

No Environmental Action

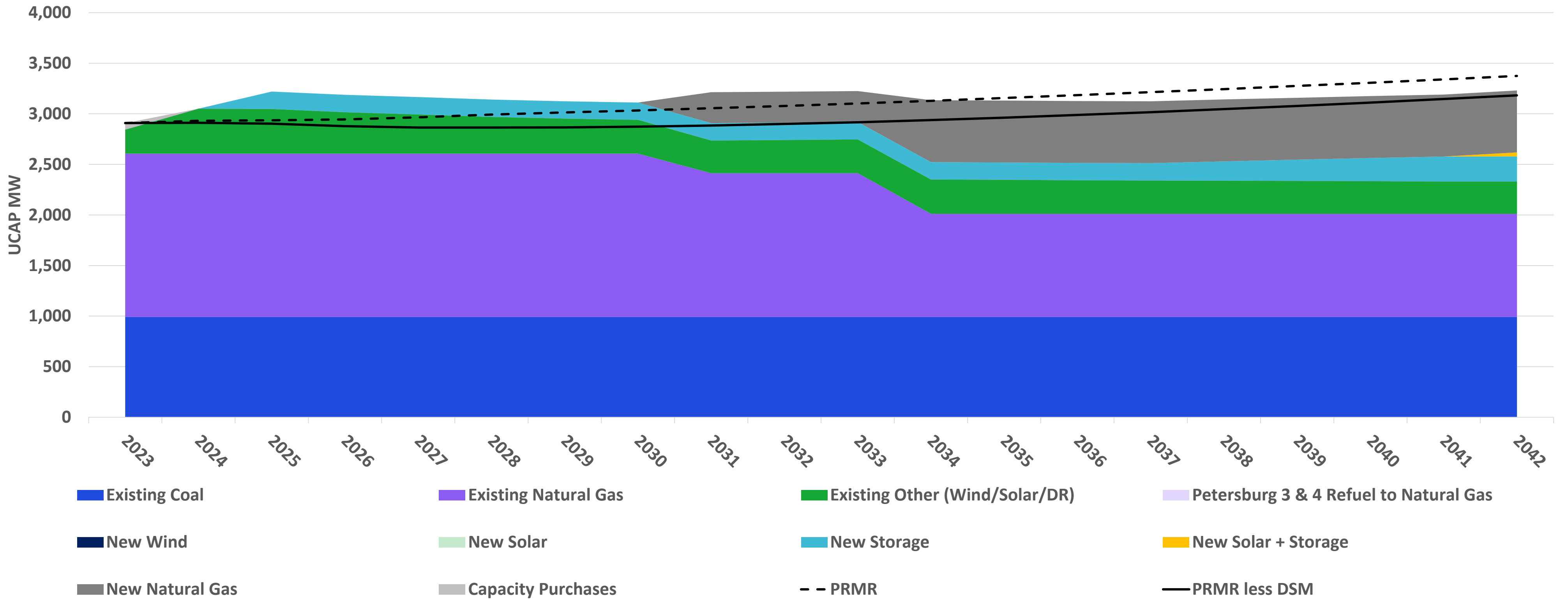
		Scenarios
		No Environmental Action
<i>20-Year PVRR (2023\$MM, 2023-2042)</i>		
Generation Strategies	No Early Retirement	\$7,111
	Pete Refuel to 100% Gas (est. 2025)	\$6,621
	One Pete Unit Retires (2026)	\$7,462
	Both Pete Units Retire (2026 & 2028)	\$7,425
	“Clean Energy Strategy” Both Pete Units Retire and Replaced with Wind, Solar & Storage (2026 & 2028)	\$9,211
	Encompass Optimization without predefined Strategy – Selects Pete 3 & 4 Refuel in 2025	\$6,610

A. No Early Retirement

		Scenarios			
Generation Strategy: <i>No Early Retirement</i>	No Environmental Action	Current Trends	Aggressive Environmental	Decarbonized Economy	
	\$7,111				

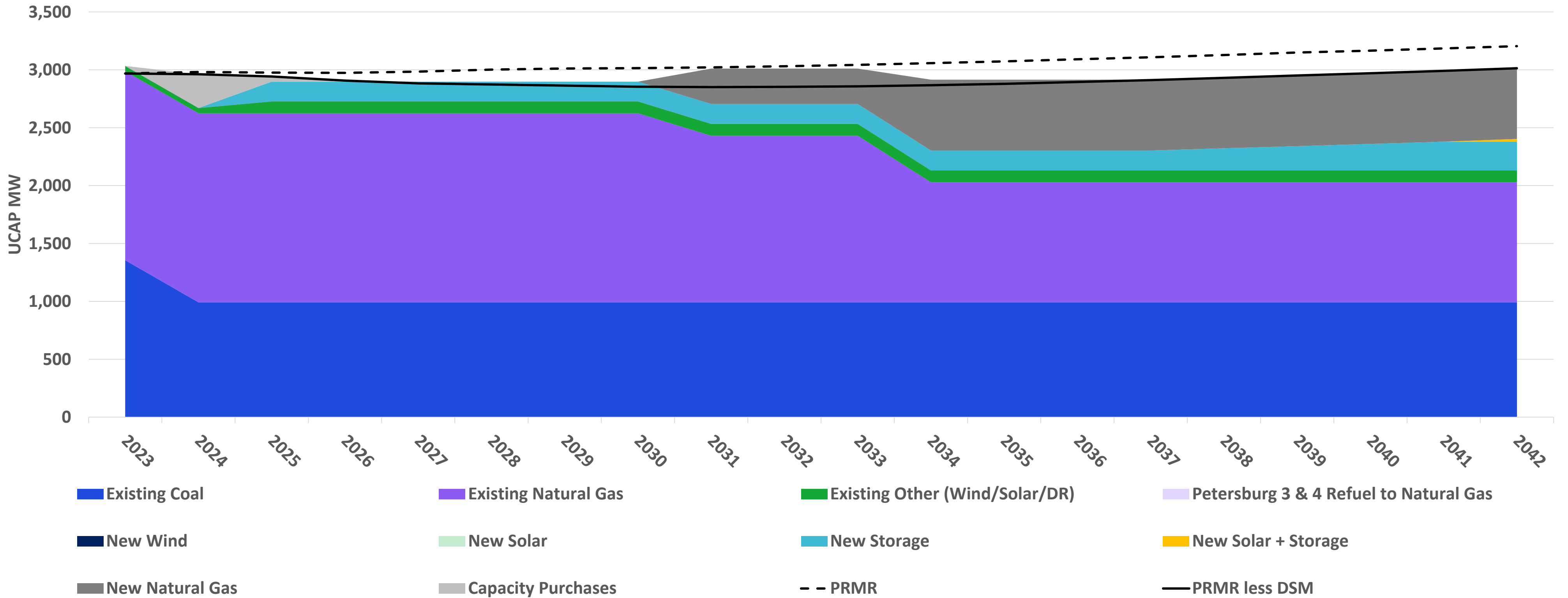
No Early Retirement: No Environmental Action

Firm Unforced Capacity Position – Summer



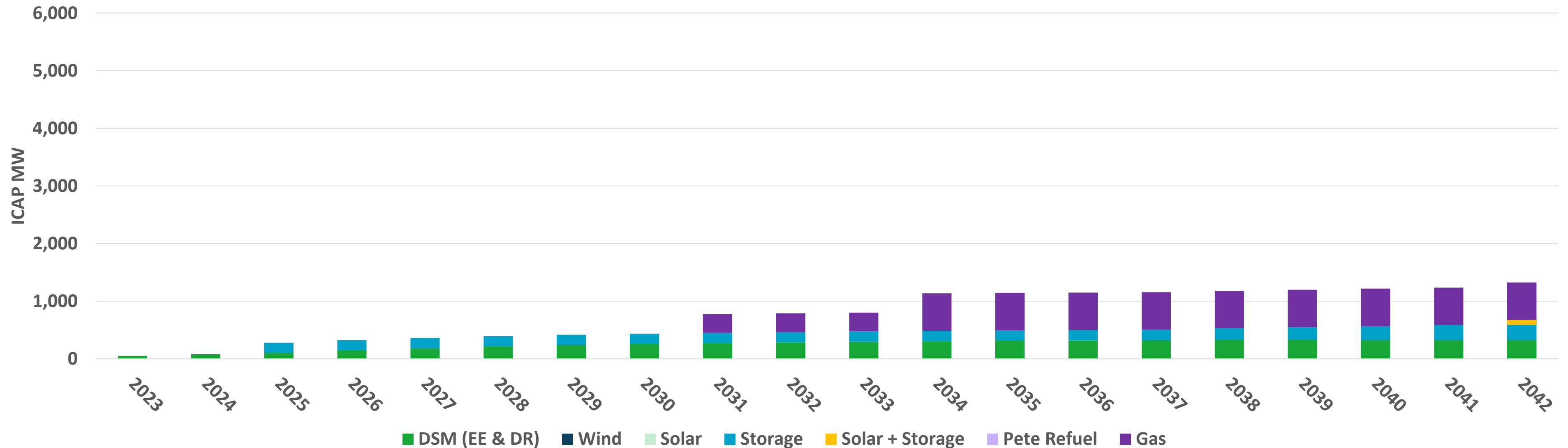
No Early Retirement: No Environmental Action

Firm Unforced Capacity Position – Winter



No Early Retirement: No Environmental Action

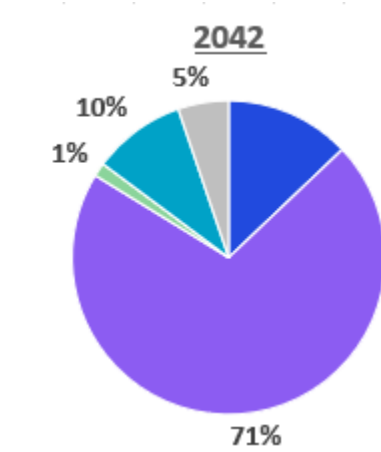
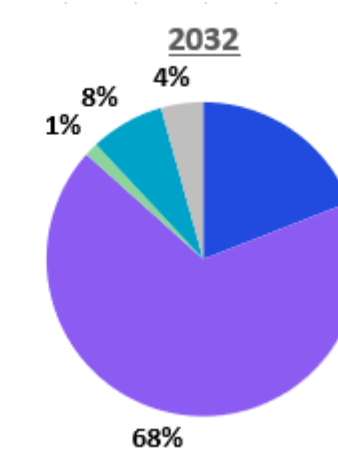
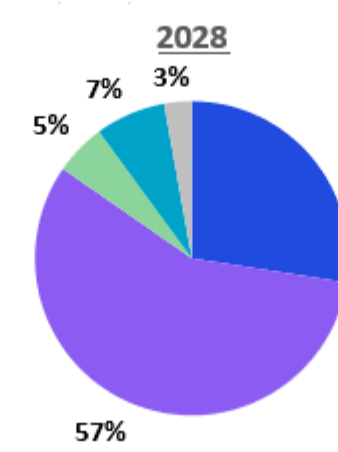
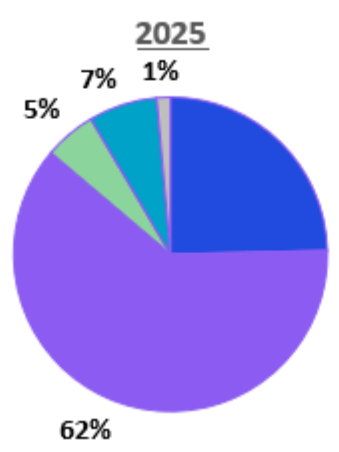
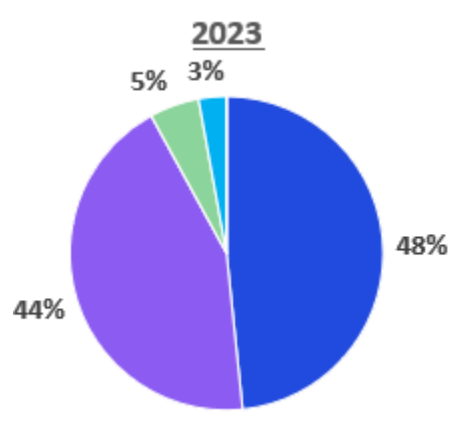
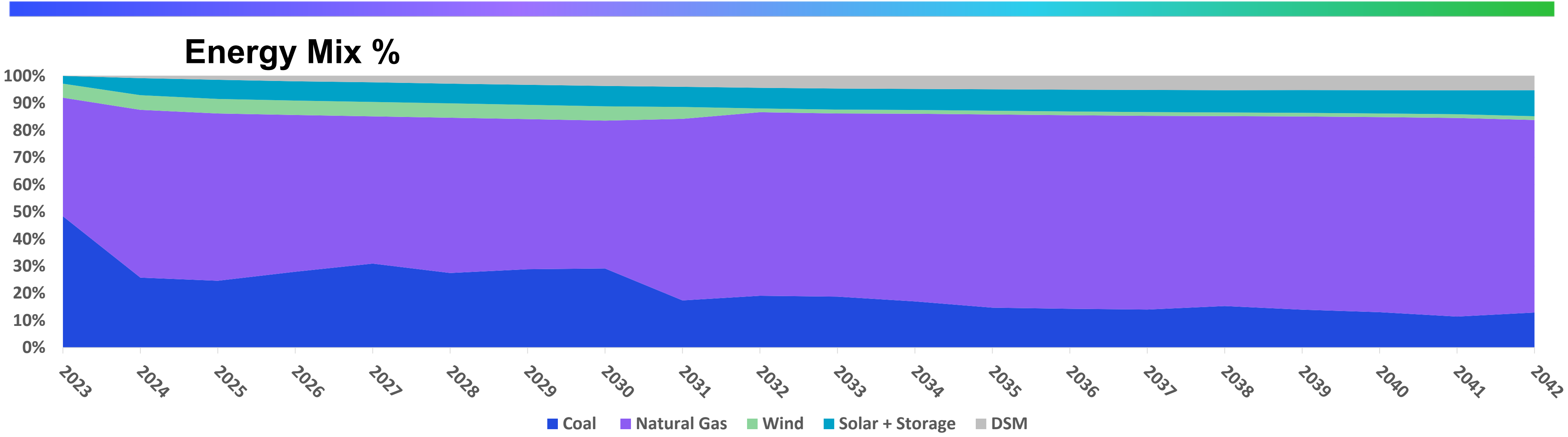
Installed Capacity Cumulative Additions (MW)



Installed Capacity Incremental Additions (MW): 2023 - 2028

	2023	2024	2025	2026	2027	2028
Wind	0	0	0	0	0	0
Solar	0	0	0	0	0	0
Storage	0	0	180	0	0	0
Solar + Storage	0	0	0	0	0	0
Pete Refuel	0	0	0	0	0	0
Gas	0	0	0	0	0	0

No Early Retirement: No Environmental Action



Thermal MWh %	92%	Thermal MWh %	86%	Thermal MWh %	85%	Thermal MWh %	87%	Thermal MWh %	84%
Renewable/DSM MWh %	8%	Renewable/DSM MWh %	14%	Renewable/DSM MWh %	15%	Renewable/DSM MWh %	13%	Renewable/DSM MWh %	16%

No Early Retirement: No Environmental Action

Portfolio Overview Retirements

Harding Street:

- HS ST5 Nat Gas: 2030
- HS ST6 Nat Gas: 2030
- HS ST7 Nat Gas: 2033
- **Total Nat Gas Retired MW: 618 MW**

Replacement Additions by 2042

- DSM: 326 MW
- Wind: 0 MW
- Solar: 0 MW
- Storage: 260 MW
- Solar + Storage: 90 MW
- Thermal: 650 MW

Current Trends PVRR Summary 20-Year PVRR (2023\$MM, 2023-2042)

	Scenarios
	No Environmental Action
No Early Retirement	\$7,111
Pete Refuel to 100% Gas (est. 2025)	\$6,621
One Pete Unit Retires (2026)	\$7,462
Both Pete Units Retire (2026 & 2028)	\$7,425
"Clean Energy Strategy" Both Pete Units Retire and Replaced with Wind, Solar & Storage (2026 & 2028)	\$9,211
Encompass Optimization without predefined Strategy	\$6,610

B. Pete Refuel by 2025

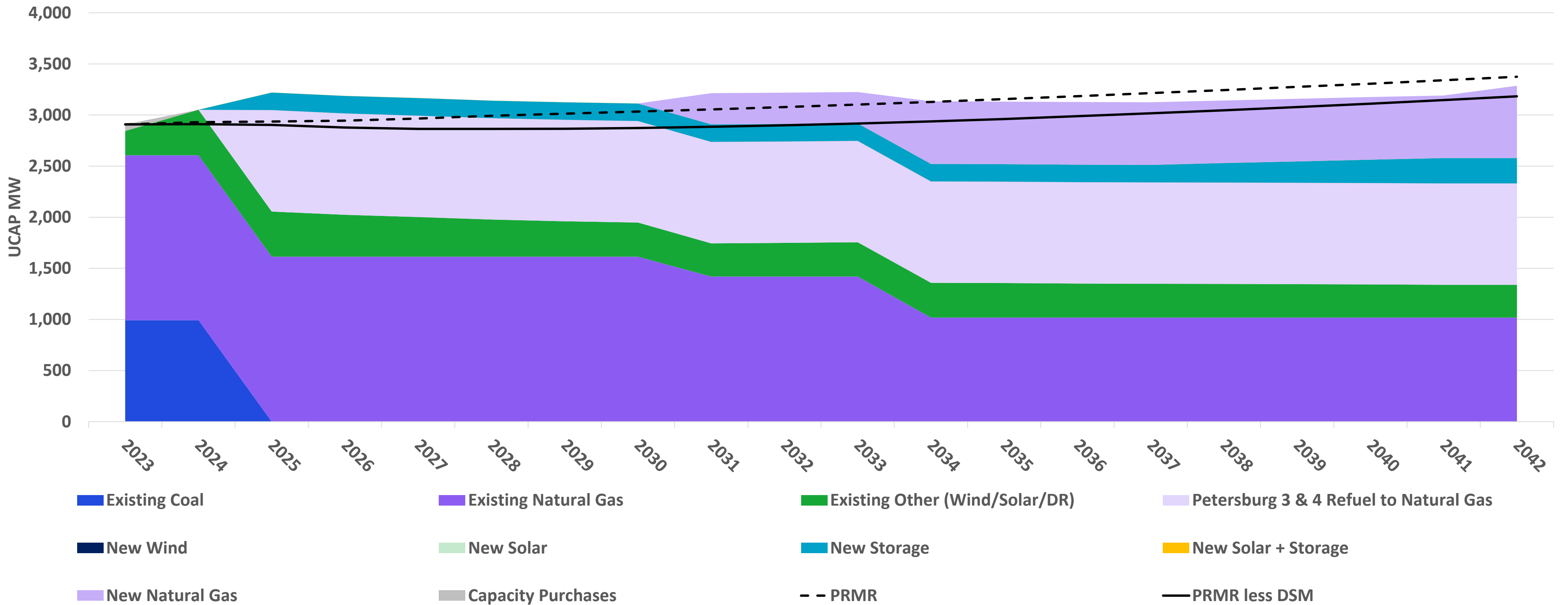
*20-Year PVRR
(2023\$MM, 2023-2042)*

Generation Strategy:
*Pete Refuel to 100%
Gas (est. 2025)*

Scenarios			
No Environmental Action	Current Trends	Aggressive Environmental	Decarbonized Economy
\$6,621			

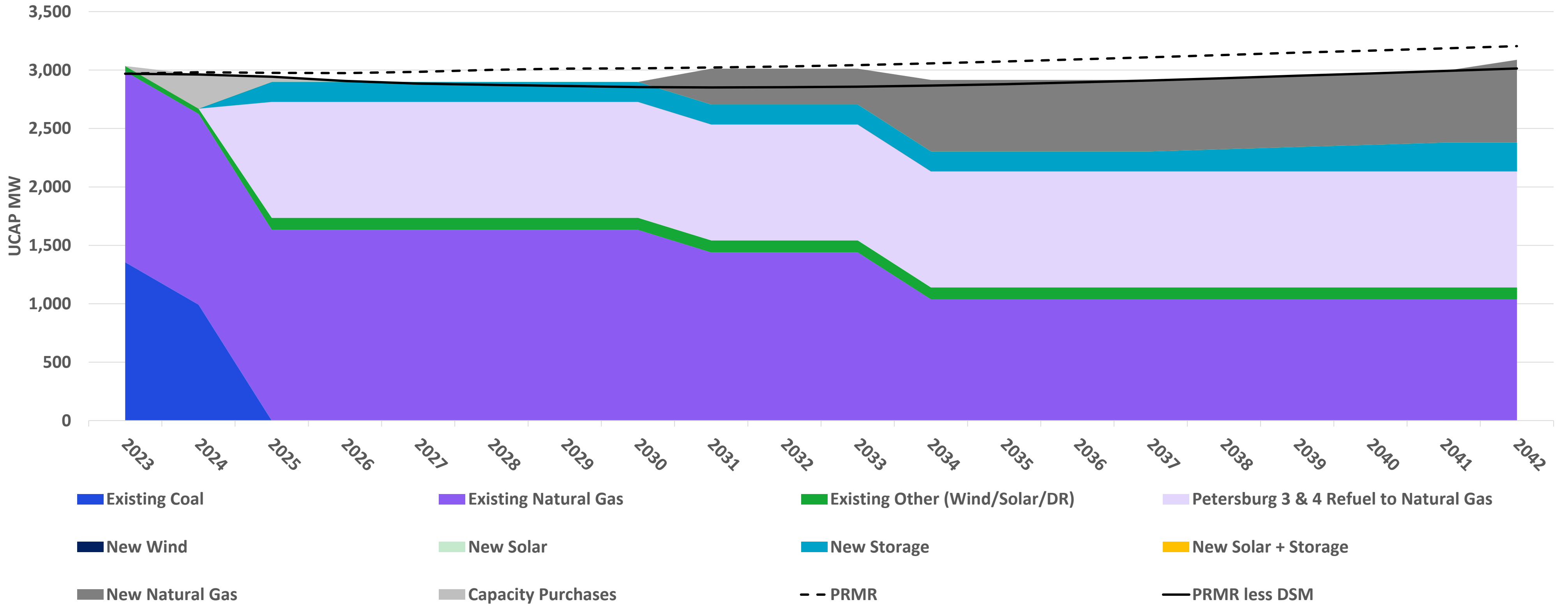
Pete 3 & 4 Refuel in 2025: No Environmental Action

Firm Unforced Capacity Position – Summer



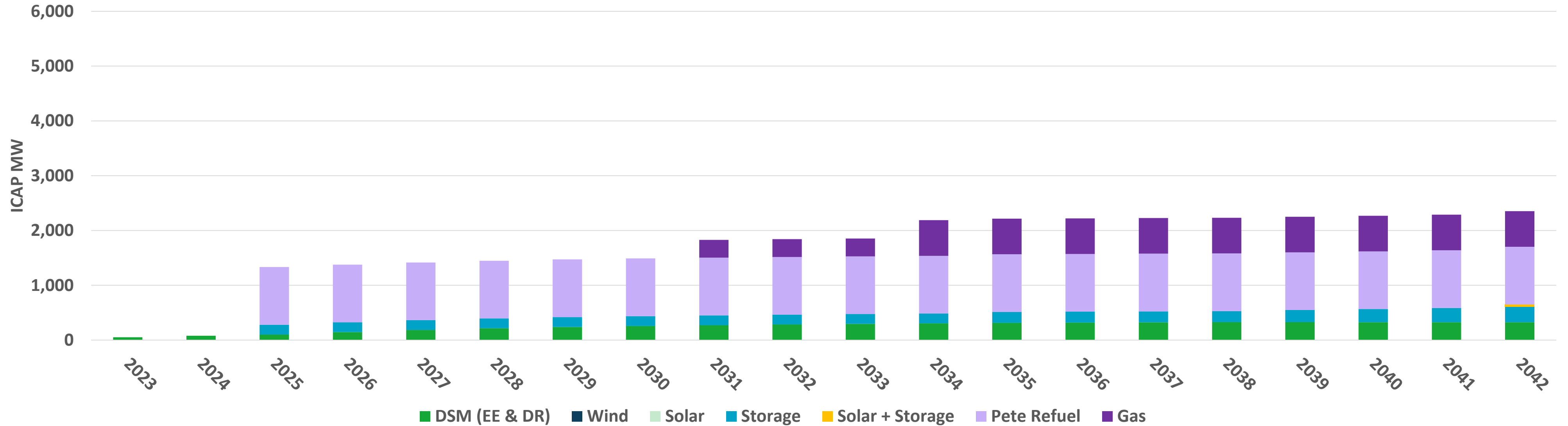
Pete 3 & 4 Refuel in 2025: No Environmental Action

Firm Unforced Capacity Position – Winter



Pete 3 & 4 Refuel in 2025: No Environmental Action

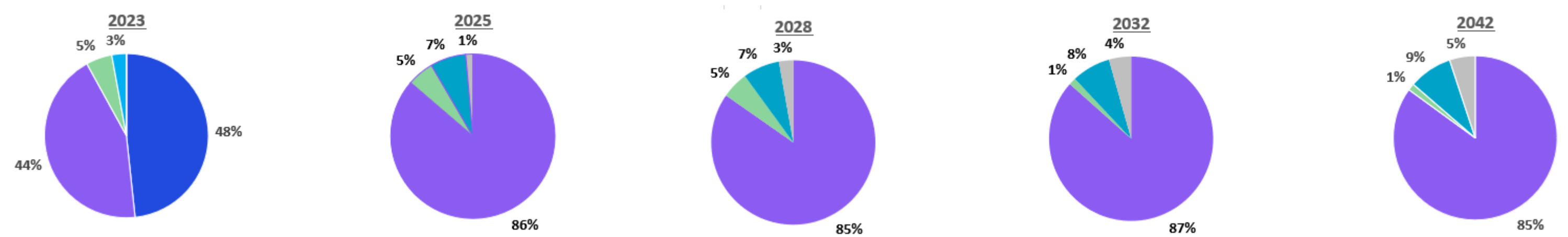
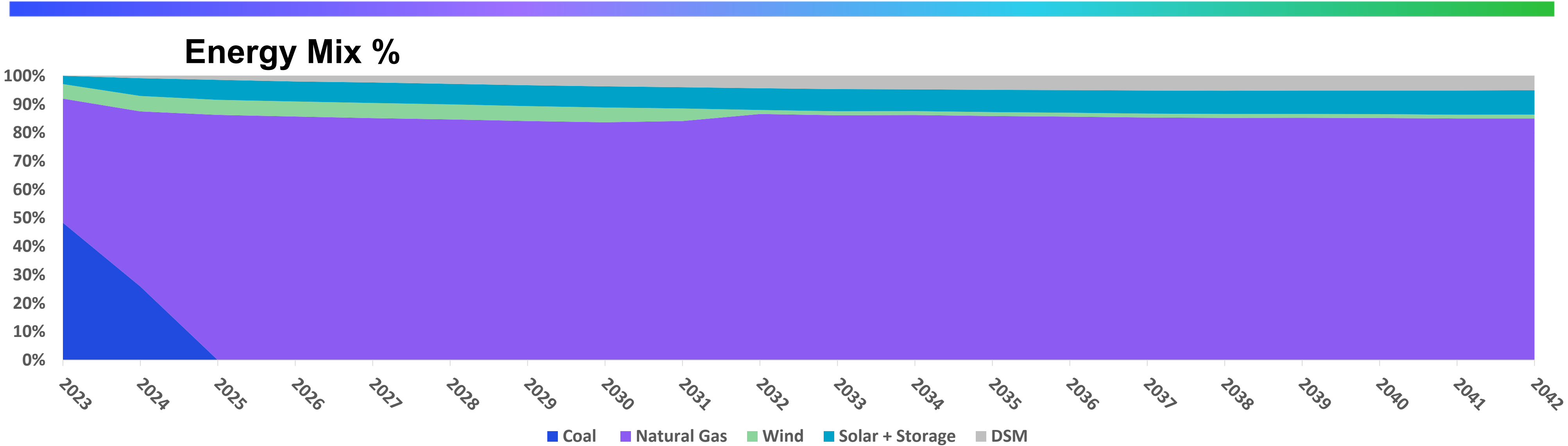
Installed Capacity Cumulative Additions (MW)



Installed Capacity Incremental Additions (MW): 2023 - 2028

	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>	<u>2028</u>
Wind	0	0	0	0	0	0
Solar	0	0	0	0	0	0
Storage	0	0	180	0	0	0
Solar + Storage	0	0	0	0	0	0
Pete Refuel	0	0	1,052	0	0	0
Gas	0	0	0	0	0	0

Pete 3 & 4 Refuel in 2025: No Environmental Action



Thermal MWh %	92%	Thermal MWh %	86%	Thermal MWh %	85%	Thermal MWh %	87%	Thermal MWh %	85%
Renewable/DSM MWh %	8%	Renewable/DSM MWh %	14%	Renewable/DSM MWh %	15%	Renewable/DSM MWh %	13%	Renewable/DSM MWh %	15%

Pete 3 & 4 Refuel in 2025: No Environmental Action

Portfolio Overview

Retirements

Petersburg:

- Pete 3 & 4 Coal: 2025 Refuel with Nat Gas
- **Total Refueled MW: 1,040 MW**

Harding Street:

- HS ST5 Nat Gas: 2030
- HS ST6 Nat Gas: 2030
- HS ST7 Nat Gas: 2033
- **Total Nat Gas Retired MW: 618 MW**

Replacement Additions by 2042

- DSM: 326 MW
- Wind: 0 MW
- Solar: 0 MW
- Storage: 260 MW
- Solar + Storage: 0 MW
- Thermal: 750 MW
- Pete 3 & 4 Refueled to Nat Gas: 1,052 MW

Current Trends PVRR Summary

20-Year PVRR (2023\$MM, 2023-2042)

	Scenarios
	No Environmental Action
No Early Retirement	\$7,111
Pete Refuel to 100% Gas (est. 2025)	\$6,621
One Pete Unit Retires (2026)	\$7,462
Both Pete Units Retire (2026 & 2028)	\$7,425
"Clean Energy Strategy" Both Pete Units Retire and Replaced with Wind, Solar & Storage (2026 & 2028)	\$9,211
Encompass Optimization without predefined Strategy	\$6,610

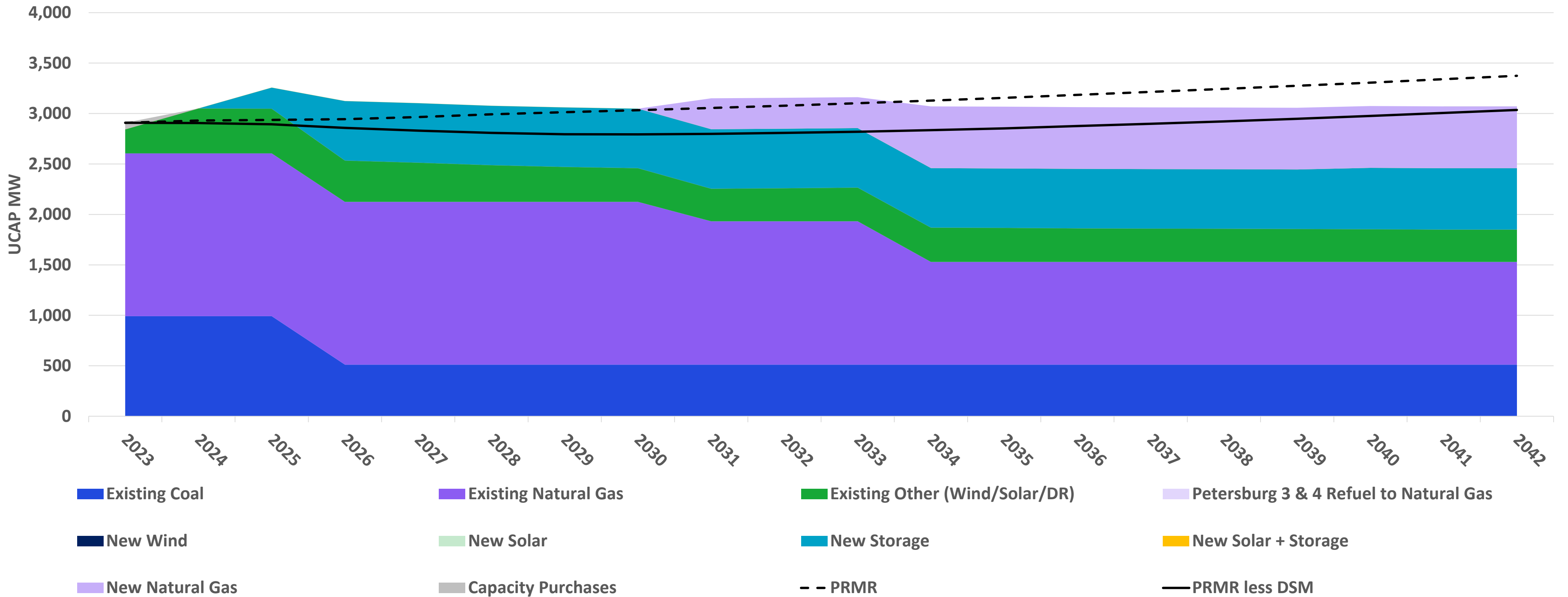
C. One Pete Unit Retires (2026)

*20-Year PVRR
(2023\$MM, 2023-2042)*
**Generation Strategy:
One Pete Unit Retires
(2026)**

Scenarios			
No Environmental Action	Current Trends	Aggressive Environmental	Decarbonized Economy
\$7,462			

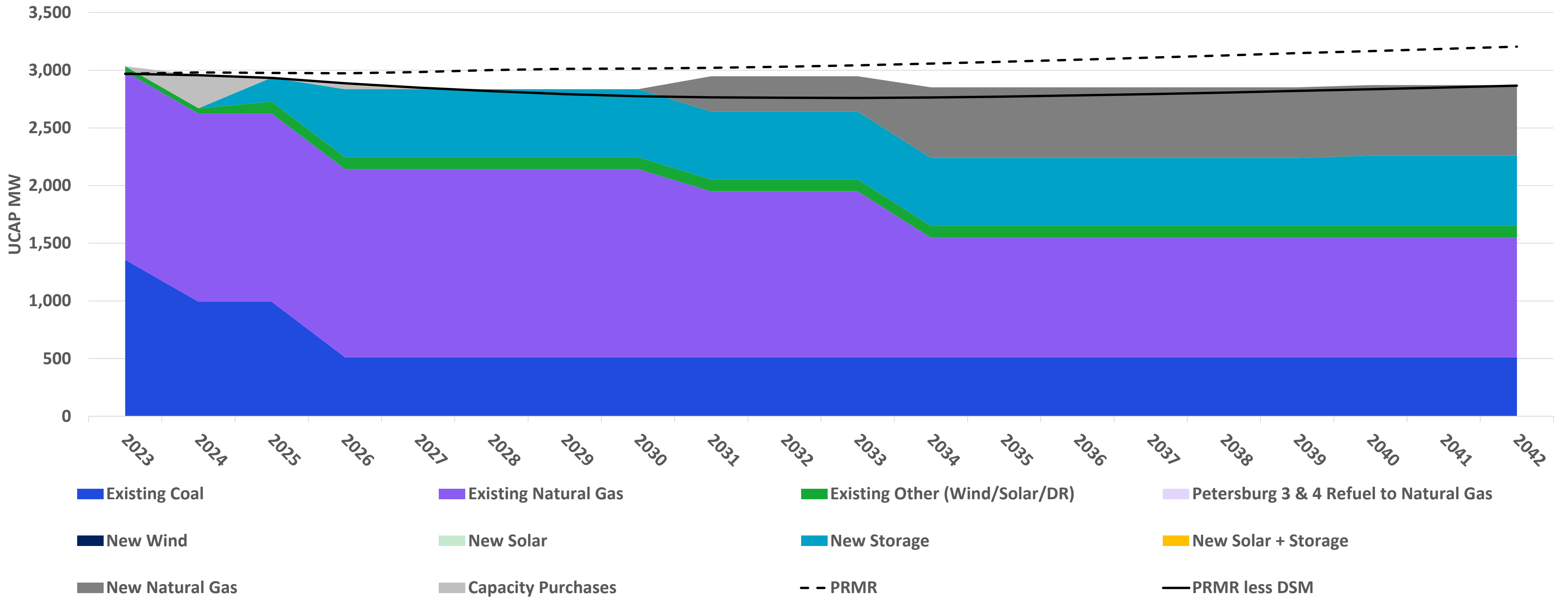
One Pete Unit Retires (2026): No Environmental Action

Firm Unforced Capacity Position – Summer



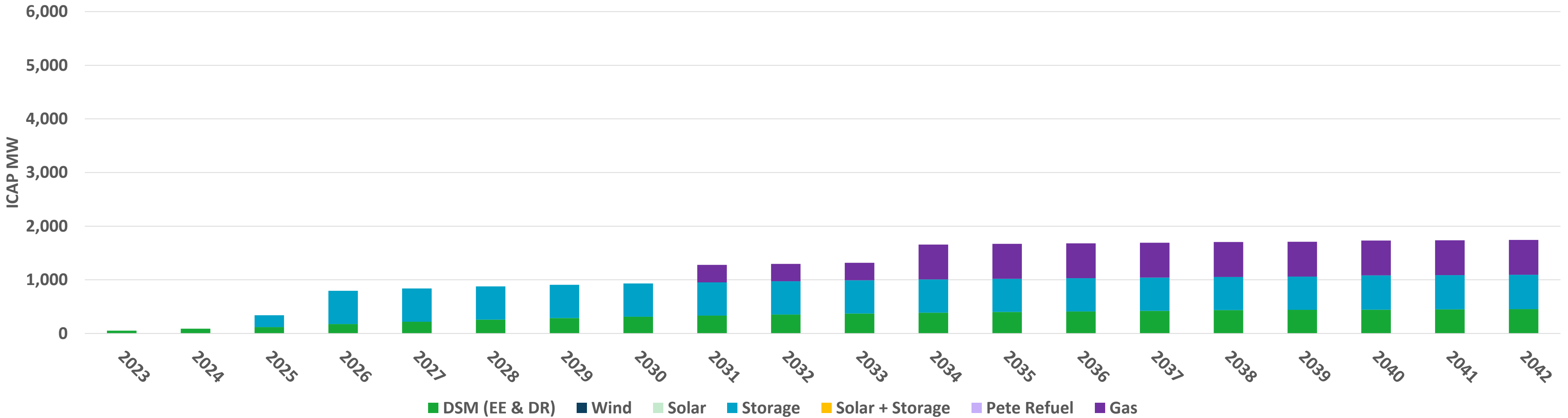
One Pete Unit Retires (2026): No Environmental Action

Firm Unforced Capacity Position – Winter



One Pete Unit Retires (2026): No Environmental Action

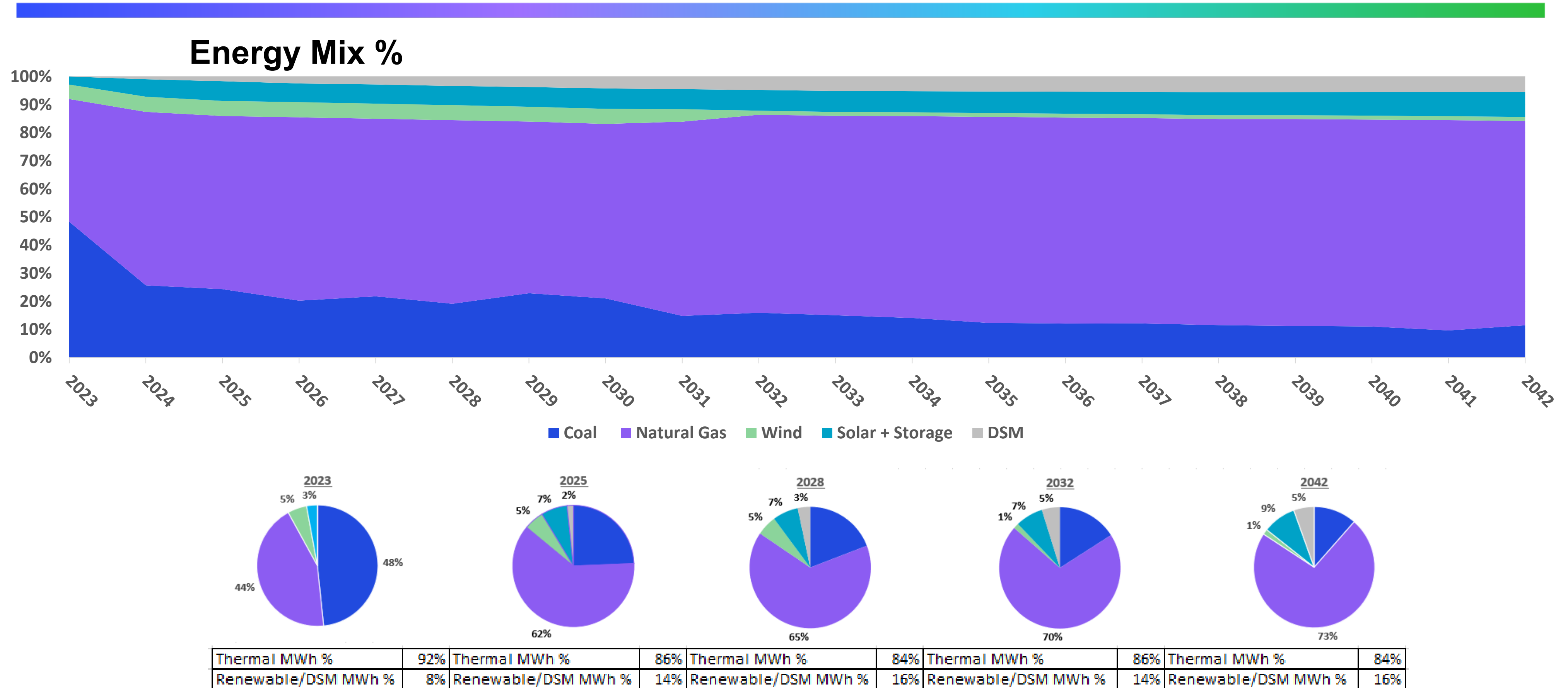
Installed Capacity Cumulative Additions (MW)



Installed Capacity Incremental Additions (MW): 2023 - 2028

	2023	2024	2025	2026	2027	2028
Wind	0	0	0	0	0	0
Solar	0	0	0	0	0	0
Storage	0	0	220	400	0	0
Solar + Storage	0	0	0	0	0	0
Pete Refuel	0	0	0	0	0	0
Gas	0	0	0	0	0	0

One Pete Unit Retires (2026): No Environmental Action



One Pete Unit Retires (2026): No Environmental Action

Portfolio Overview

Retirements

Petersburg:

- Pete 3 Coal: 2026
- **Total Coal Retired MW: 520 MW**

Harding Street:

- HS ST5 Nat Gas: 2030
- HS ST6 Nat Gas: 2030
- HS ST7 Nat Gas: 2033
- **Total Nat Gas Retired MW: 618 MW**

Replacement Additions by 2042

- DSM: 453 MW
- Wind: 0 MW
- Solar: 0 MW
- Storage: 640 MW
- Solar + Storage: 0 MW
- Thermal: 650 MW

Current Trends PVRR Summary

20-Year PVRR (2023\$MM, 2023-2042)

	Scenarios
	No Environmental Action
No Early Retirement	\$7,111
Pete Refuel to 100% Gas (est. 2025)	\$6,621
One Pete Unit Retires (2026)	\$7,462
Both Pete Units Retire (2026 & 2028)	\$7,425
"Clean Energy Strategy" Both Pete Units Retire and Replaced with Wind, Solar & Storage (2026 & 2028)	\$9,211
Encompass Optimization without predefined Strategy	\$6,610

D. Both Pete Units Retire (2026 & 2028)

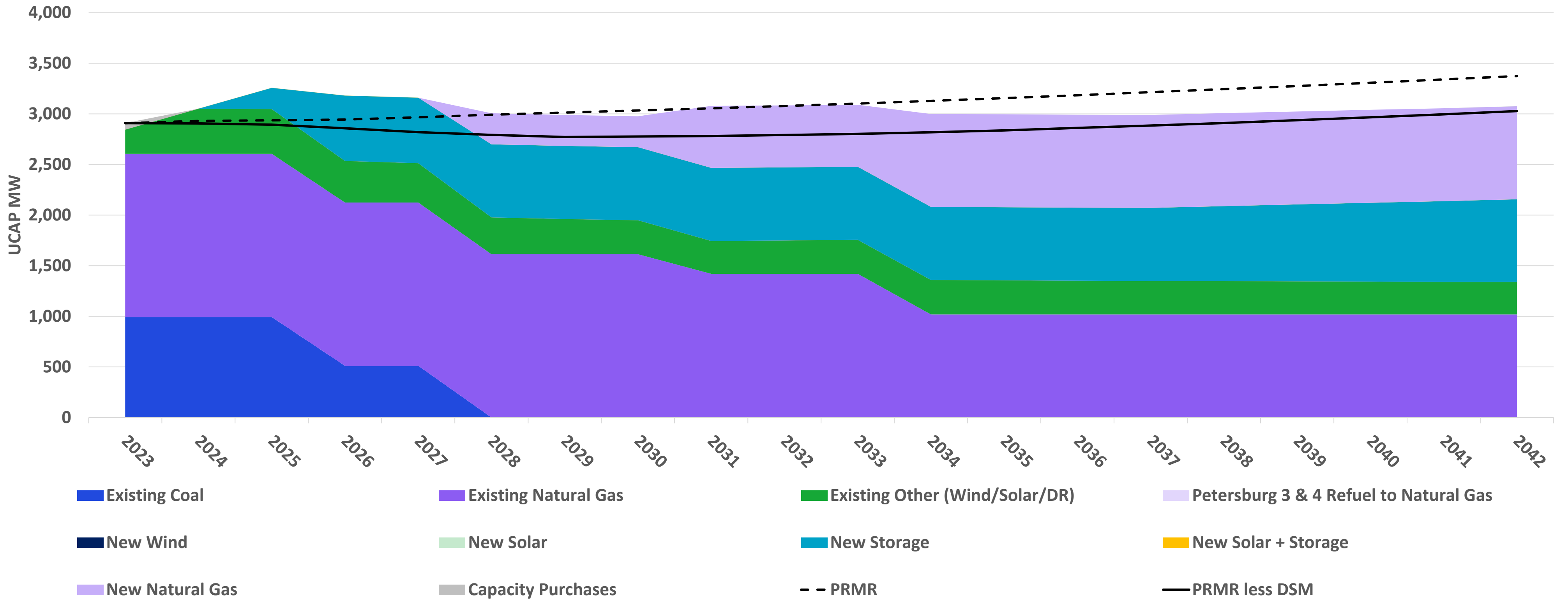
*20-Year PVRR
(2023\$MM, 2023-2042)*
Generation Strategy:
*Both Pete Units Retire
(2026 & 2028)*

Scenarios			
No Environmental Action	Current Trends	Aggressive Environmental	Decarbonized Economy
\$7,425			

Both Pete Units Retire: No Environmental Action

2026 & 2028

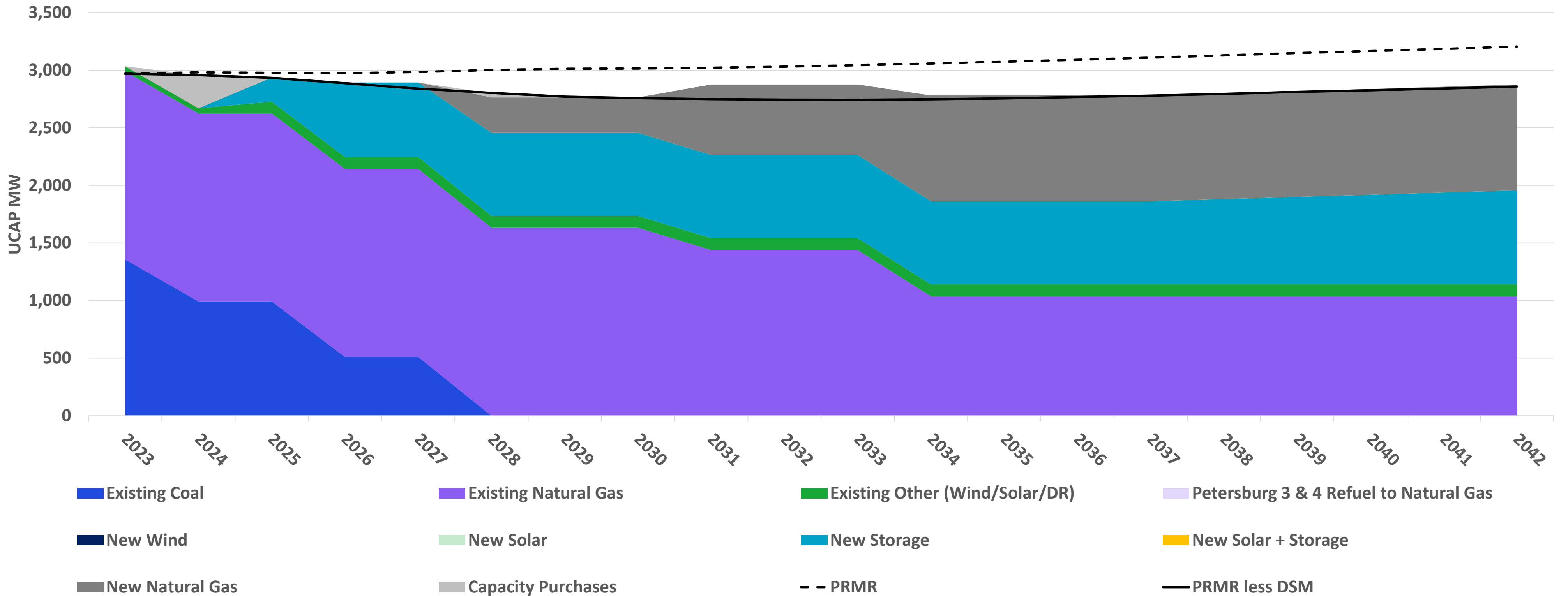
Firm Unforced Capacity Position - Summer



Both Pete Units Retire: No Environmental Action

2026 & 2028

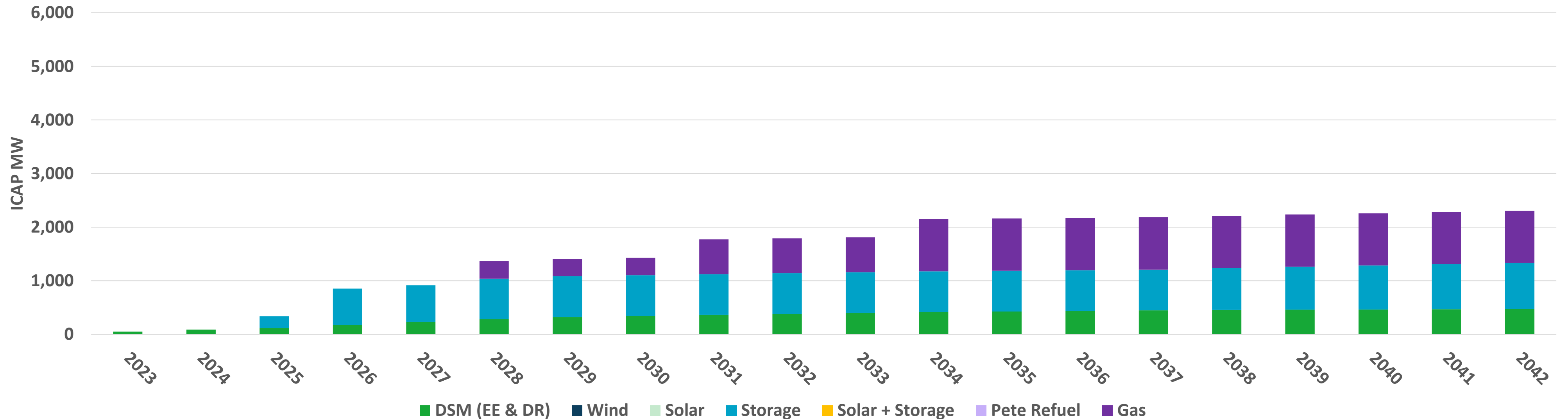
Firm Unforced Capacity Position - Winter



Both Pete Units Retire: No Environmental Action

2026 & 2028

Installed Capacity Cumulative Additions (MW)

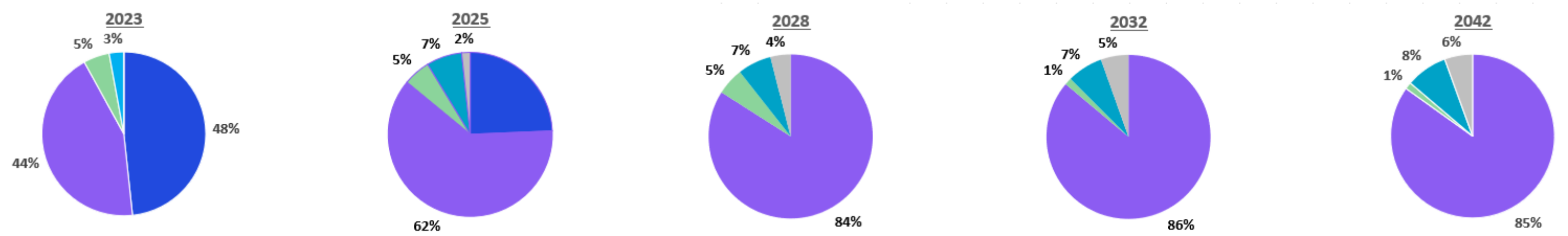
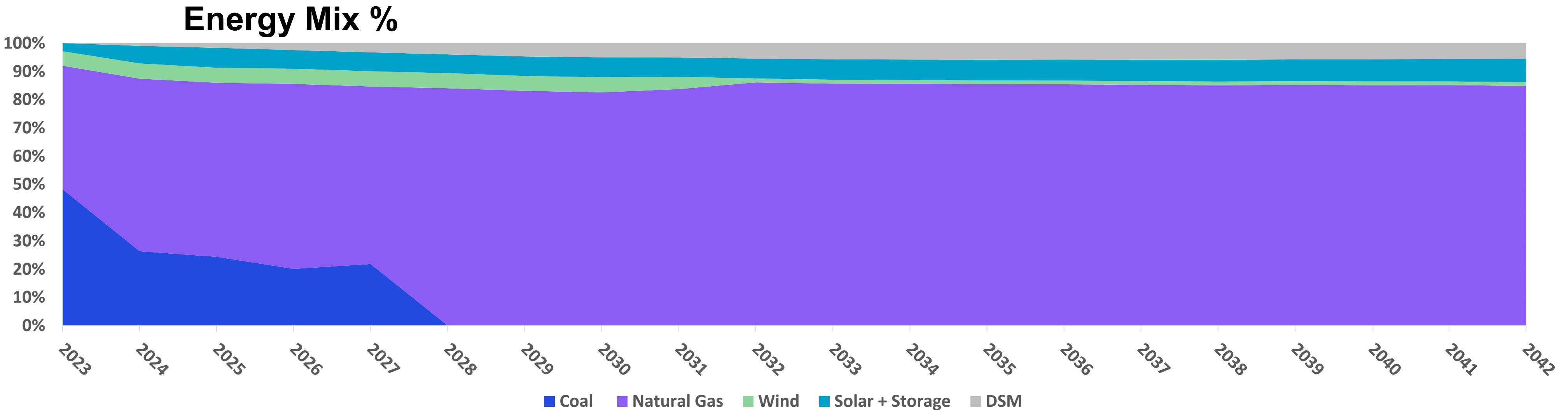


Installed Capacity Incremental Additions (MW): 2023 – 2028

	2023	2024	2025	2026	2027	2028
Wind	0	0	0	0	0	0
Solar	0	0	0	0	0	0
Storage	0	0	220	460	0	80
Solar + Storage	0	0	0	0	0	0
Pete Refuel	0	0	0	0	0	0
Gas	0	0	0	0	0	325

Both Pete Units Retire: No Environmental Action

2026 & 2028



Thermal MWh %	92%	Thermal MWh %	86%	Thermal MWh %	84%	Thermal MWh %	86%	Thermal MWh %	85%
Renewable/DSM MWh %	8%	Renewable/DSM MWh %	14%	Renewable/DSM MWh %	16%	Renewable/DSM MWh %	14%	Renewable/DSM MWh %	15%

Both Pete Units Retire: No Environmental Action

2026 & 2028

Portfolio Overview

Retirements

Petersburg:

- Pete 3 Coal: 2026
- Pete 4 Coal: 2028
- **Total Coal Retired MW: 1,040 MW**

Harding Street:

- HS ST5 Nat Gas: 2030
- HS ST6 Nat Gas: 2030
- HS ST7 Nat Gas: 2033
- **Total Nat Gas Retired MW: 618 MW**

Replacement Additions by 2042

- DSM: 472 MW
- Wind: 0 MW
- Solar: 0 MW
- Storage: 860 MW
- Solar + Storage: MW
- Thermal: 975 MW

Current Trends PVRR Summary

20-Year PVRR (2023\$MM, 2023-2042)

	Scenarios
	No Environmental Action
No Early Retirement	\$7,111
Pete Refuel to 100% Gas (est. 2025)	\$6,621
One Pete Unit Retires (2026)	\$7,462
Both Pete Units Retire (2026 & 2028)	\$7,425
"Clean Energy Strategy" Both Pete Units Retire and Replaced with Wind, Solar & Storage (2026 & 2028)	\$9,211
Encompass Optimization without predefined Strategy	\$6,610

E. Clean Energy Strategy

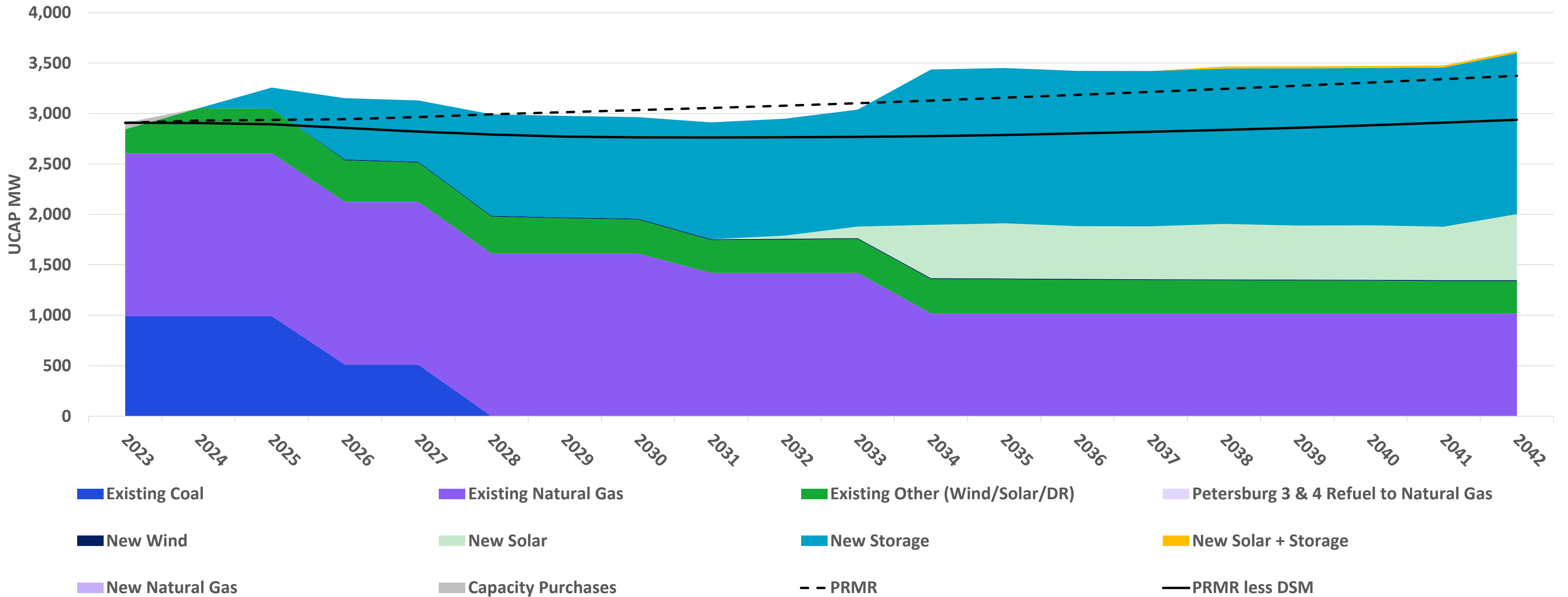
Retire & Replace Pete with Clean Energy

20-Year PVRR (2023\$MM, 2023-2042) Generation Strategy: "Clean Energy Strategy" Both Pete Units Retire and Replaced with Wind, Solar & Storage (2026 & 2028)	Scenarios			
	No Environmental Action	Current Trends	Aggressive Environmental	Decarbonized Economy
	\$9,211			

Clean Energy Strategy: No Environmental Action

Retire & Replace Pete with Clean Energy

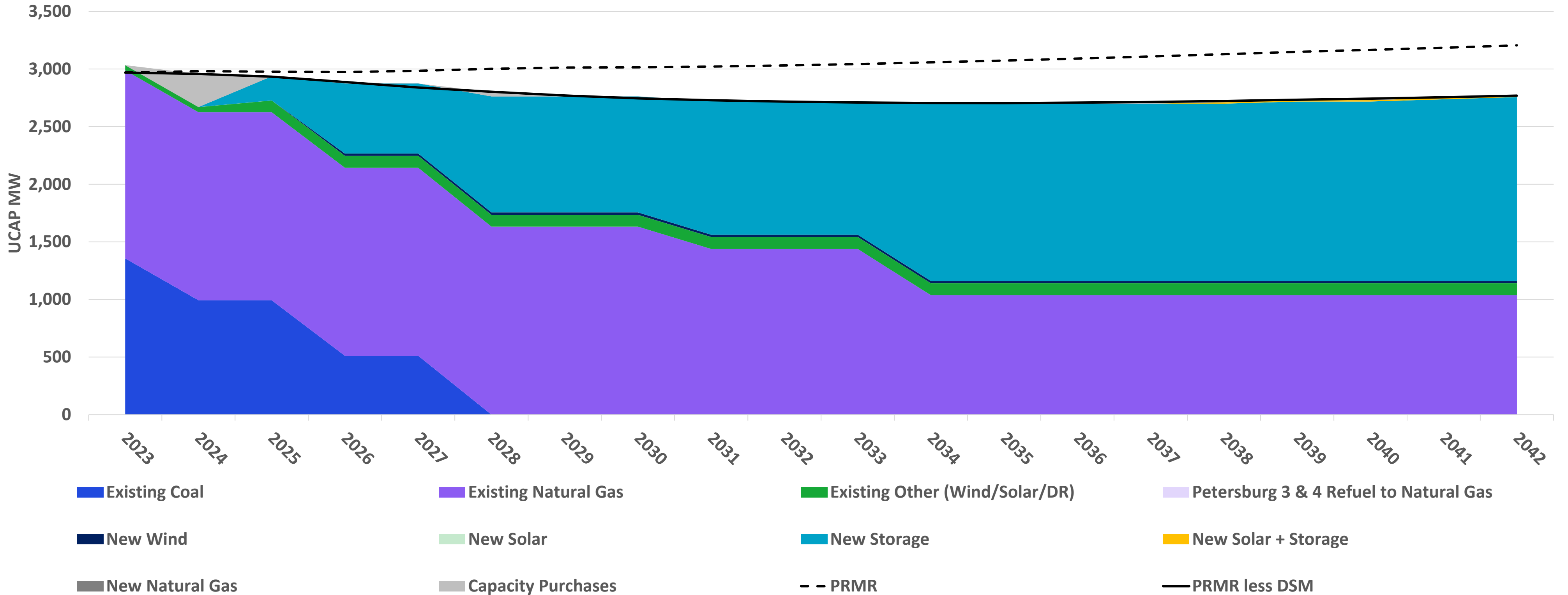
Firm Unforced Capacity Position – Summer



Clean Energy Strategy: Decarbonized Economy

Retire & Replace Pete with Clean Energy

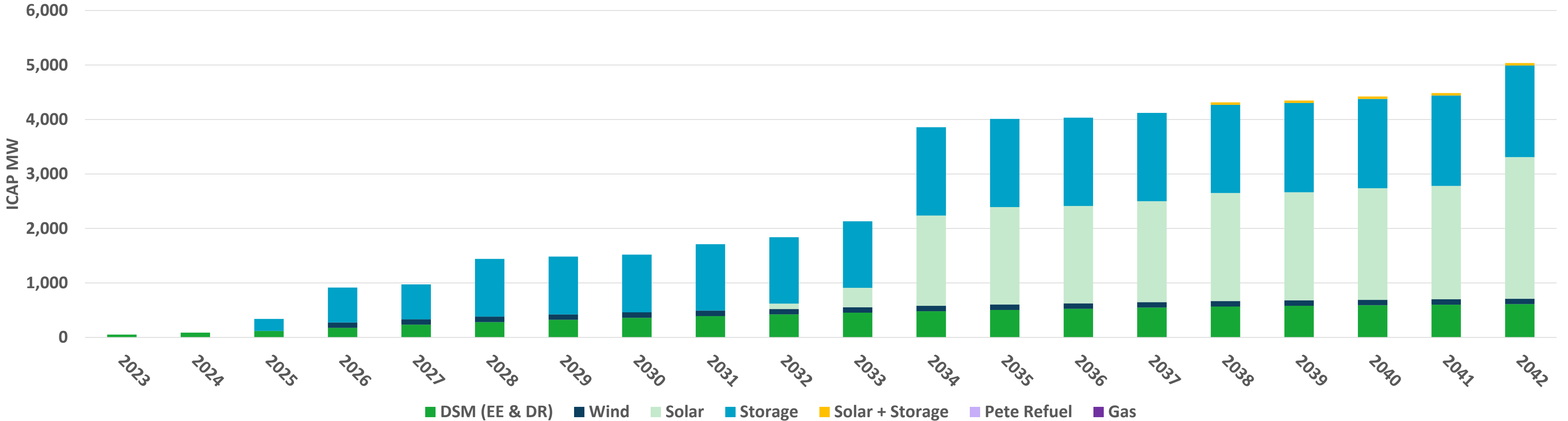
Firm Unforced Capacity Position – Winter



Clean Energy Strategy: Decarbonized Economy

Retire & Replace Pete with Clean Energy

Installed Capacity Cumulative Additions (MW)

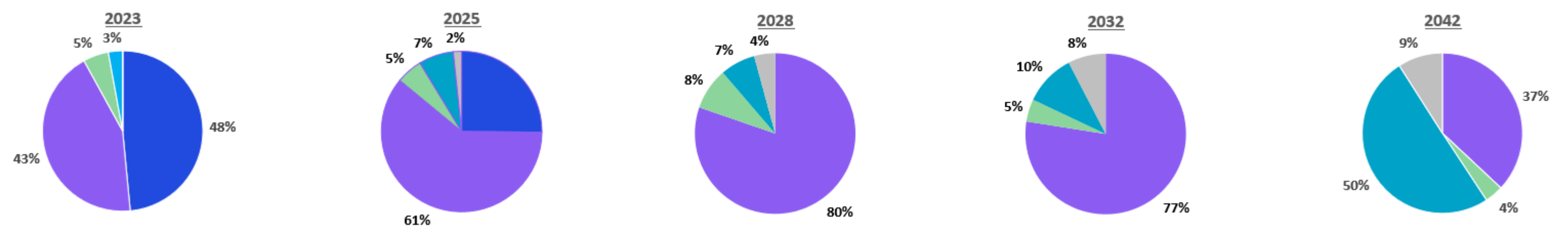
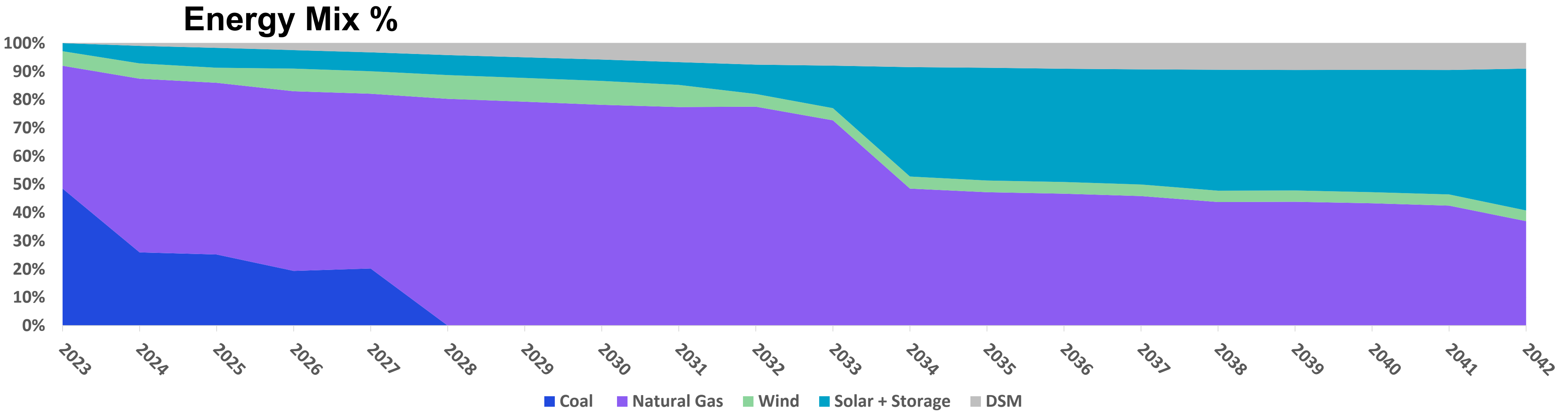


Installed Capacity Incremental Additions (MW): 2023 – 2028

	2023	2024	2025	2026	2027	2028
Wind	0	0	0	100	0	0
Solar	0	0	0	0	0	0
Storage	0	0	220	420	0	420
Solar + Storage	0	0	0	0	0	0
Pete Refuel	0	0	0	0	0	0
Gas	0	0	0	0	0	0

Clean Energy Strategy: Decarbonized Economy

Retire & Replace Pete with Clean Energy



Thermal MWh %	92%	Thermal MWh %	86%	Thermal MWh %	80%	Thermal MWh %	77%	Thermal MWh %	37%
Renewable/DSM MWh %	8%	Renewable/DSM MWh %	14%	Renewable/DSM MWh %	20%	Renewable/DSM MWh %	23%	Renewable/DSM MWh %	63%

Clean Energy Strategy: Decarbonized Economy

Retire & Replace Pete with Clean Energy

Portfolio Overview

Retirements

Petersburg:

- Pete 3 Coal: 2026
- Pete 4 Coal: 2028
- **Total Coal Retired MW: 1,040 MW**

Harding Street:

- HS ST5 Nat Gas: 2030
- HS ST6 Nat Gas: 2030
- HS ST7 Nat Gas: 2033
- **Total Retired Nat Gas MW: 618 MW**

Replacements by 2042

- DSM: 610 MW
- Wind: 100 MW
- Solar: 2,600 MW
- Storage: 1,680 MW
- Solar + Storage: 45 MW
- Thermal: 0 MW

Current Trends PVRR Summary

20-Year PVRR (2023\$MM, 2023-2042)

	Scenarios
	No Environmental Action
No Early Retirement	\$7,111
Pete Refuel to 100% Gas (est. 2025)	\$6,621
One Pete Unit Retires (2026)	\$7,462
Both Pete Units Retire (2026 & 2028)	\$7,425
"Clean Energy Strategy" Both Pete Units Retire and Replaced with Wind, Solar & Storage (2026 & 2028)	\$9,211
Encompass Optimization without predefined Strategy	\$6,610

F. Encompass Optimization

Refuels Petersburg
Units 3 & 4 in 2025

20-Year PVRR
(2023\$MM, 2023-2042)

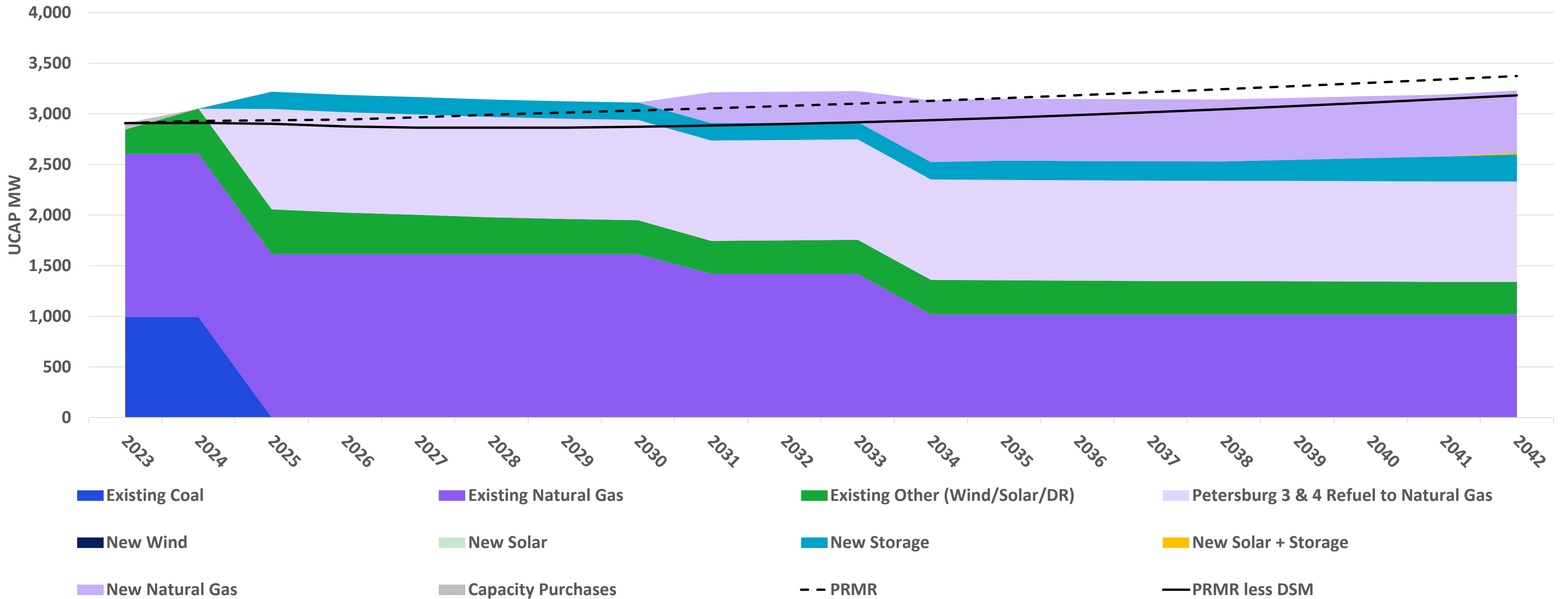
Generation Strategy:
Encompass
Optimization without
predefined Strategy –
Selects Pete 3 & 4
Refuel in 2025

Scenarios			
No Environmental Action	Current Trends	Aggressive Environmental	Decarbonized Economy
\$6,610			

Encompass Optimization: No Environmental Action

Refuels Petersburg Units 3 & 4 in 2025

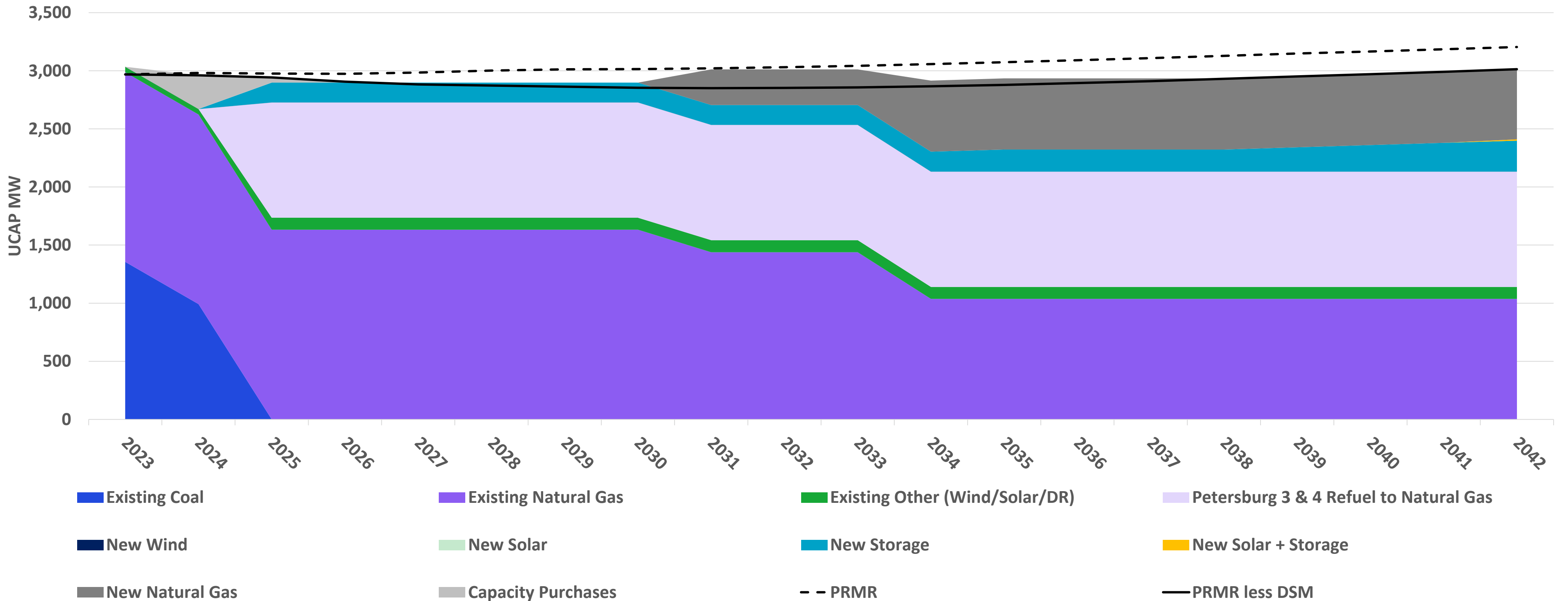
Firm Unforced Capacity Position - Summer



Encompass Optimization: No Environmental Action

Refuels Petersburg Units 3 & 4 in 2025

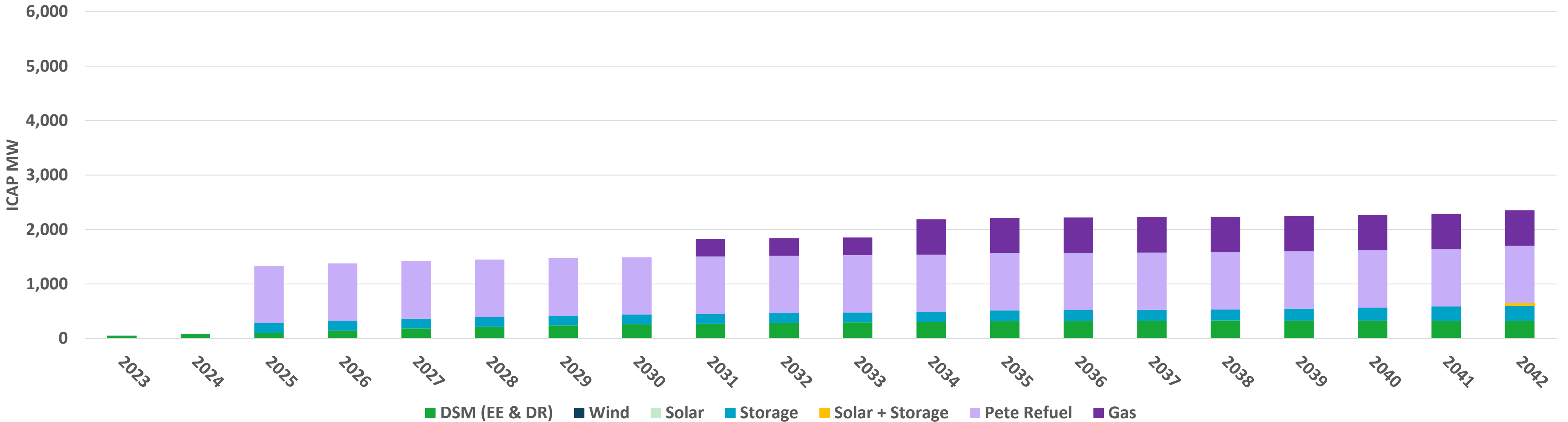
Firm Unforced Capacity Position - Winter



Encompass Optimization: No Environmental Action

Refuels Petersburg Units 3 & 4 in 2025

Installed Capacity Cumulative Additions (MW)



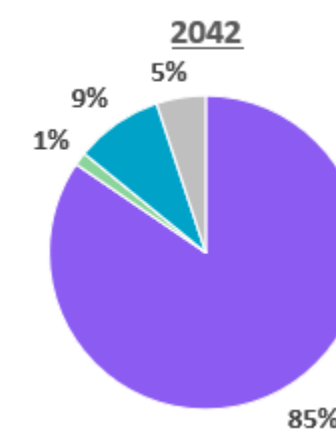
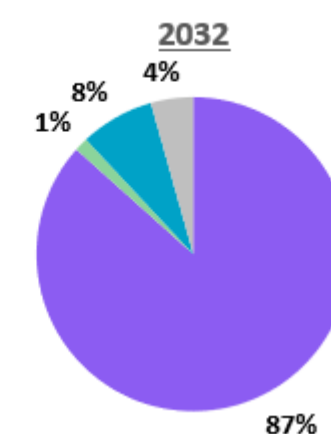
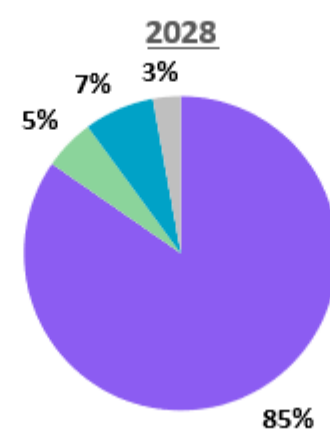
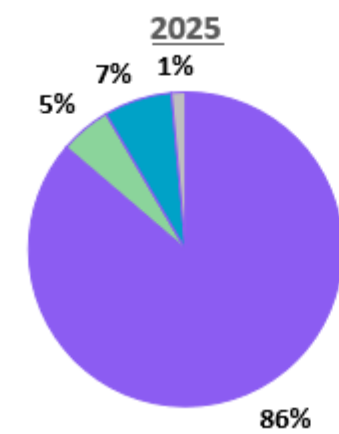
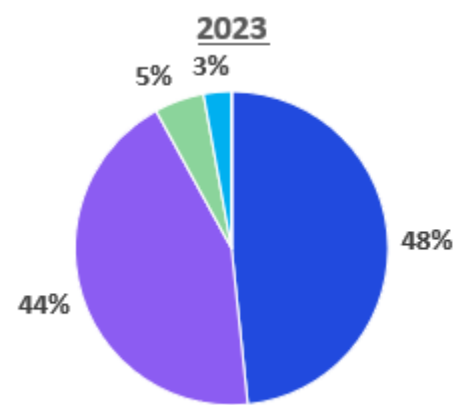
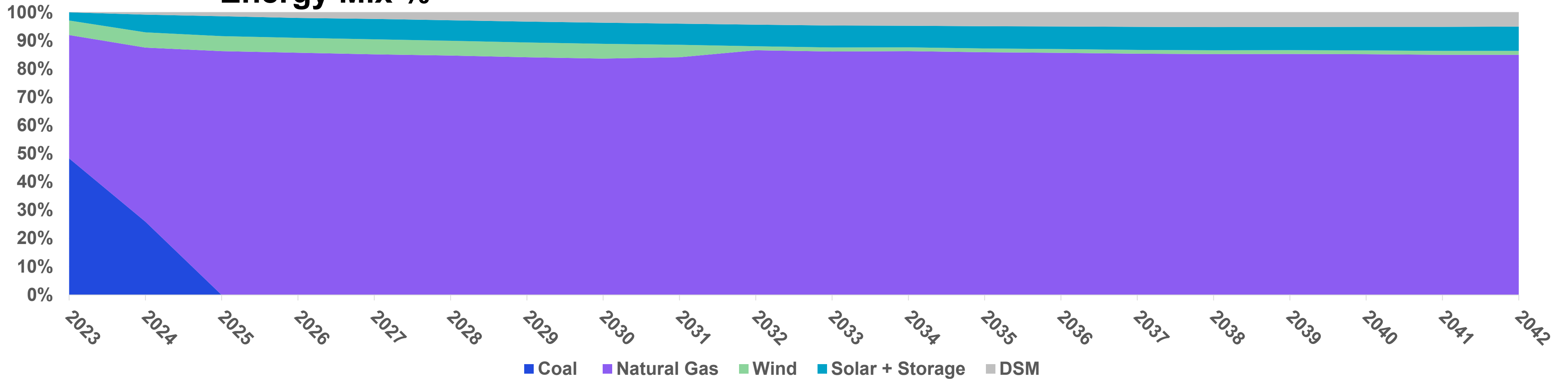
Installed Capacity Incremental Additions (MW): 2023 - 2028

	2023	2024	2025	2026	2027	2028
Wind	0	0	0	0	0	0
Solar	0	0	0	0	0	0
Storage	0	0	180	0	0	0
Solar + Storage	0	0	0	0	0	0
Pete Refuel	0	0	1,052	0	0	0
Gas	0	0	0	0	0	0

Encompass Optimization: No Environmental Action

Refuels Petersburg Units 3 & 4 in 2025

Energy Mix %



Thermal MWh %	92%	Thermal MWh %	86%	Thermal MWh %	85%	Thermal MWh %	87%	Thermal MWh %	85%
Renewable/DSM MWh %	8%	Renewable/DSM MWh %	14%	Renewable/DSM MWh %	15%	Renewable/DSM MWh %	13%	Renewable/DSM MWh %	15%

Encompass Optimization: No Environmental Action

Refuels Petersburg Units 3 & 4 in 2025

Portfolio Overview

Retirements

Petersburg:

- Pete 3 Coal: 2025
- Pete 4 Coal: 2025
- **Total Refueled MW: 1,040 MW**

Harding Street:

- HS ST5 Nat Gas: 2030
- HS ST6 Nat Gas: 2030
- HS ST7 Nat Gas: 2033
- **Total Nat Gas Retired MW: 618 MW**

Replacement Additions by 2042

- DSM: 326 MW
- Wind: 0 MW
- Solar: 0 MW
- Storage: 280 MW
- Solar + Storage: 45 MW
- Thermal: 650 MW
- Pete 3 & 4 Refueled to Nat Gas: 1,052 MW

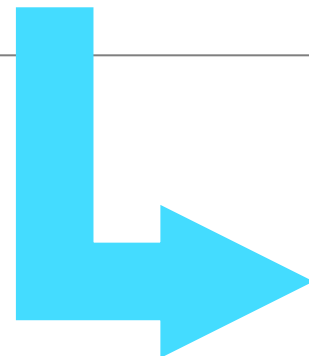
Current Trends PVRR Summary

20-Year PVRR (2023\$MM, 2023-2042)

	Scenarios
	No Environmental Action
No Early Retirement	\$7,111
Pete Refuel to 100% Gas (est. 2025)	\$6,621
One Pete Unit Retires (2026)	\$7,462
Both Pete Units Retire (2026 & 2028)	\$7,425
"Clean Energy Strategy" Both Pete Units Retire and Replaced with Wind, Solar & Storage (2026 & 2028)	\$9,211
Encompass Optimization without predefined Strategy	\$6,610

Portfolio Matrix

20-Year PVRR (2023\$MM, 2023-2042)		Scenarios			
		No Environmental Action	Current Trends (Reference Case)	Aggressive Environmental	Decarbonized Economy
Generation Strategies	No Early Retirement	\$7,111	\$9,572	\$11,349	\$9,917
	Pete Refuel to 100% Gas (est. 2025)	\$6,621	\$9,330	\$11,181	\$9,546
	One Pete Unit Retires (2026)	\$7,462	\$9,773	\$11,470	\$9,955
	Both Pete Units Retire (2026 & 2028)	\$7,425	\$9,618	\$11,145	\$9,923
	"Clean Energy Strategy" Both Pete Units Retire and Replaced with Wind, Solar & Storage (2026 & 2028)	\$9,211	\$9,711	\$11,184	\$9,690
	Encompass Optimization without predefined Strategy	\$6,610	\$9,262	\$10,994	\$9,572



Encompass Optimization Results by Scenario:

Refuels Petersburg Units 3 & 4 in 2025	Refuels Petersburg Unit 3 in 2025 & Refuels Petersburg Unit 4 in 2027	Refuels Petersburg Unit 4 in 2027	Refuels Petersburg Unit 3 in 2025 & Refuels Petersburg Unit 4 in 2027
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