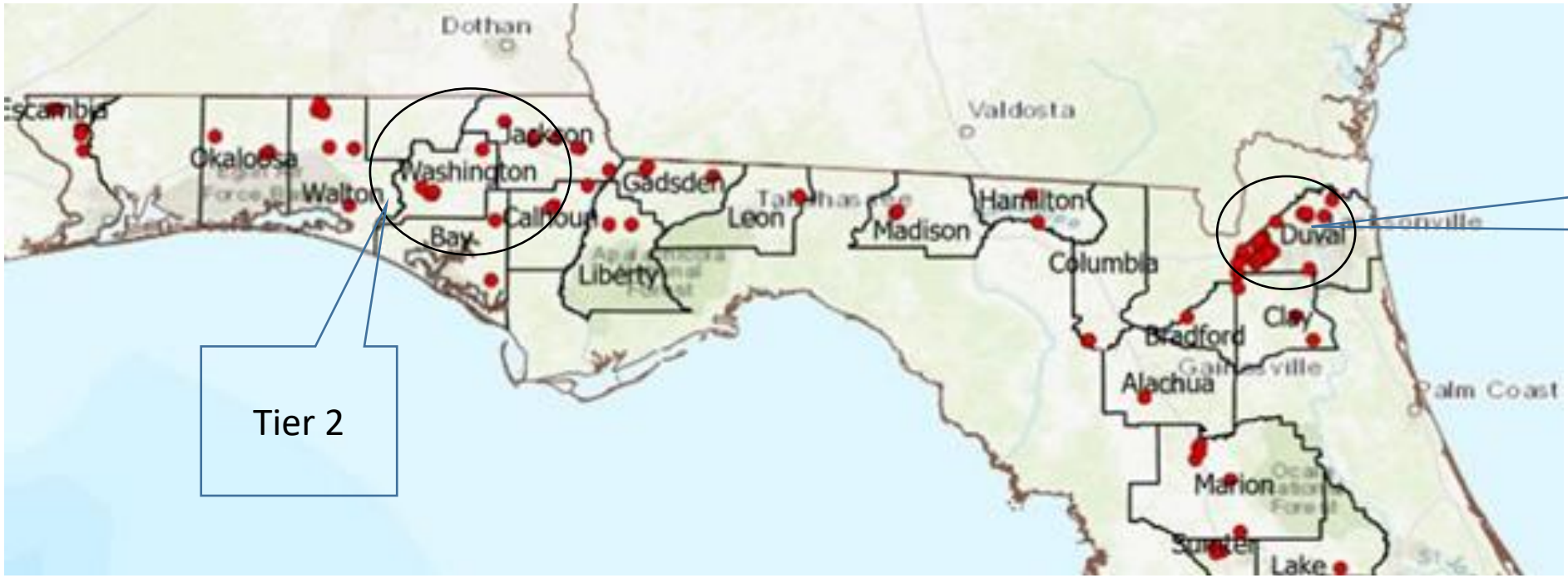


Key Variables – Solar PPA Prices

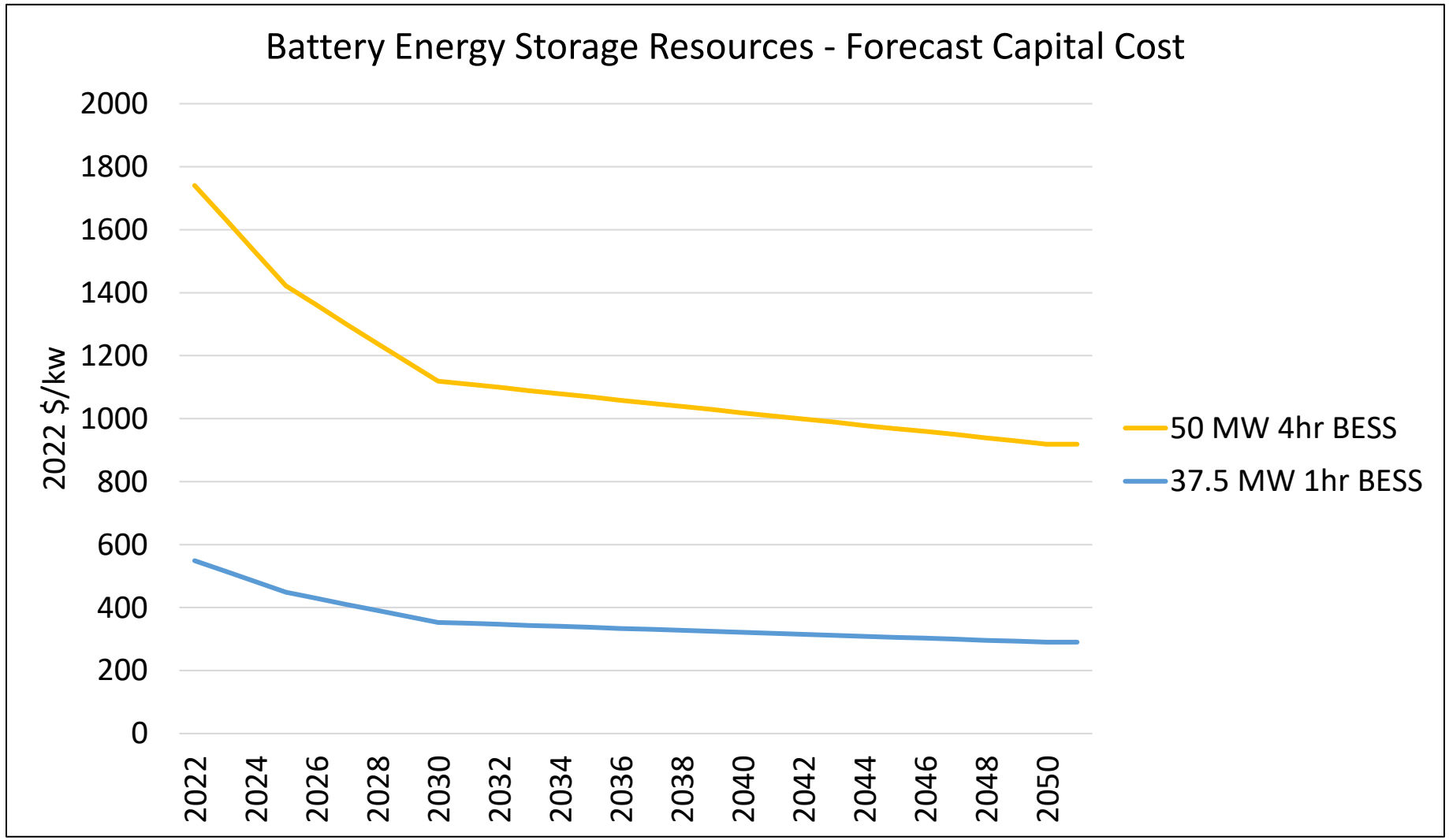




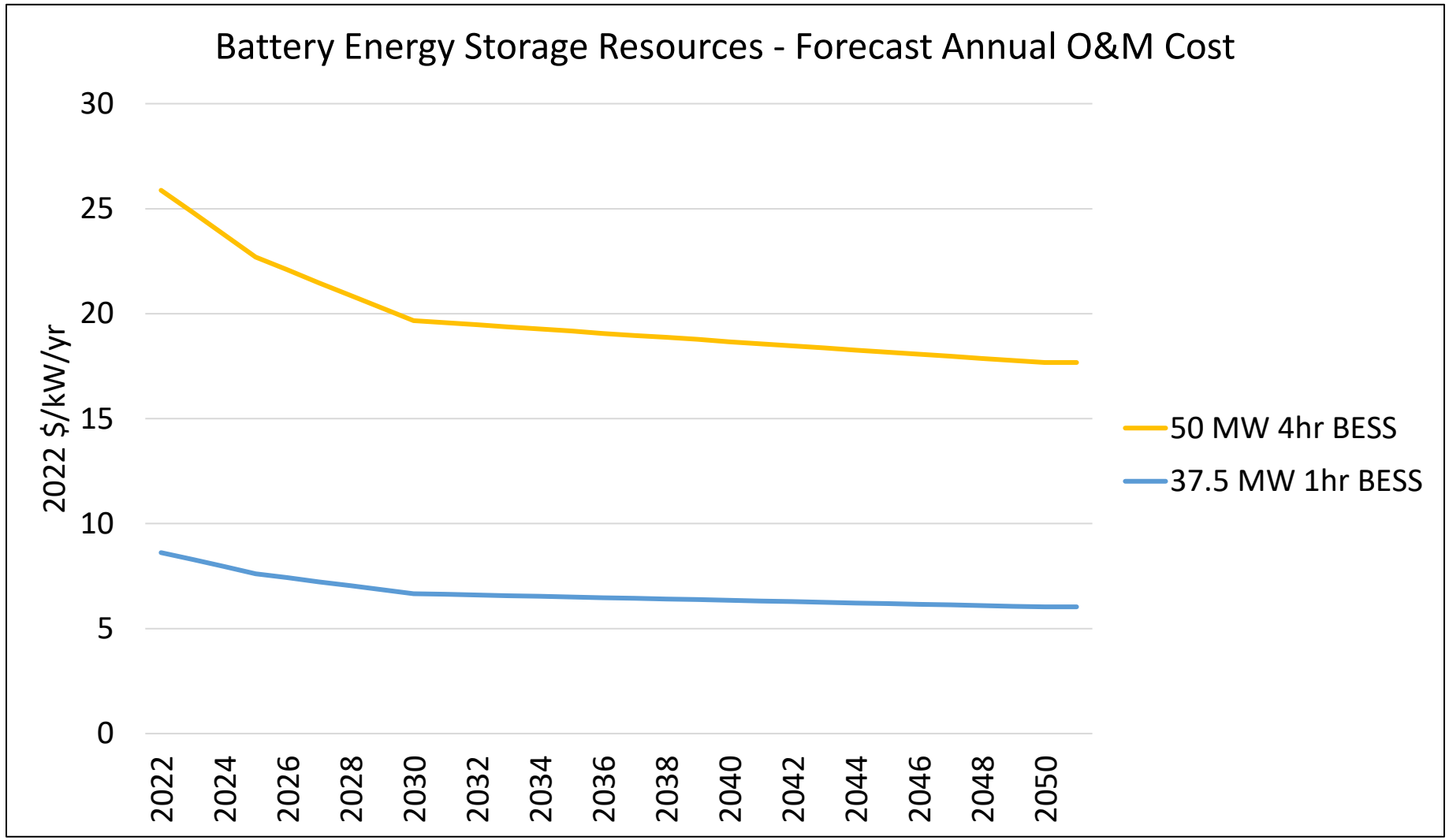
Key Variables – Solar PPA Transmission Costs



Key Variables – Battery Storage Capital Costs



Key Variables – Battery Storage O&M Costs



Key Variables – Gas Firming Resources Capital and O&M Costs

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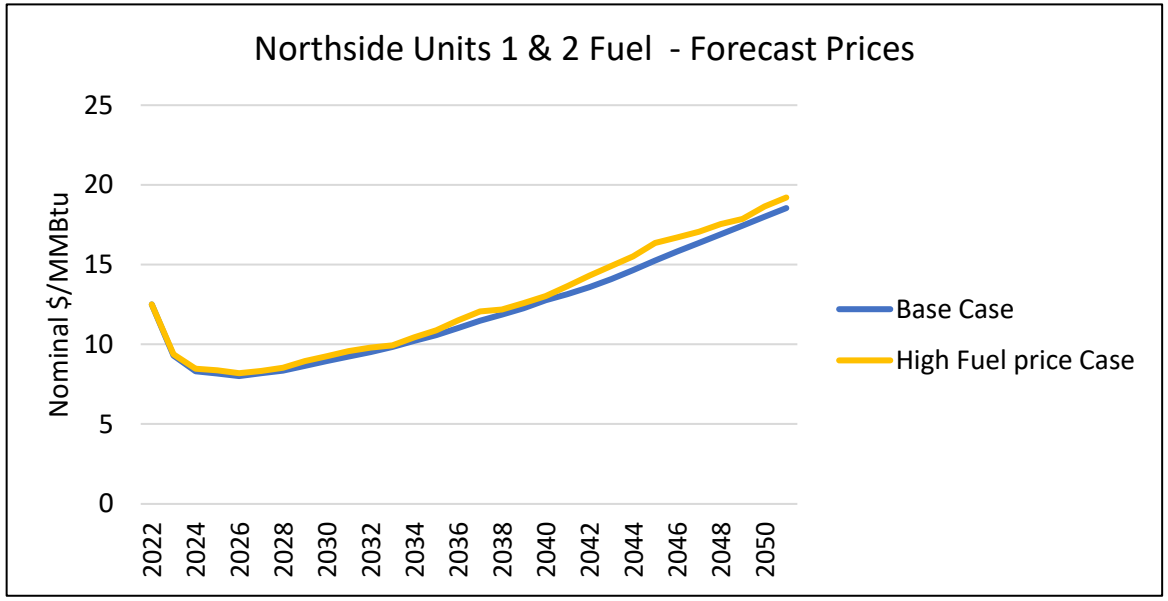
Natural Gas Firming Resources - Forecast Capital Cost

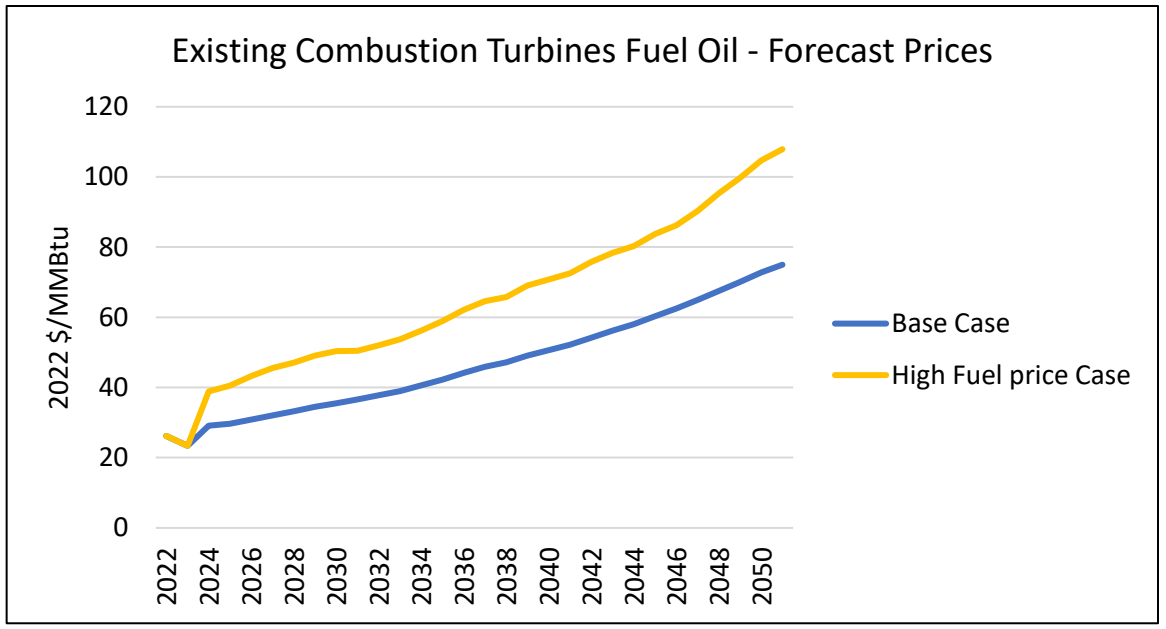
Number	Option	Max Cap (MW)	Capital Cost (2022$M)	Plexos Build Cost (2022$/kw)
7	LM6000 PF Sprint 2x0	50	$104	$1,048
8	LMS100 PA+ 1x0	115	$124	$1,078
9	7F.05 1x0	236	$109	$464
10	7F.05 1x1	379	$446	$1,175
11	7F.05 2x1	762	$707	$928
12	7HA.02 1x0	346	$184	$531
13	7HA.02 1x1	571	$540	$945
14	7HA.02 2x1	1,147	$790	$689
15	7HA.02 3x1	1,725	$1,033	$599
16	7HA.02 1x1 ACC	567	$566	$999
17	7F.03 Upgraded 1x1	329	$304	$925
18	7F.03 Upgraded 2x1	660	$554	$838
19	18V50DF 5x0	18	$136	$1,523

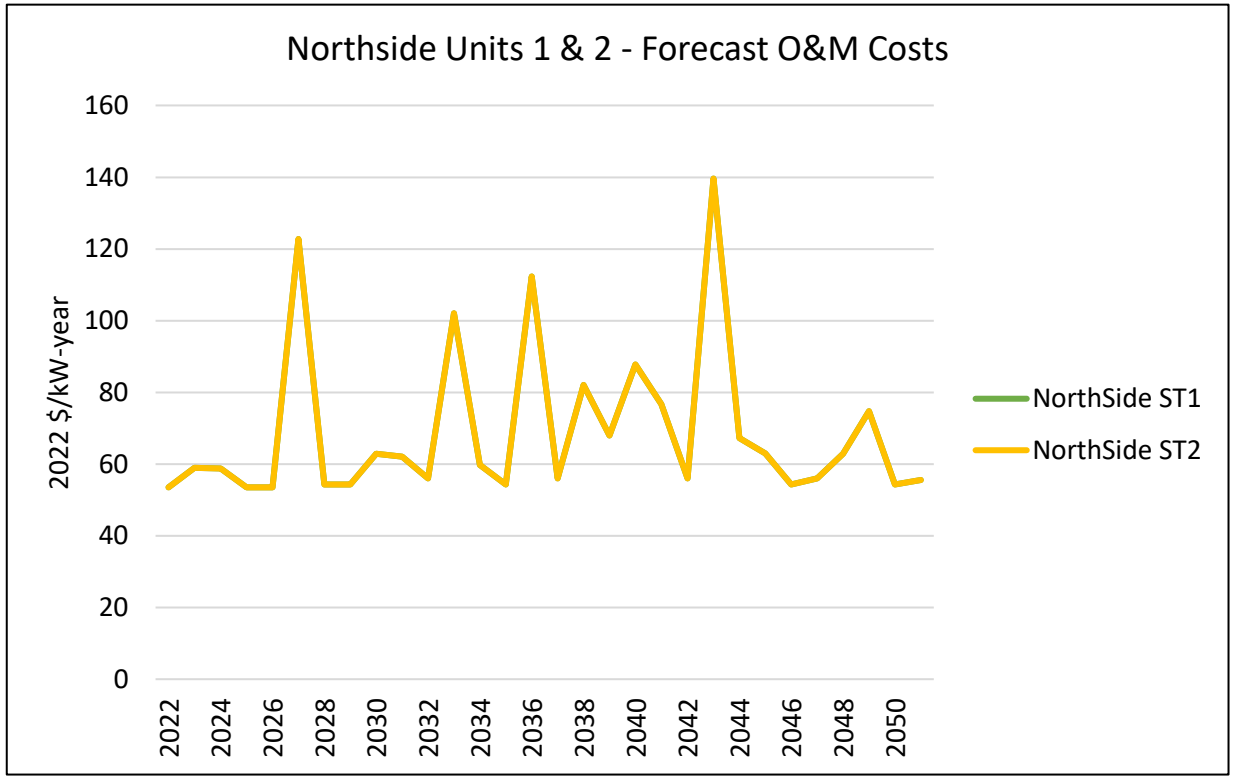
Natural Gas Firming Resources - Forecast Operating Cost

Number	Option	Variable O&M Costs (2022$/MWh)	Fixed O&M Costs (2022$/kW-year)	Heat Rate (Btu/kWh, HHV)
7	LM6000 PF Sprint 2x0	$7.07	$15.84	9,379
8	LMS100 PA+ 1x0	$4.55	$13.18	8,818
9	7F.05 1x0	$10.25	$8.53	10,080
10	7F.05 1x1	$4.17	$10.20	6,743
11	7F.05 2x1	$4.07	$6.60	6,397
12	7HA.02 1x0	$13.69	$6.20	9,256
13	7HA.02 1x1	$4.85	$7.49	6,419
14	7HA.02 2x1	$4.78	$4.39	6,397
15	7HA.02 3x1	$4.75	$4.39	6,378
16	7HA.02 1x1 ACC	$4.20	$7.49	6,484
17	7F.03 Upgraded 1x1	$4.78	$11.61	6,832
18	7F.03 Upgraded 2x1	$4.69	$7.37	6,803
19	18V50DF 5x0	$9.08	$22.71	8,380

Key Variables – Existing Plant Fuel and O&M Costs







Reference Material

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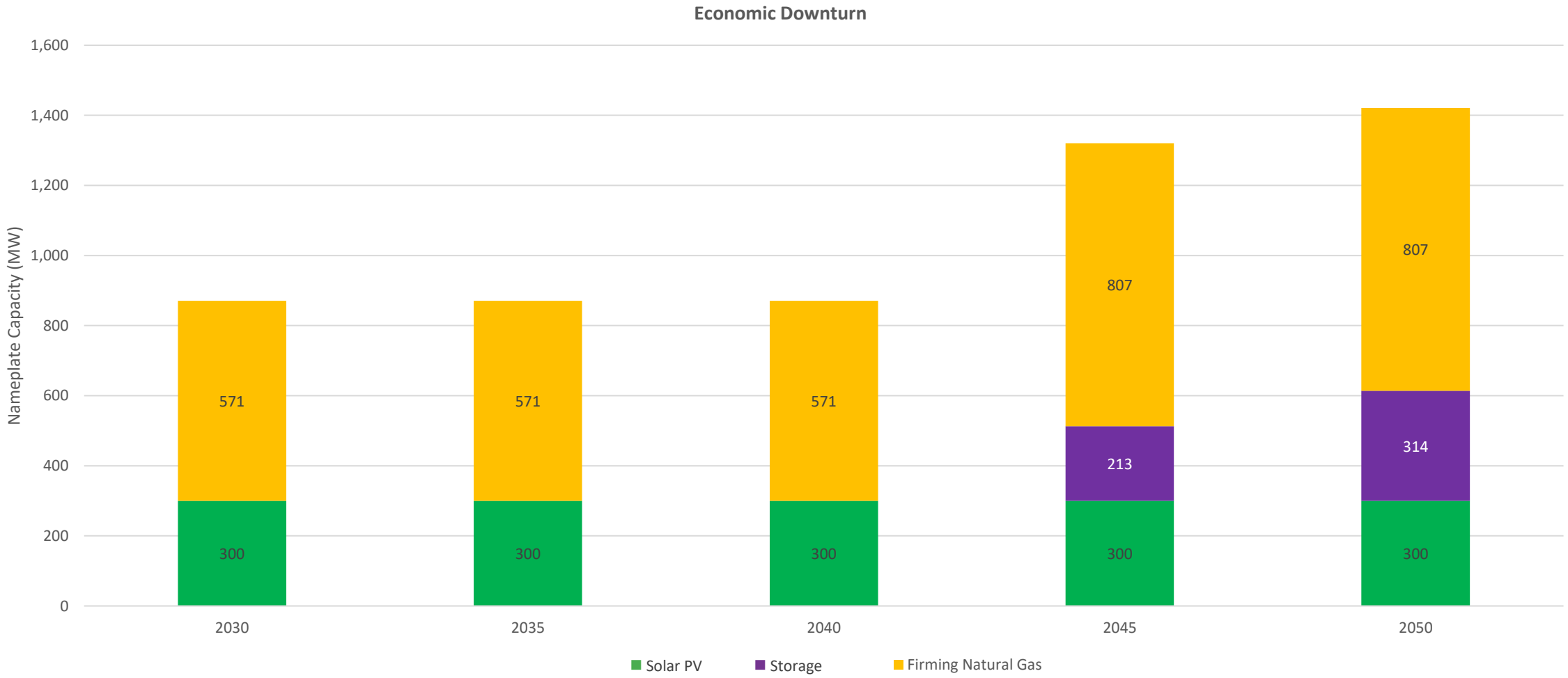
New Resource Additions - MW Capacity

New Resource Additions - MW Capacity



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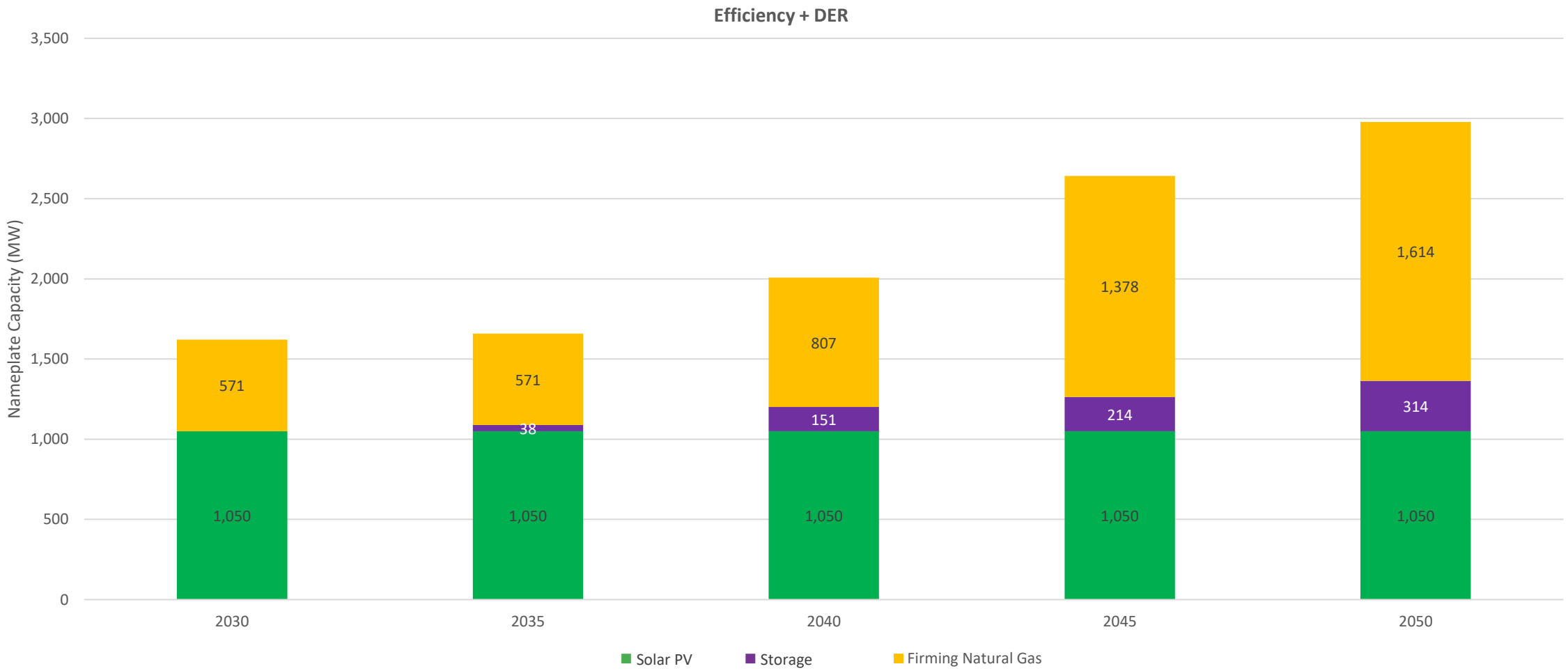

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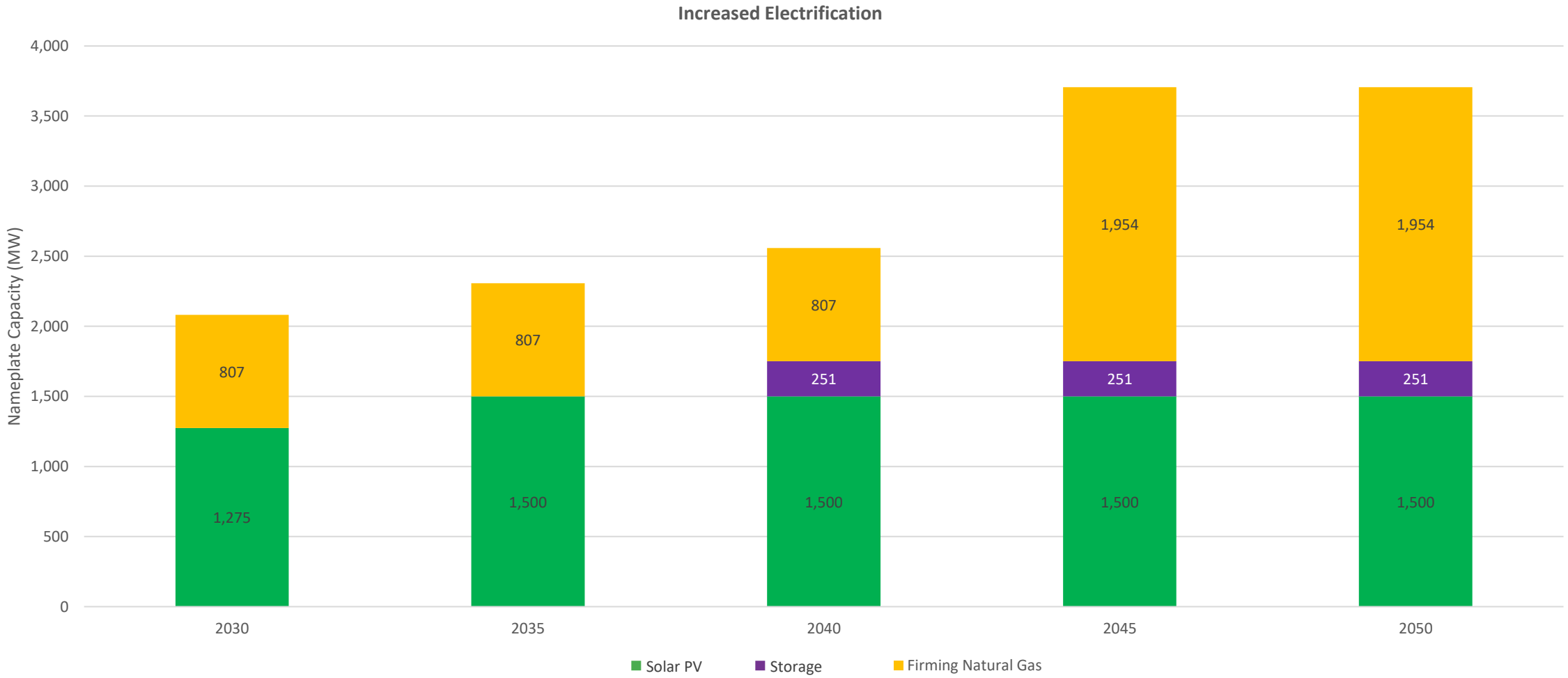
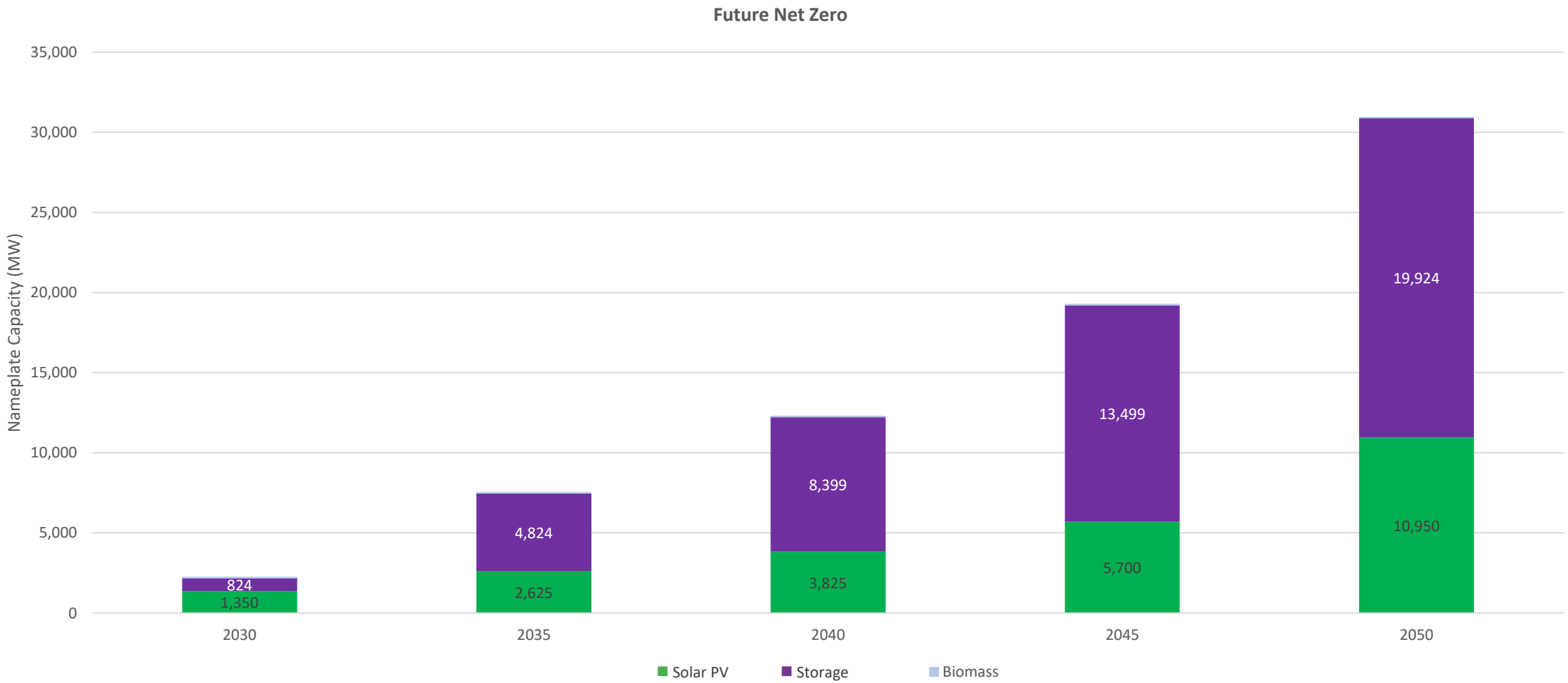


New Resource Additions - MW Capacity



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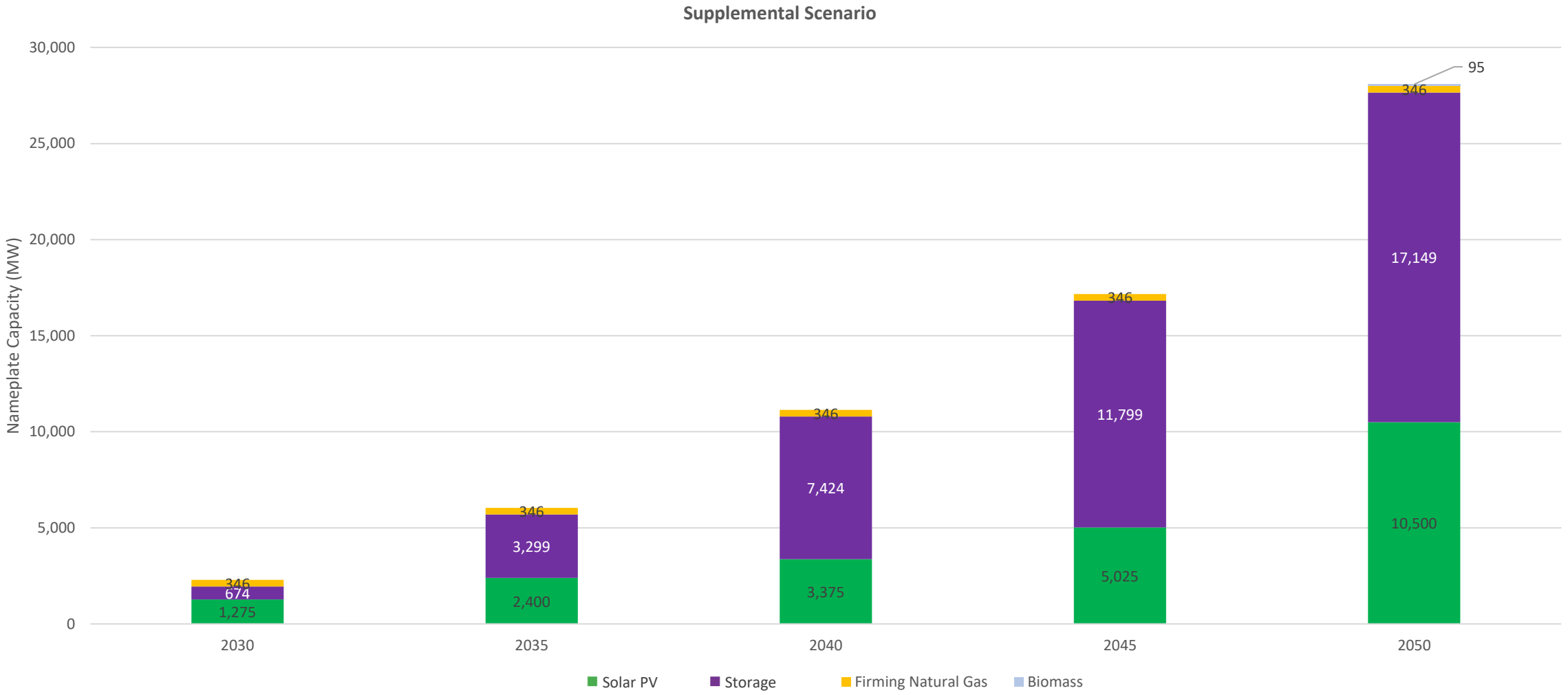
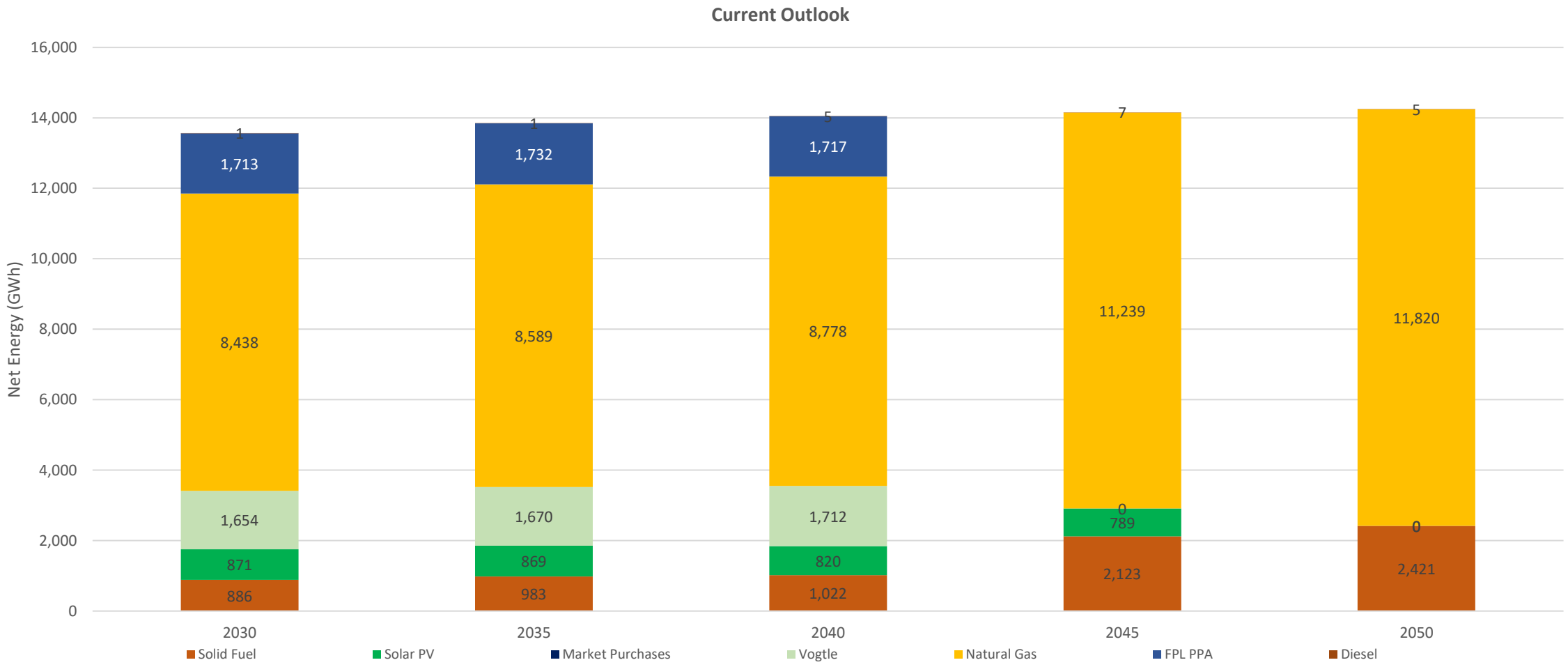


Net Energy (GWh) by Resource



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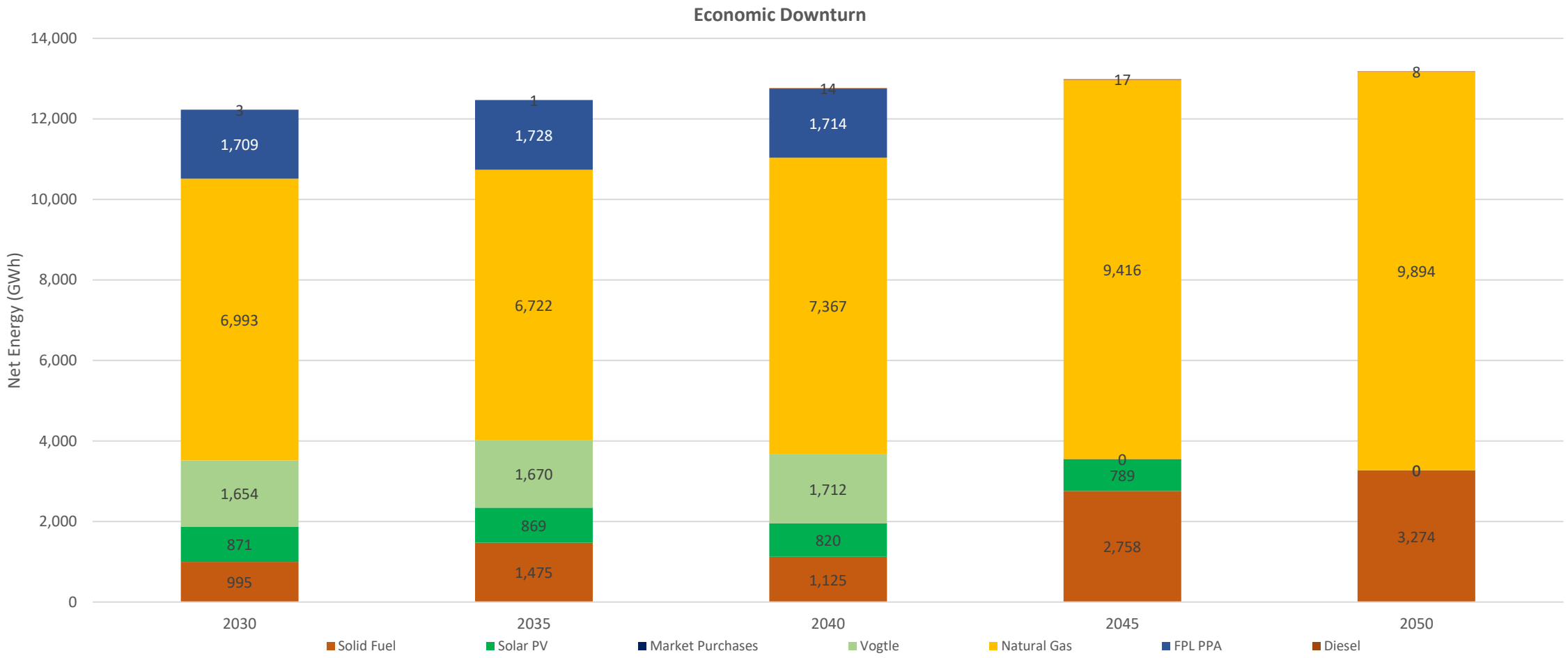

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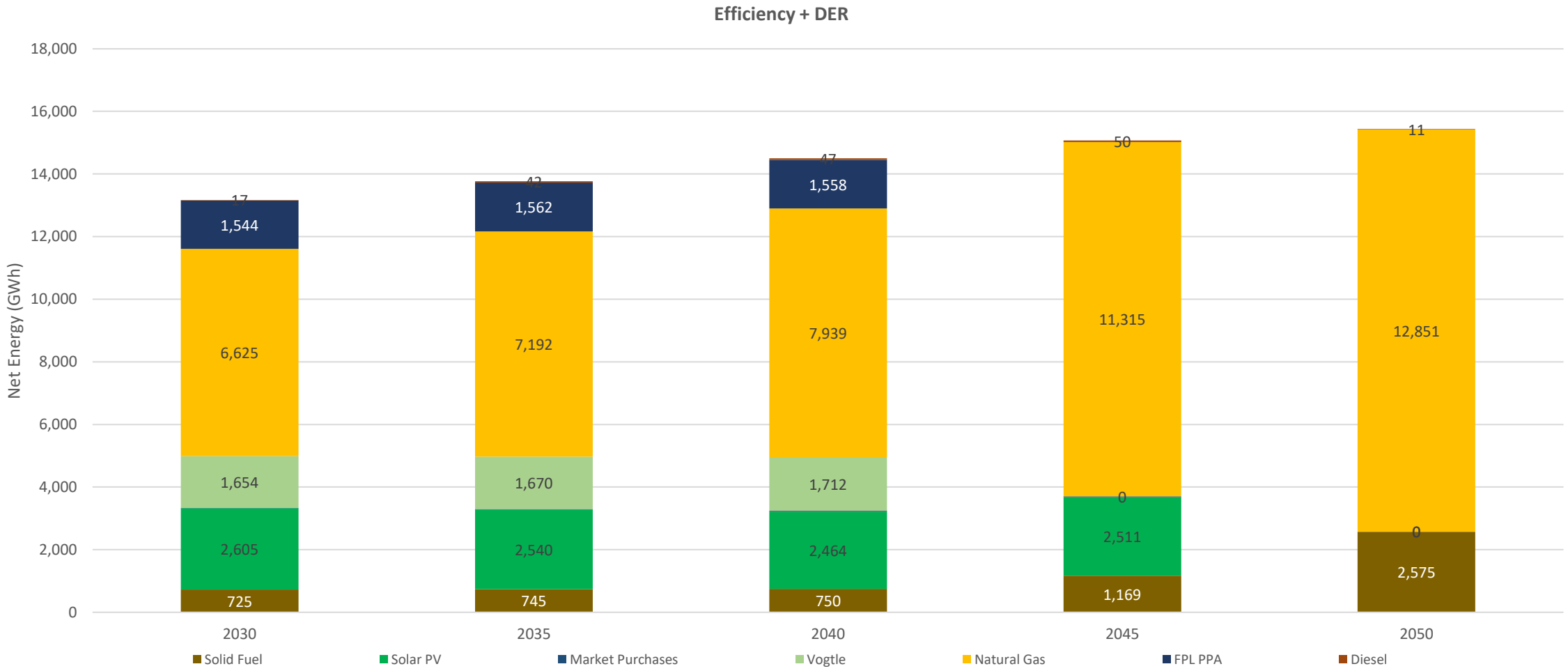

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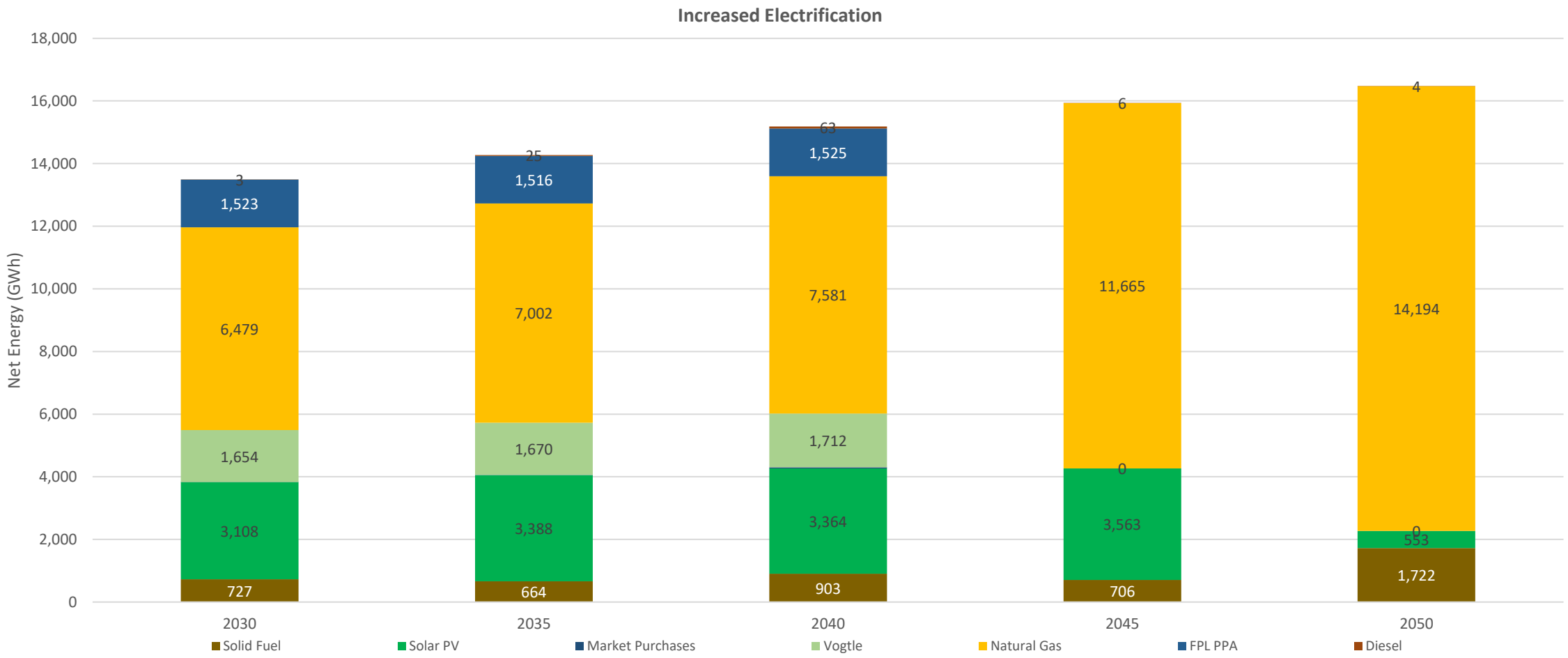

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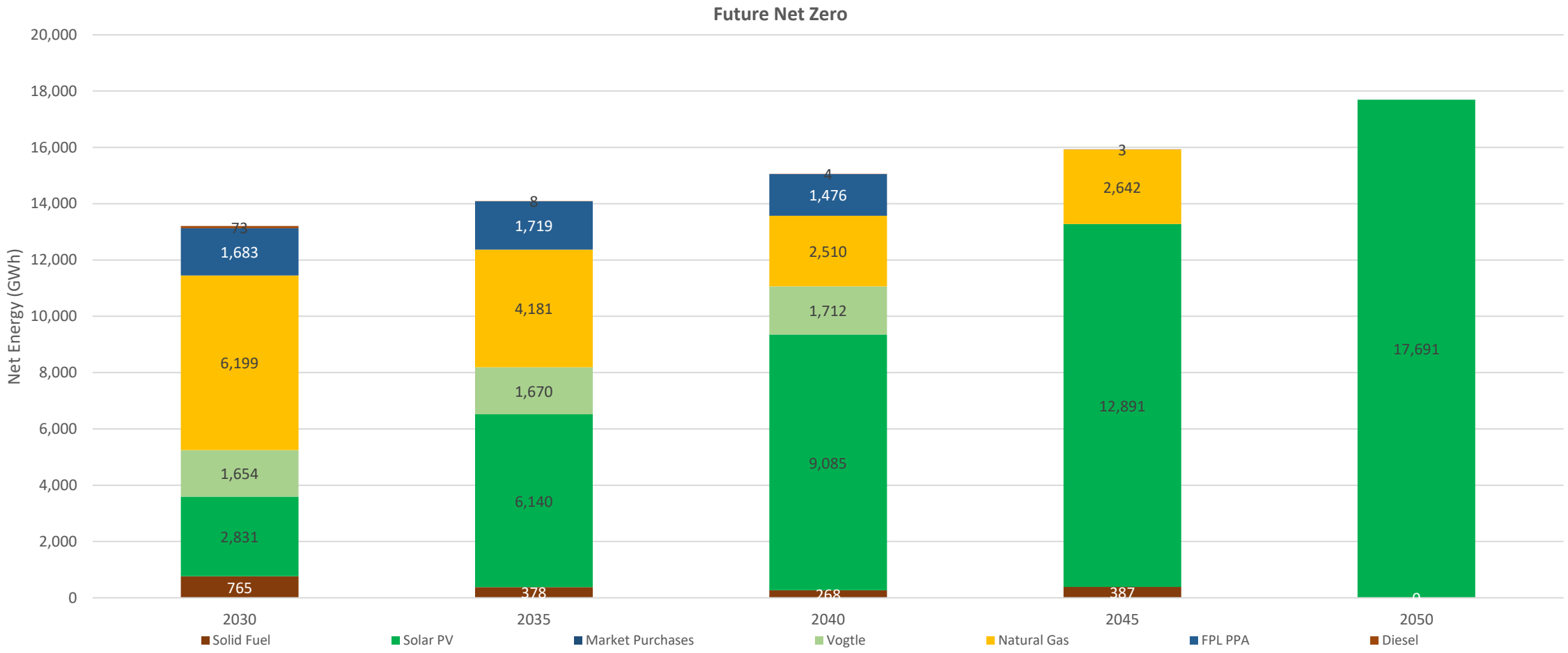

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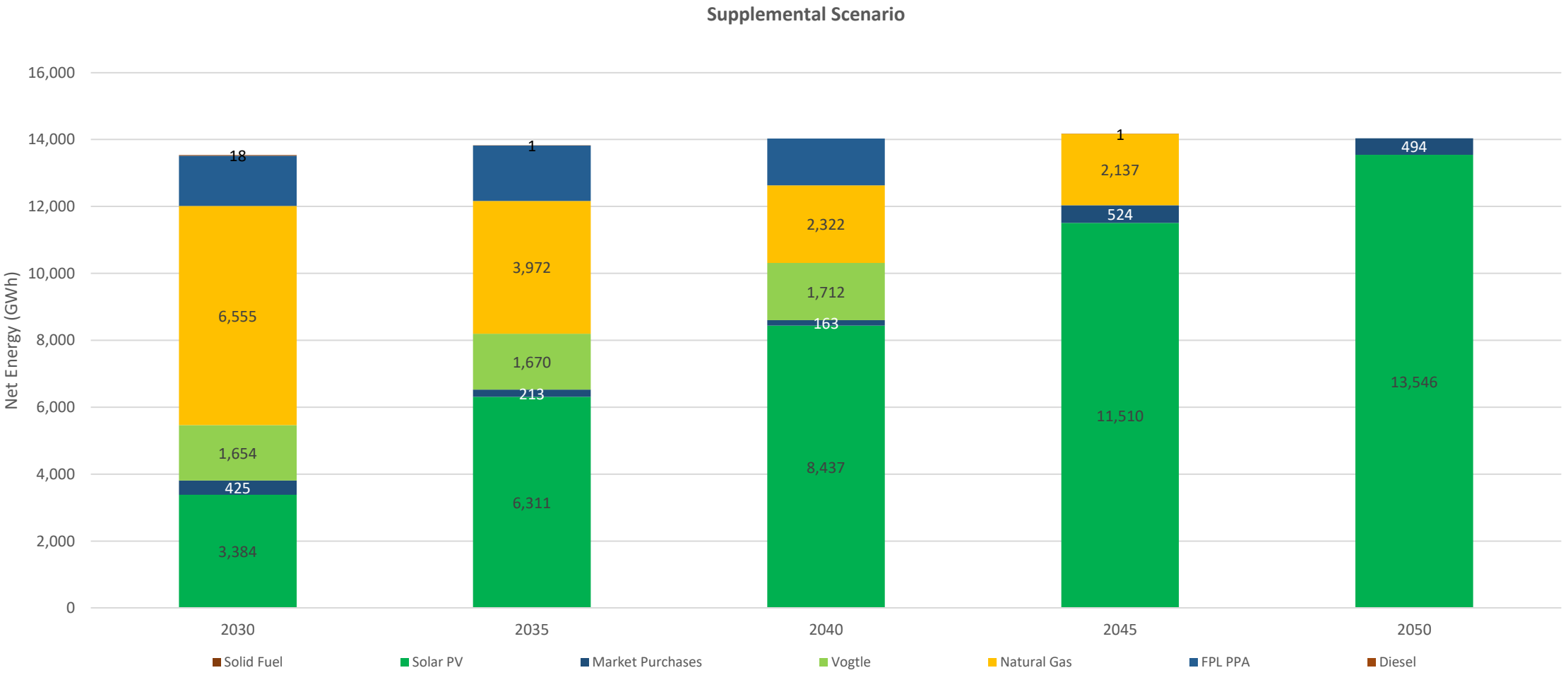
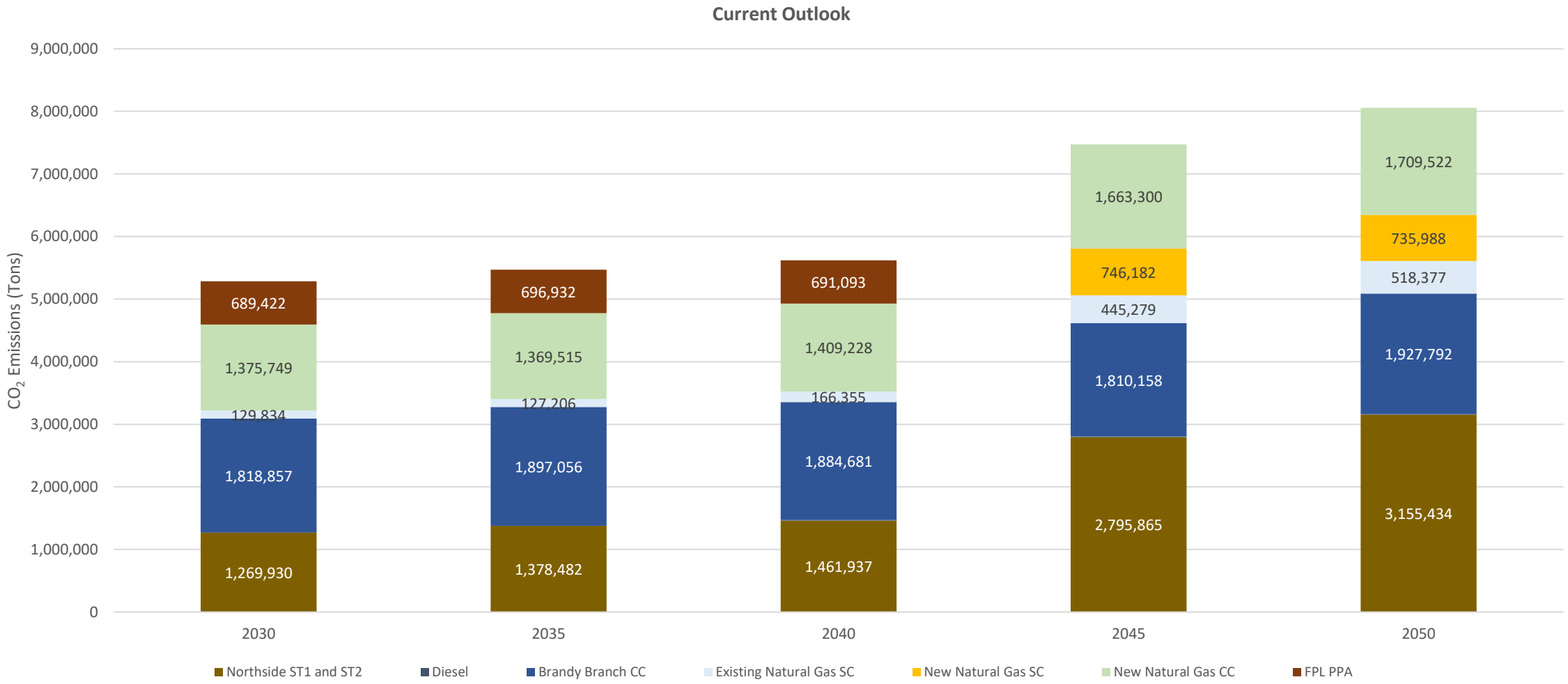


CO_2 Emissions



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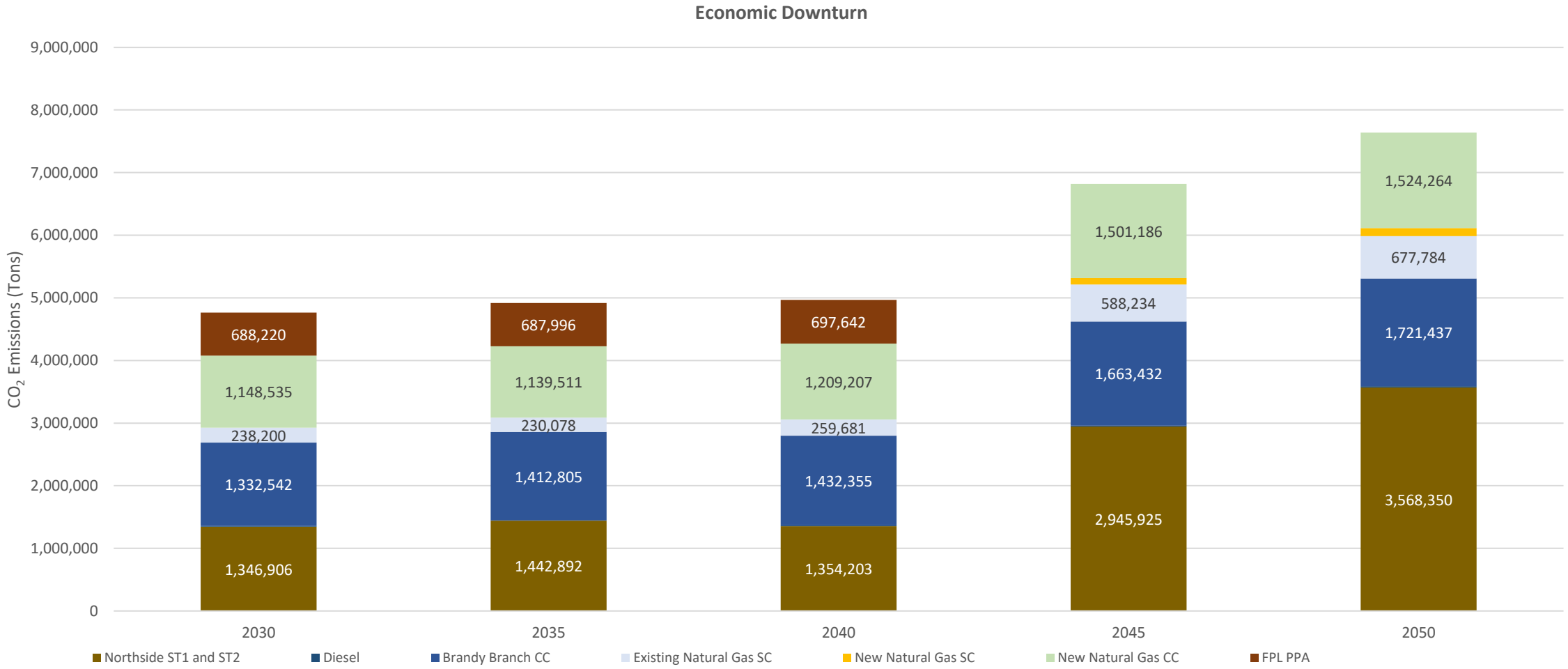

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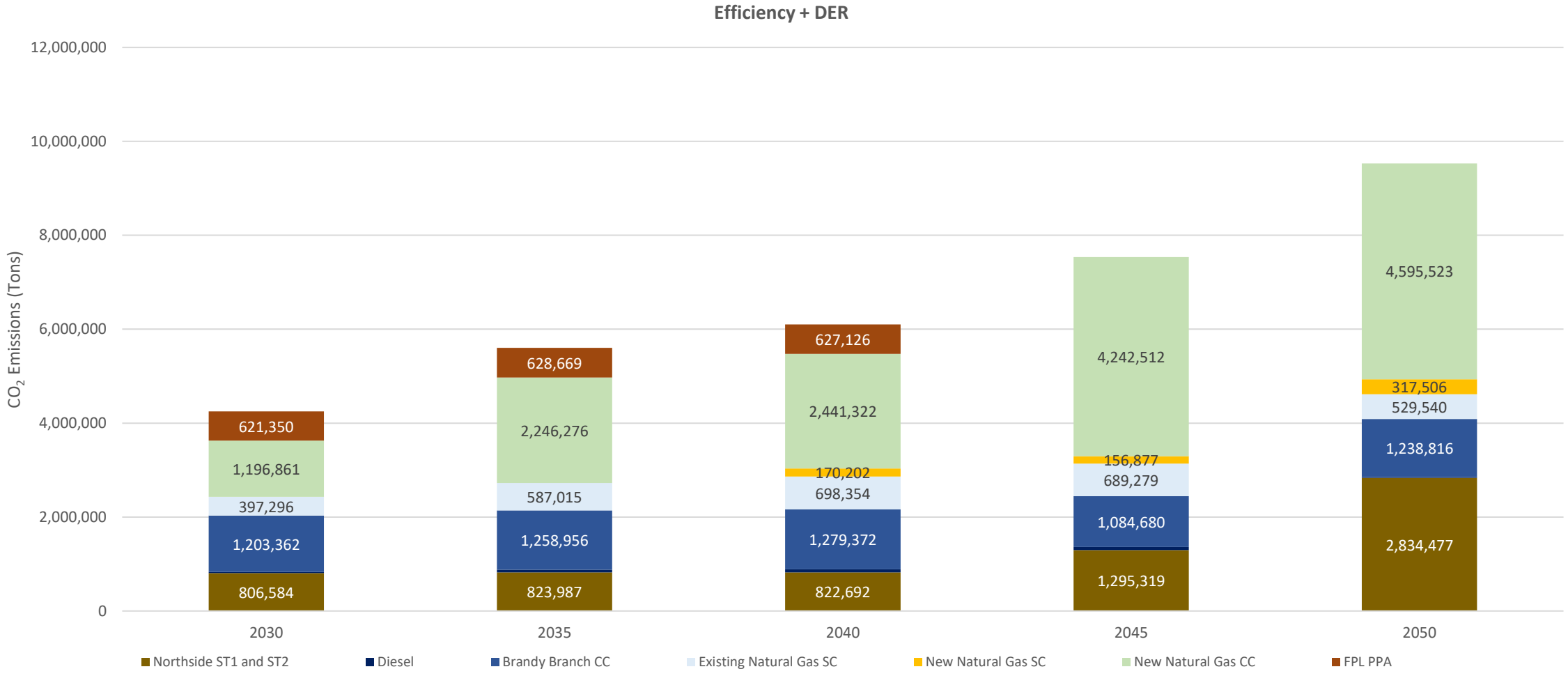

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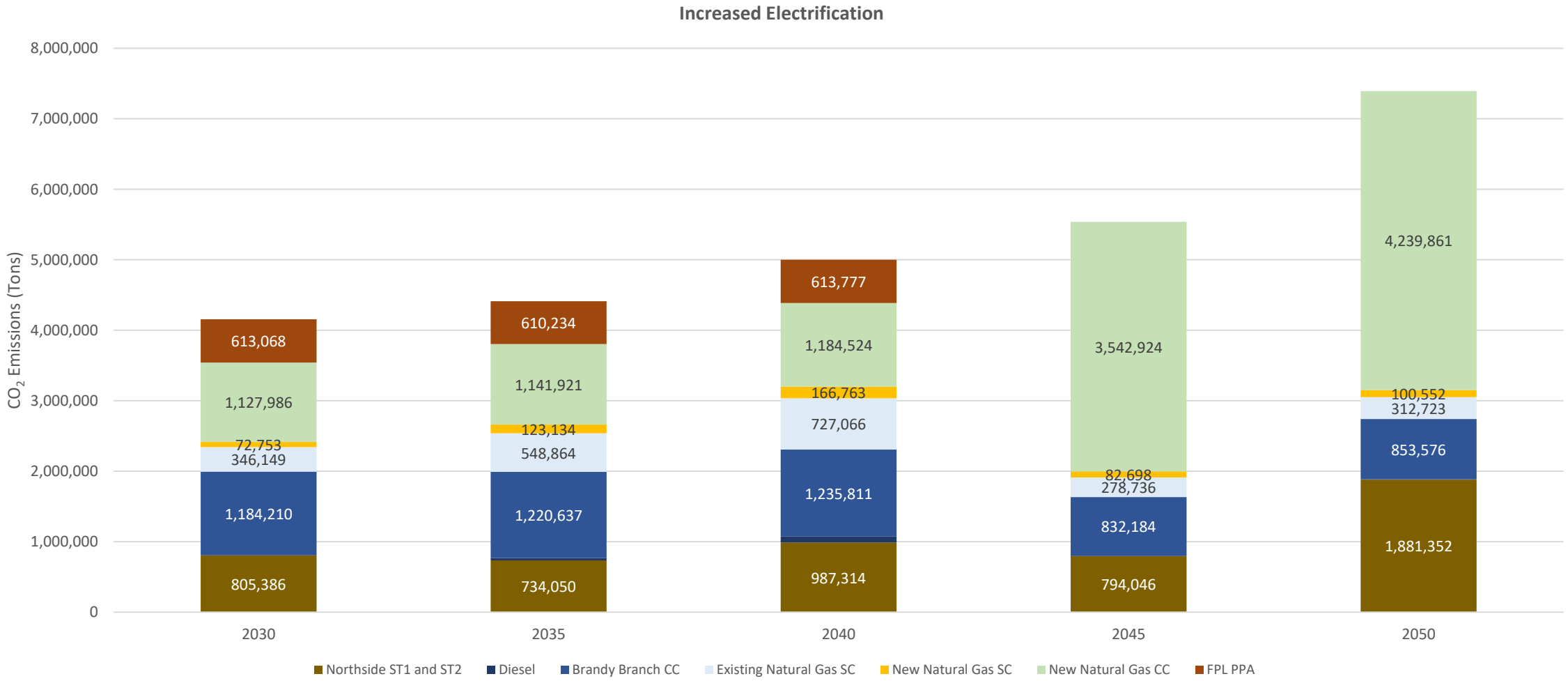

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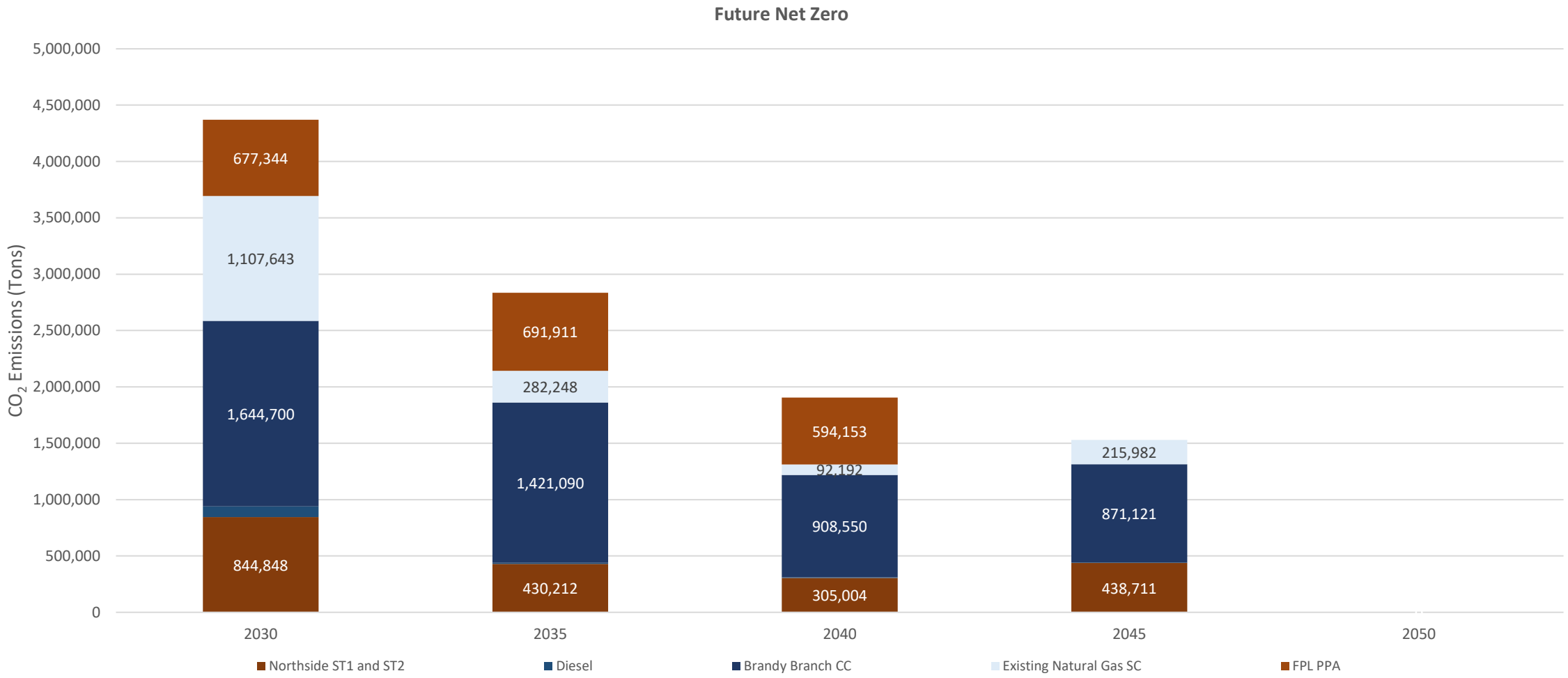

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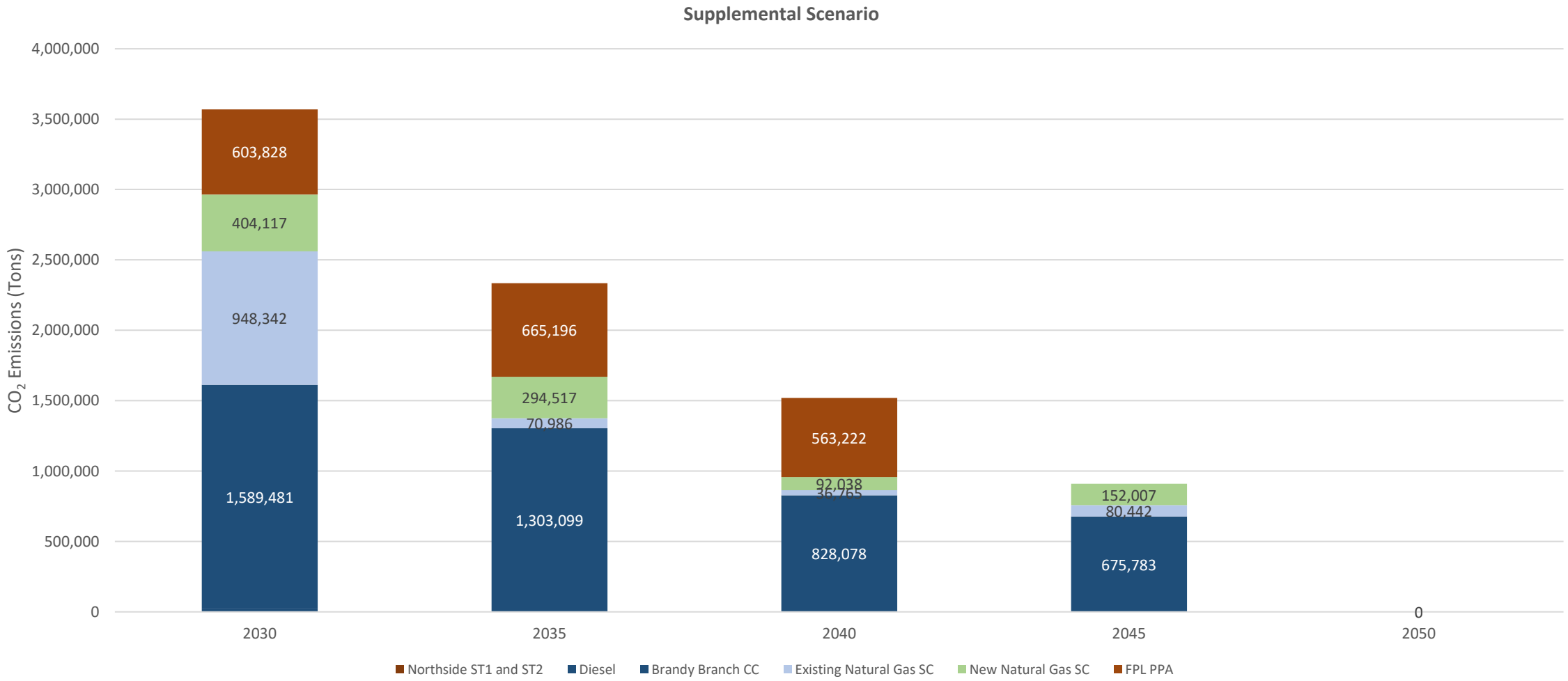
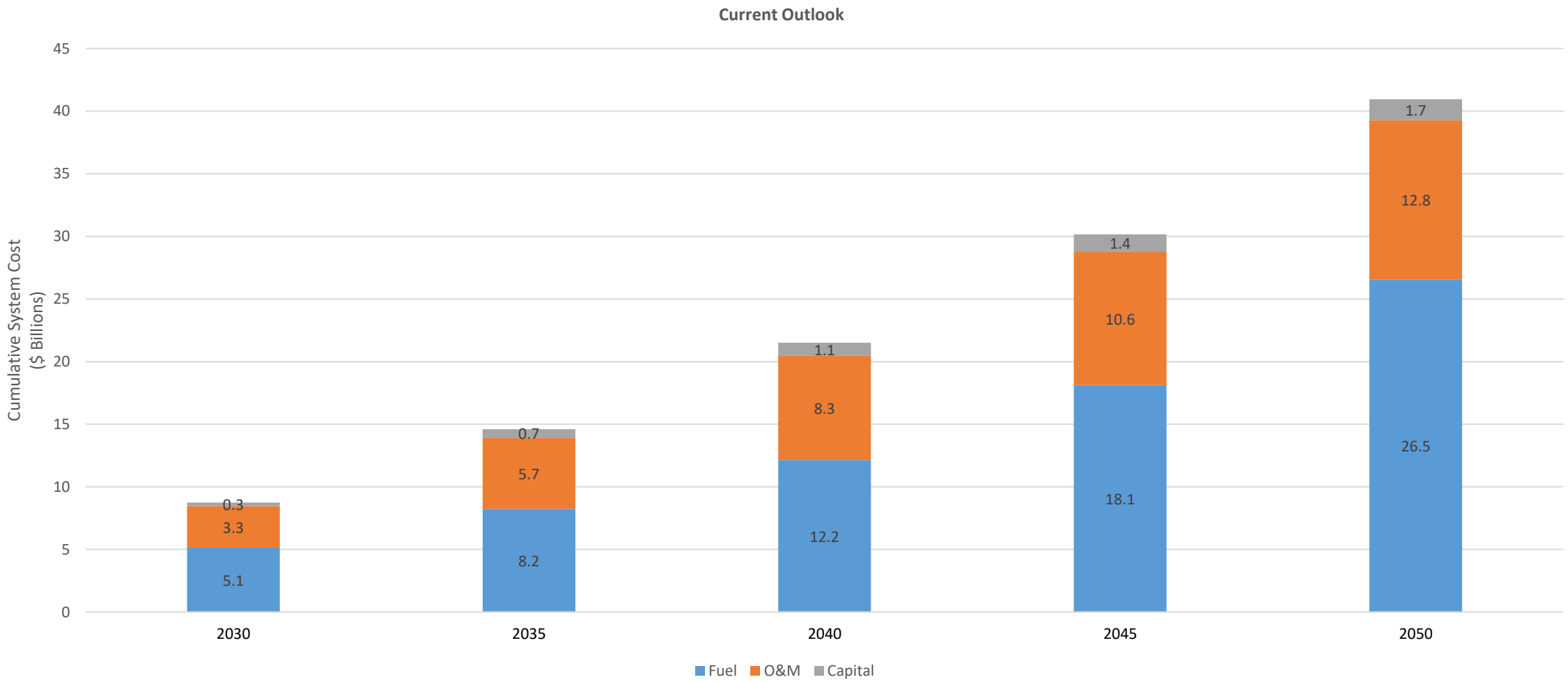


Cumulative System Costs



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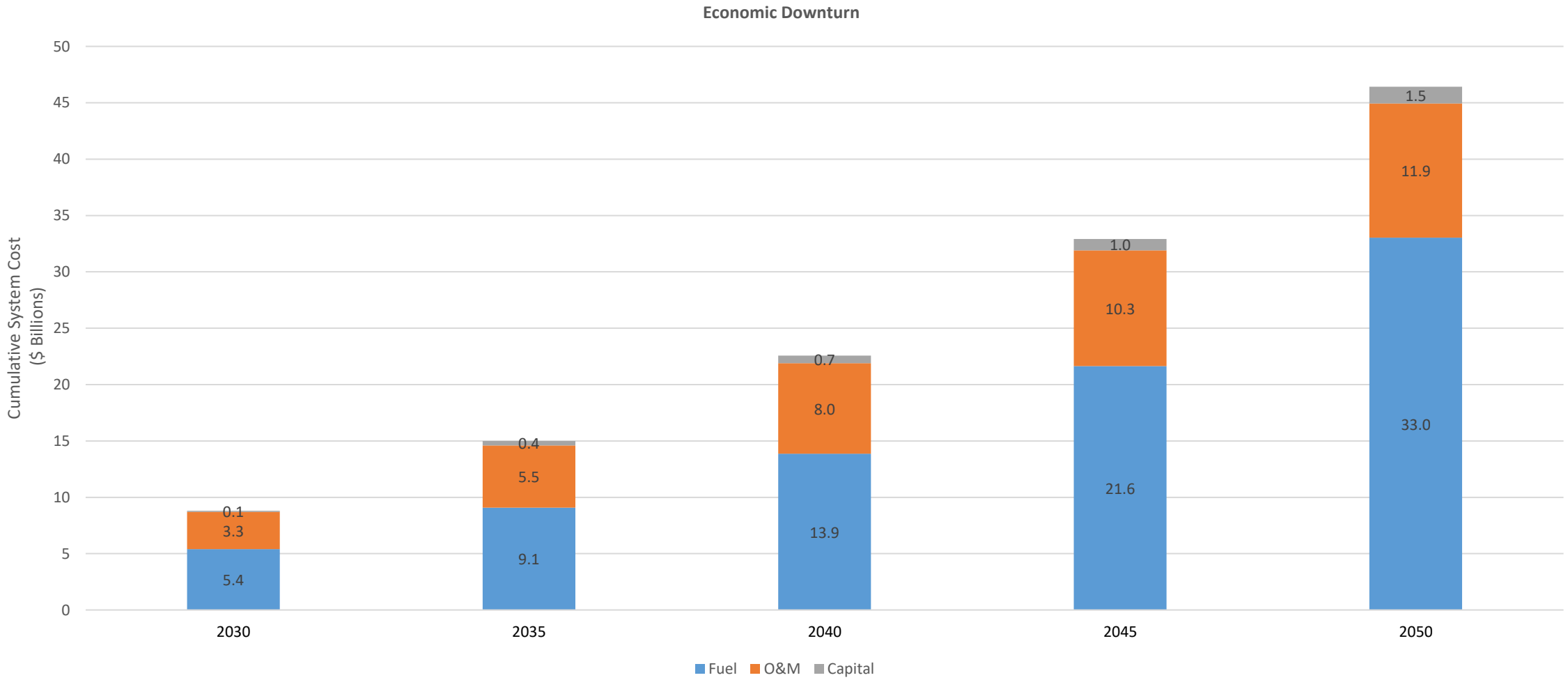

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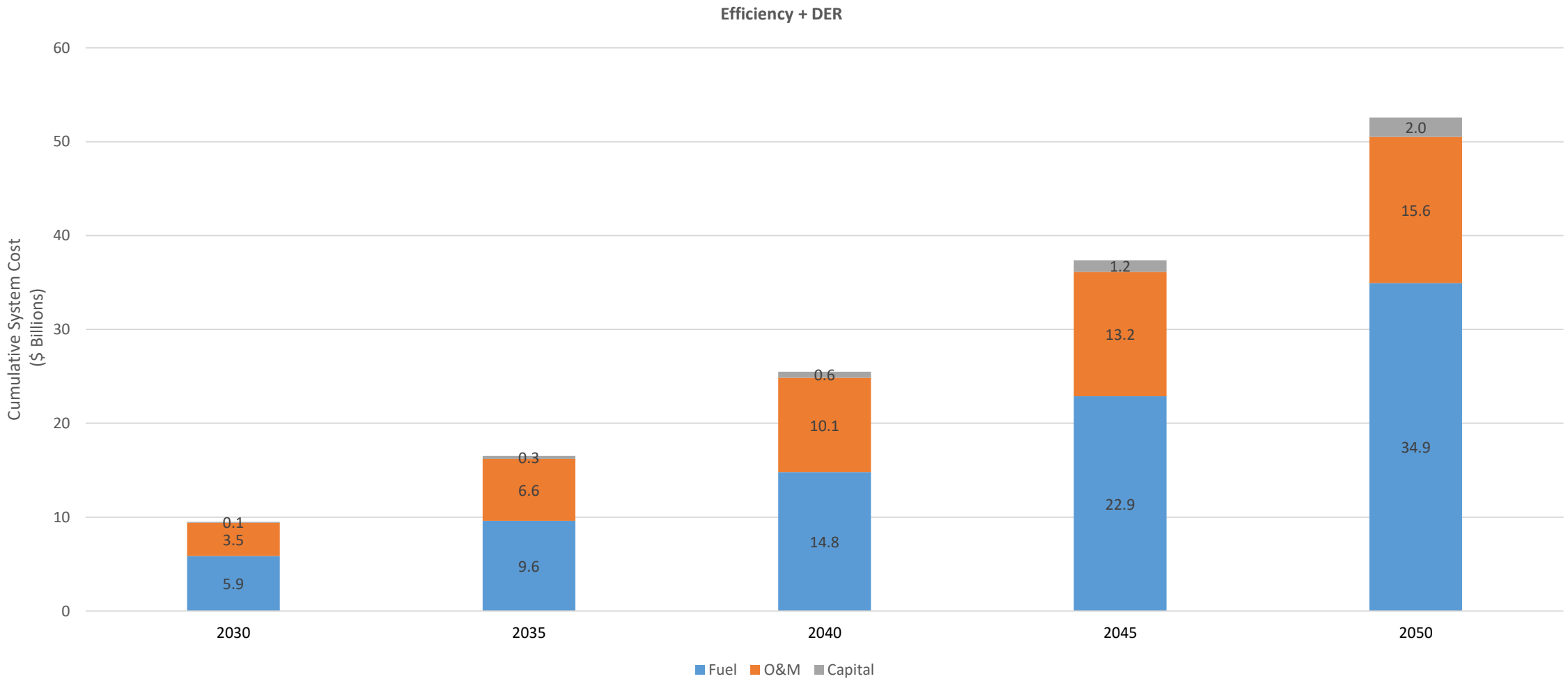

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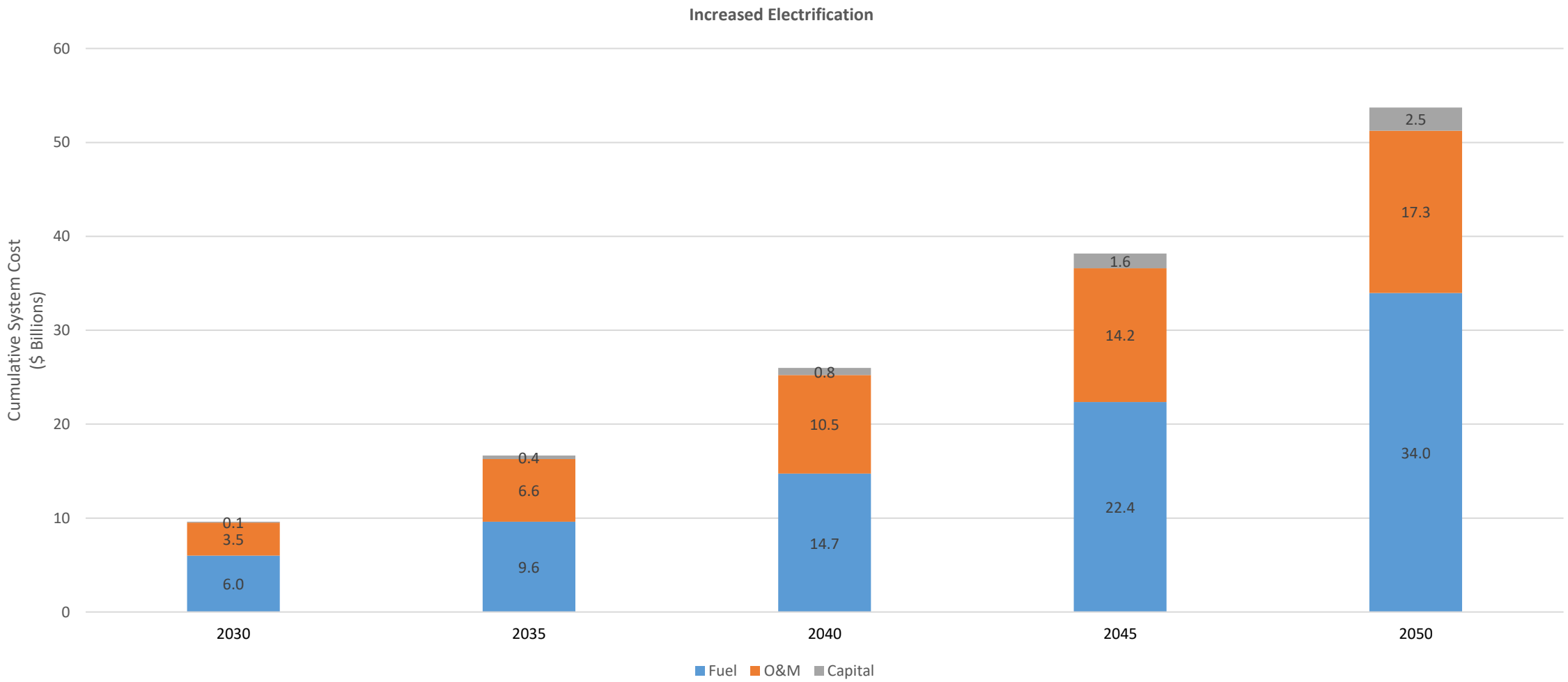

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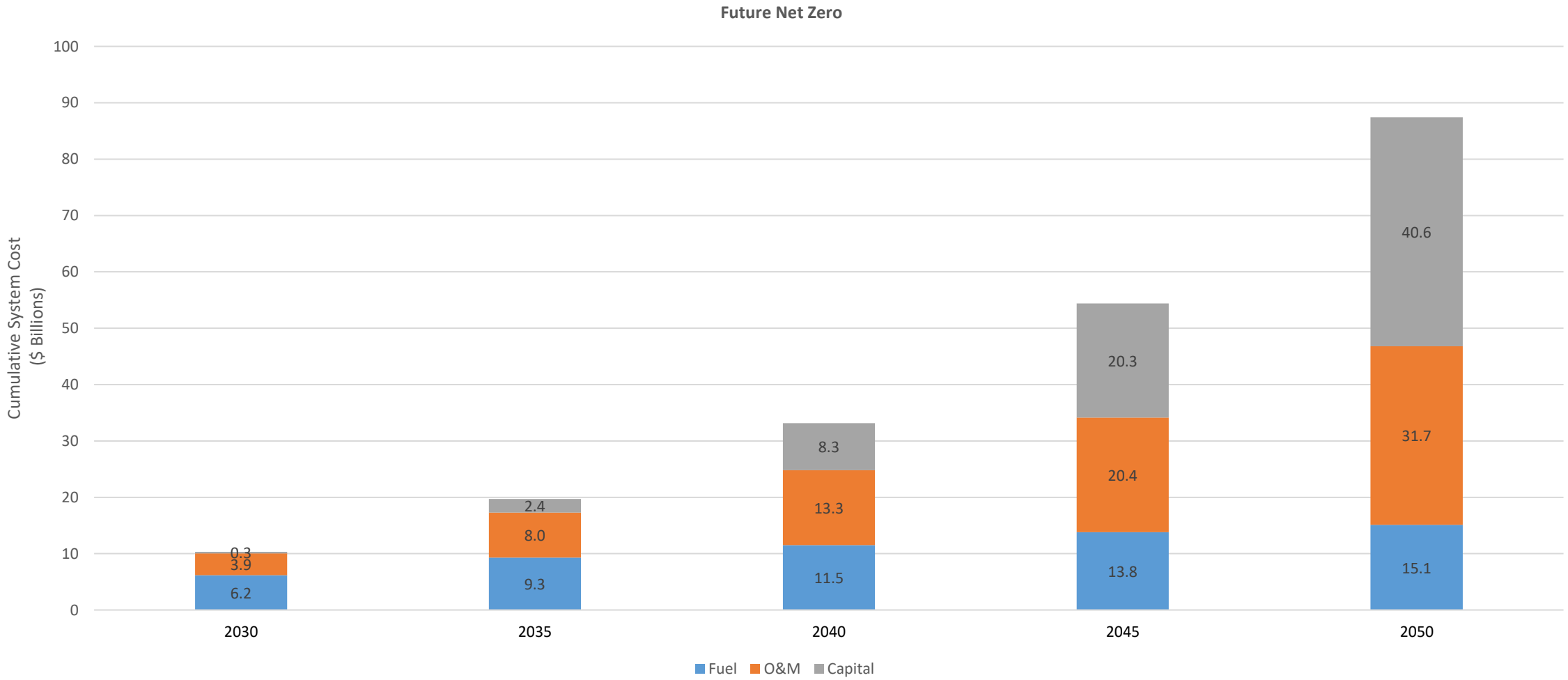

Cumulative System Costs