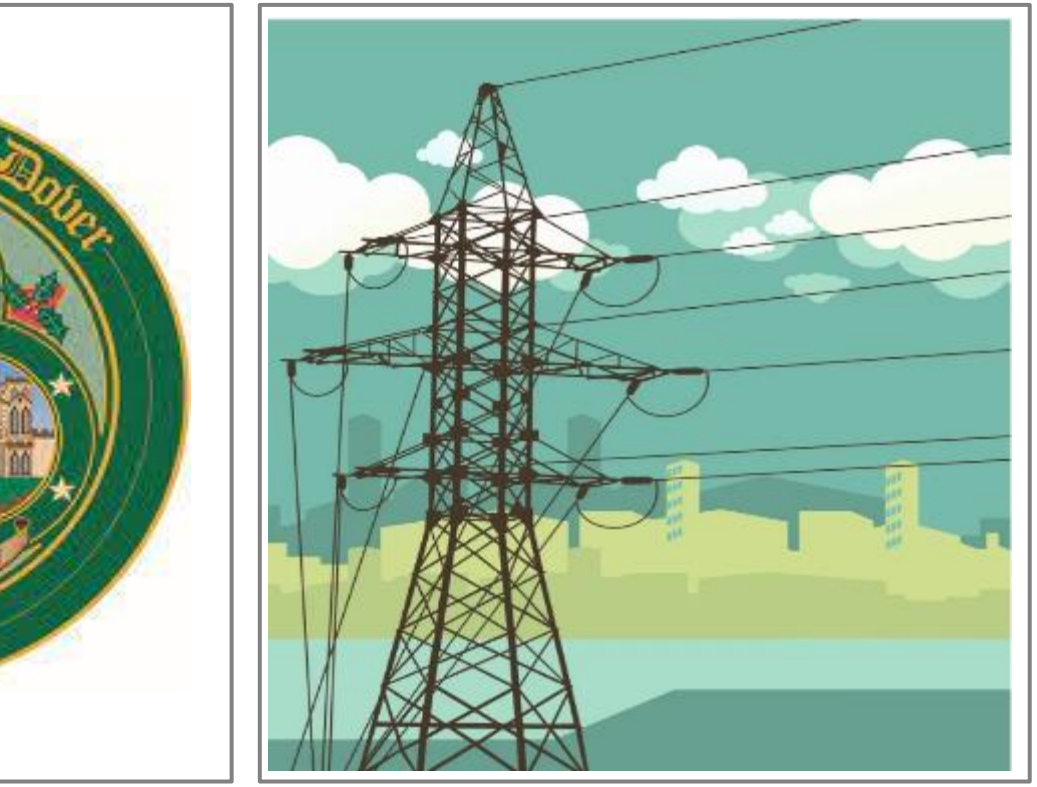


DOVER INTEGRATED RESOURCE PLAN (IRP)

AGENDA

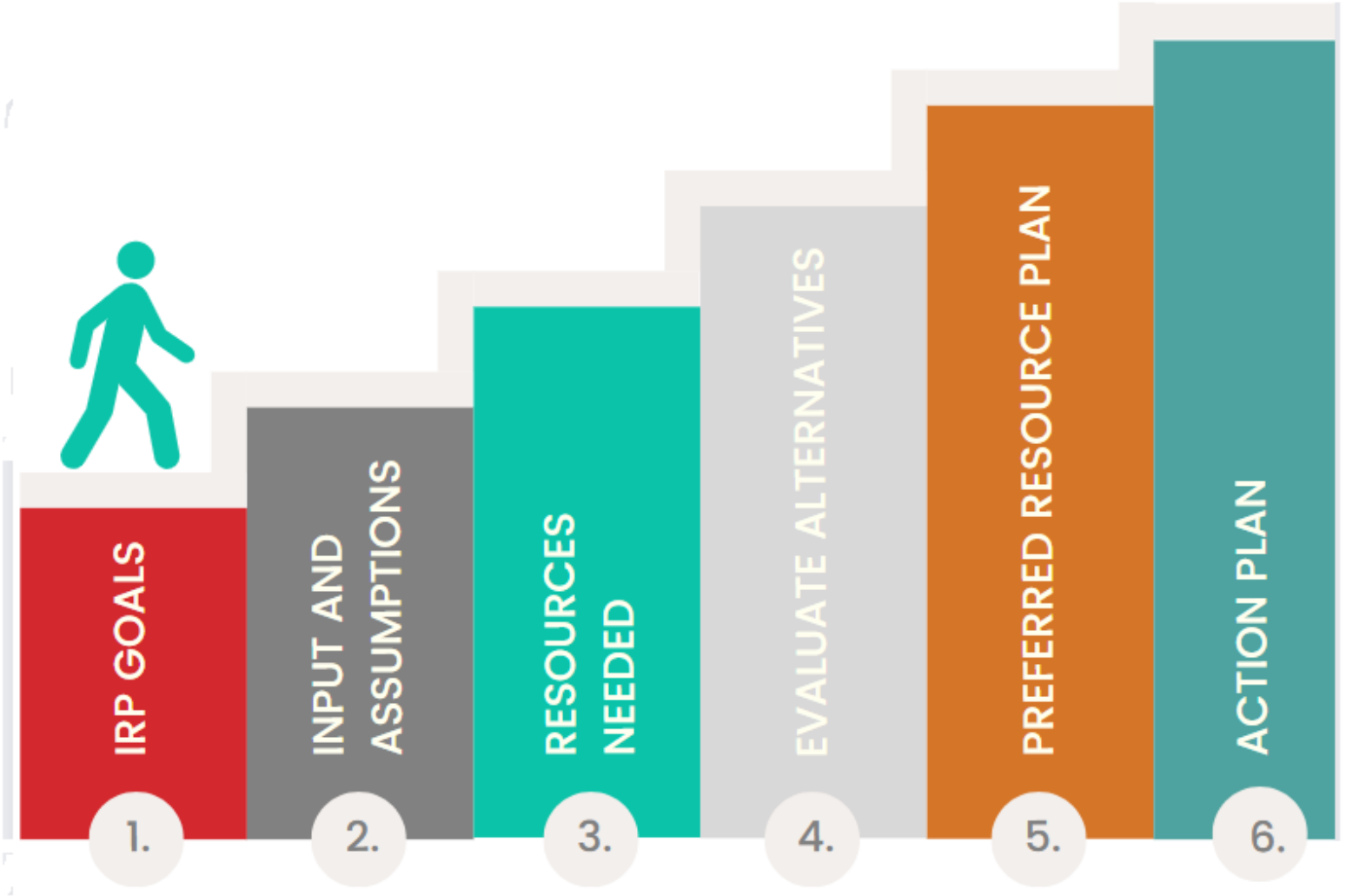
- Executive Summary
- Planning Environment
- Base Case Solution
- Scenarios and Alternate Base Case Portfolios
- Question and Answers

TEA THE EnergyAuthority

EXECUTIVE SUMMARY

INTRODUCTION

The 2022 Dover IRP is a comprehensive decision support tool and roadmap for meeting the city's objective of providing reliable, safe, low-cost electric service to all customers.



EXECUTIVE SUMMARY

UNDERSTANDING IRP AS A ROAD MAP

Balance short-term capacity needs through 2026 in PJM's Reliability Pricing Model market

2023 Request for Proposal (RFP)

125 MW (Start 2027)

100 MW (Start 2028)

Capacity options for evaluation should include:

- Capacity Purchased Power Agreements
- Solar Purchased Power Agreements
- Battery Energy Storage
- Utility-owned gas turbines or reciprocating internal combustion

Subsequent RFPs should be timed appropriately to satisfy capacity requirements beyond 2028

For PPAs, select a diversified combination of vendors and term lengths to help mitigate energy commodity risks

Consider a study to identify cost-effective peak demand reduction options.

RECOMMENDATIONS

PLANNING ENVIRONMENT

INDUSTRY AND ECONOMIC RISK FACTORS

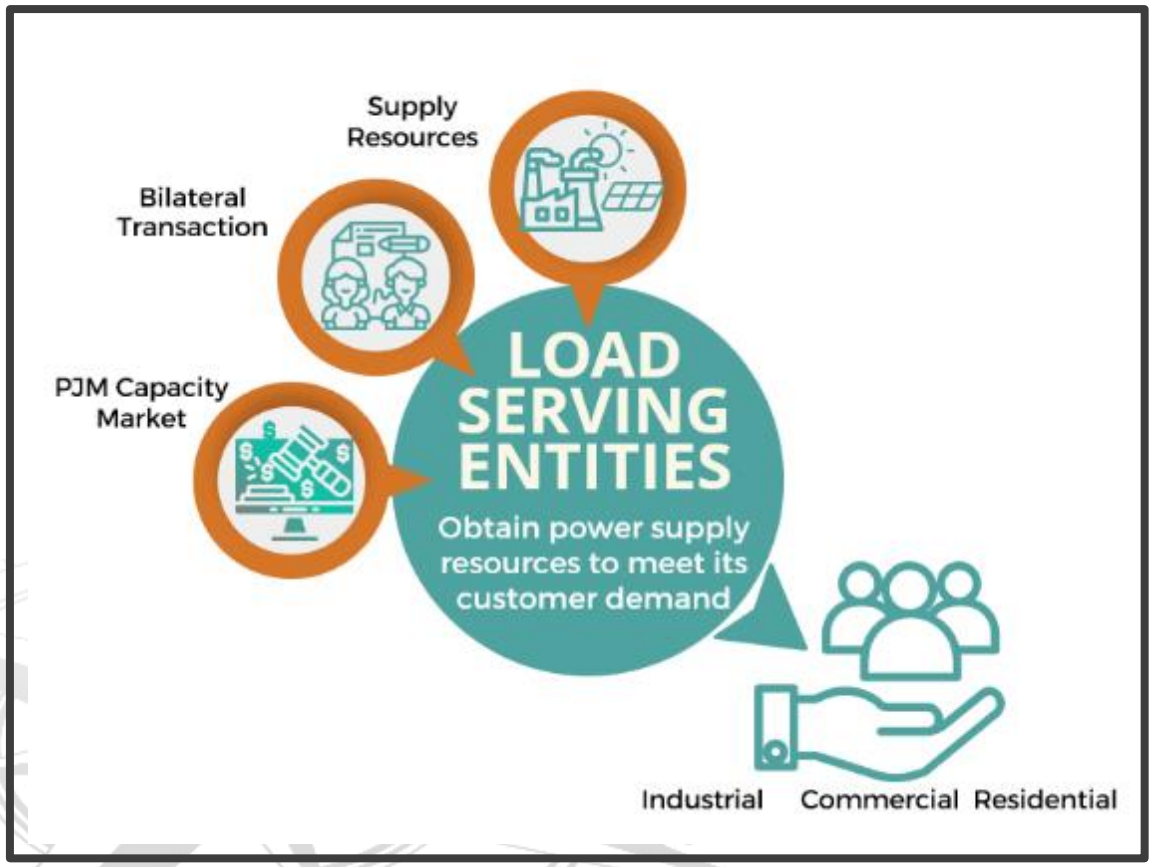
- Changing energy policy and environmental regulations.
- High solar pricing.
- Lead times for new supply resources.
- Potential increase in PJM Installed Reserve Margin (IRM).
- Decreasing solar accreditation with increasing penetration.
- Possible unforced capacity (UCAP) accreditation for conventional resources.
- Transmission congestion into Dover.
- Load forecasting accuracy in increasingly complex market.

MARKET CONSTRAINTS

The Delmarva peninsula's natural geographic shape places some limitations on energy movement into and out of the region:

- Electricity transmission grid constraints impact the price of wholesale electricity.
- Natural gas pipeline constraints affect the type of owned energy generation, and the resource plan options that Dover can choose economically.
- Transmission grid reliability constraints sometimes require expensive transmission upgrade projects that significantly impact Dover's ratepayers.

PJM CAPACITY CONSTRUCT

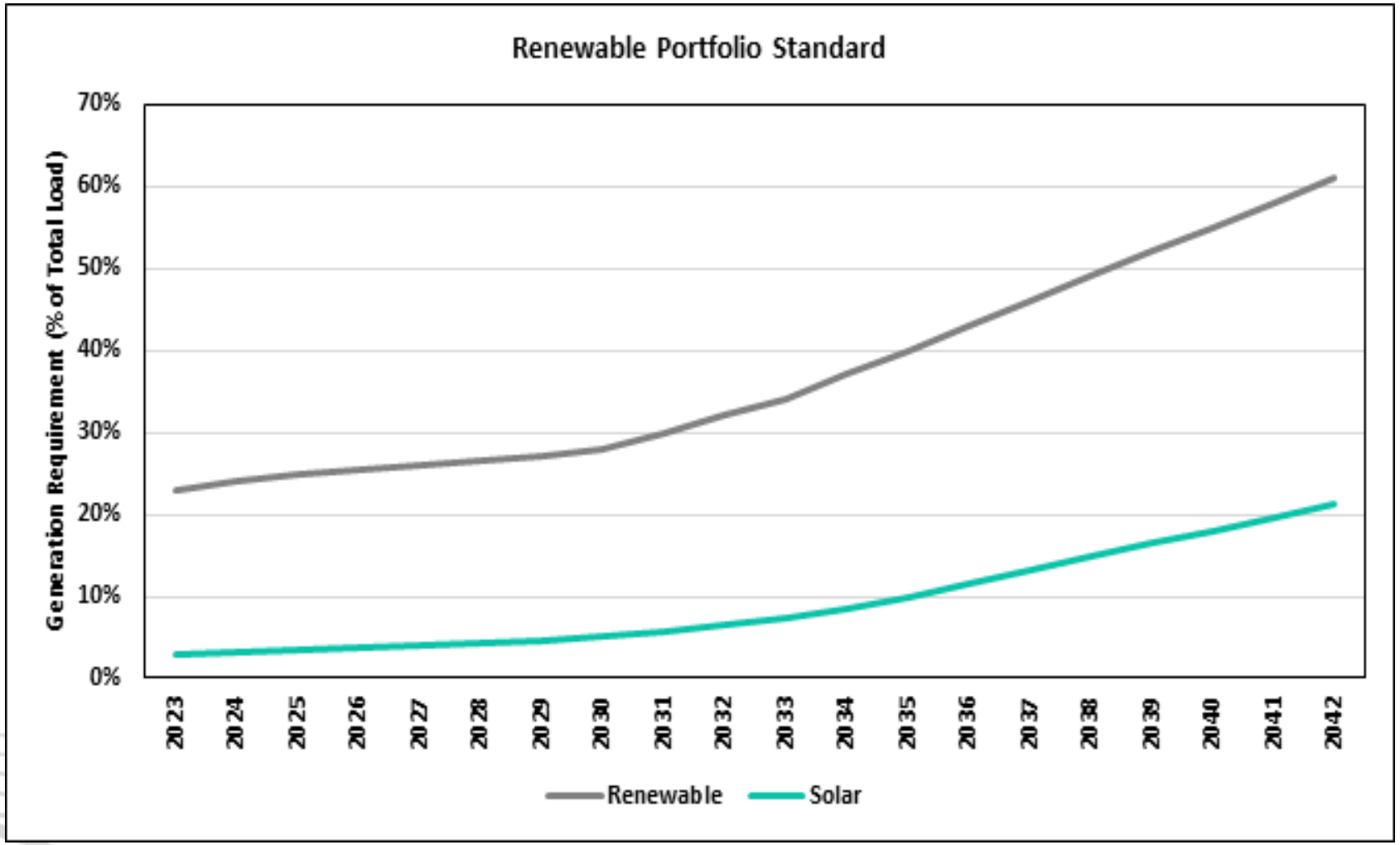


- Each load-serving entity is responsible for approximately 120% of its own forecasted yearly peak demand.
- Under a "pay-for-performance" model, power supply resources must deliver on demand during system emergencies or owe a **significant payment for non-performance**.

RENEWABLE PORTFOLIO STANDARDS (RPS)

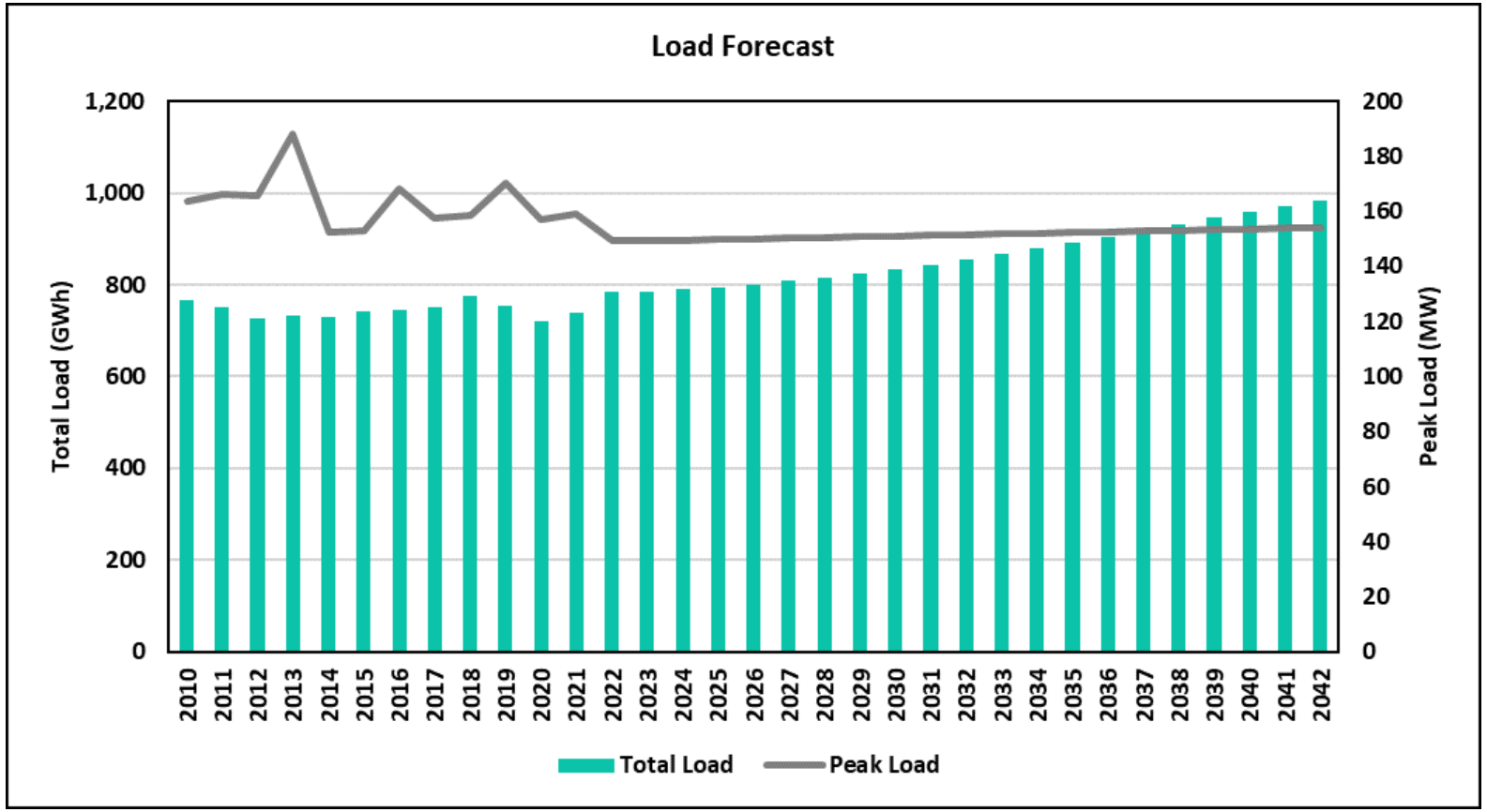
The current 2021 standard requires 40% renewables by 2035 with at least 10% solar PV.

For post-2035 years, RPS requirements are assumed to continue to grow through the study

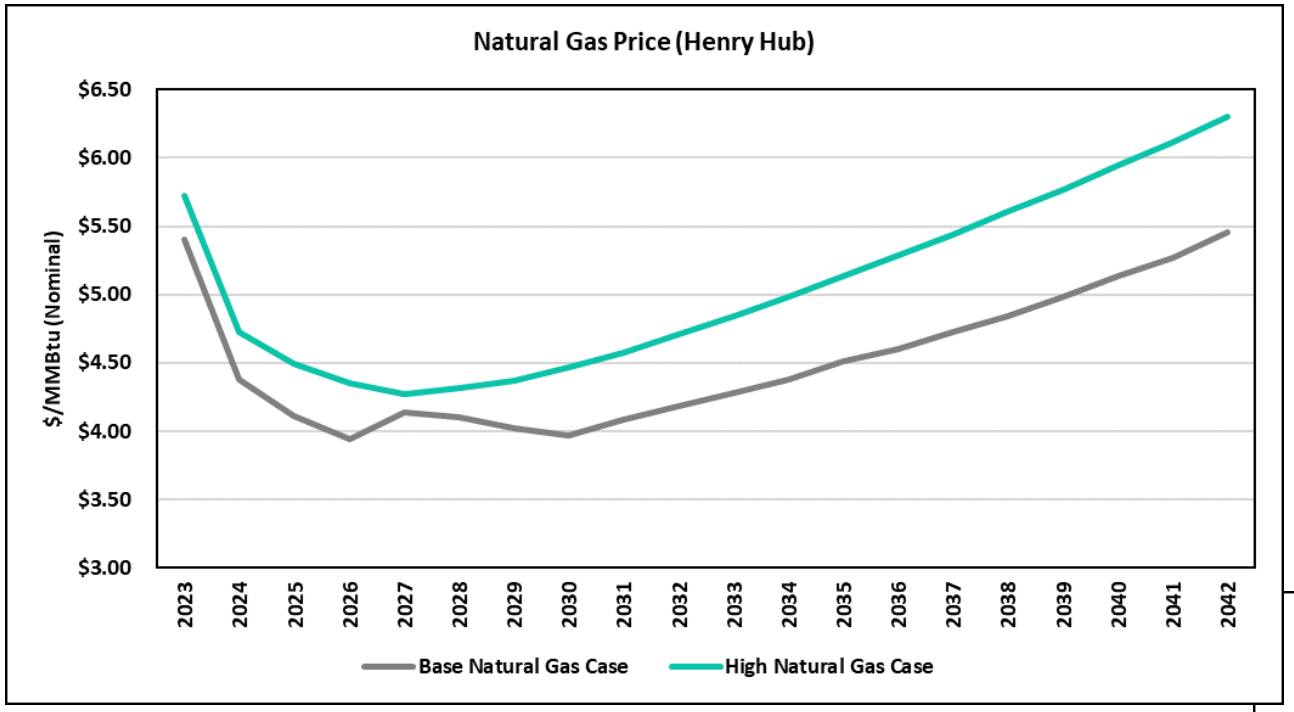


LOAD FORECAST

- Sum of separate customer class forecasts
- Based on 10-year weather-normalized load
- Uses Kent County Economic Forecast



FUEL PRICES


Natural Gas Price (Henry Hub)
$/MMBtu (Nominal)
$6.50
$6.00
$5.50
$5.00
$4.50
$4.00
$3.50
$3.00
2023
2024
2025
2026
2027
2028
2029
2030
2031
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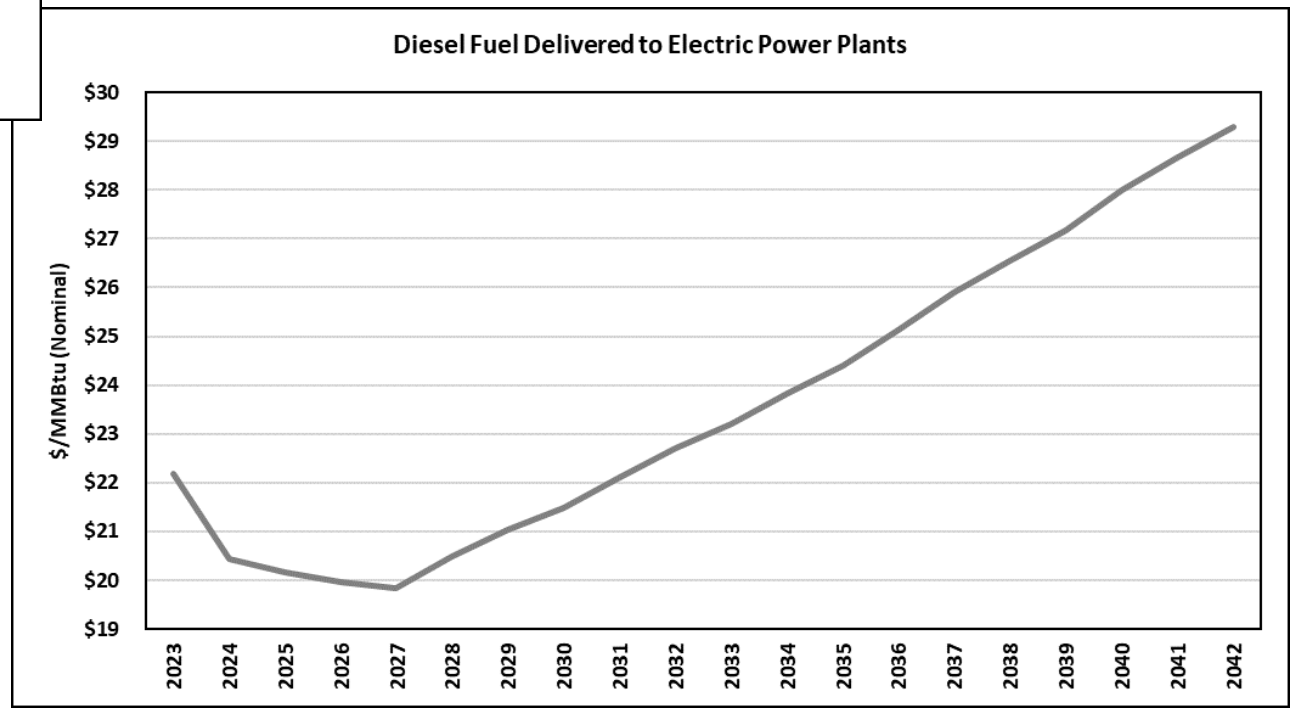
2042
Base Natural Gas Case
High Natural Gas Case


Diesel Fuel Delivered to Electric Power Plants
$/MMBtu (Nominal)
$30
$29
$28
$27
$26
$25
$24
$23
$22
$21
$20
$19
2023
2024
2025
2026
2027
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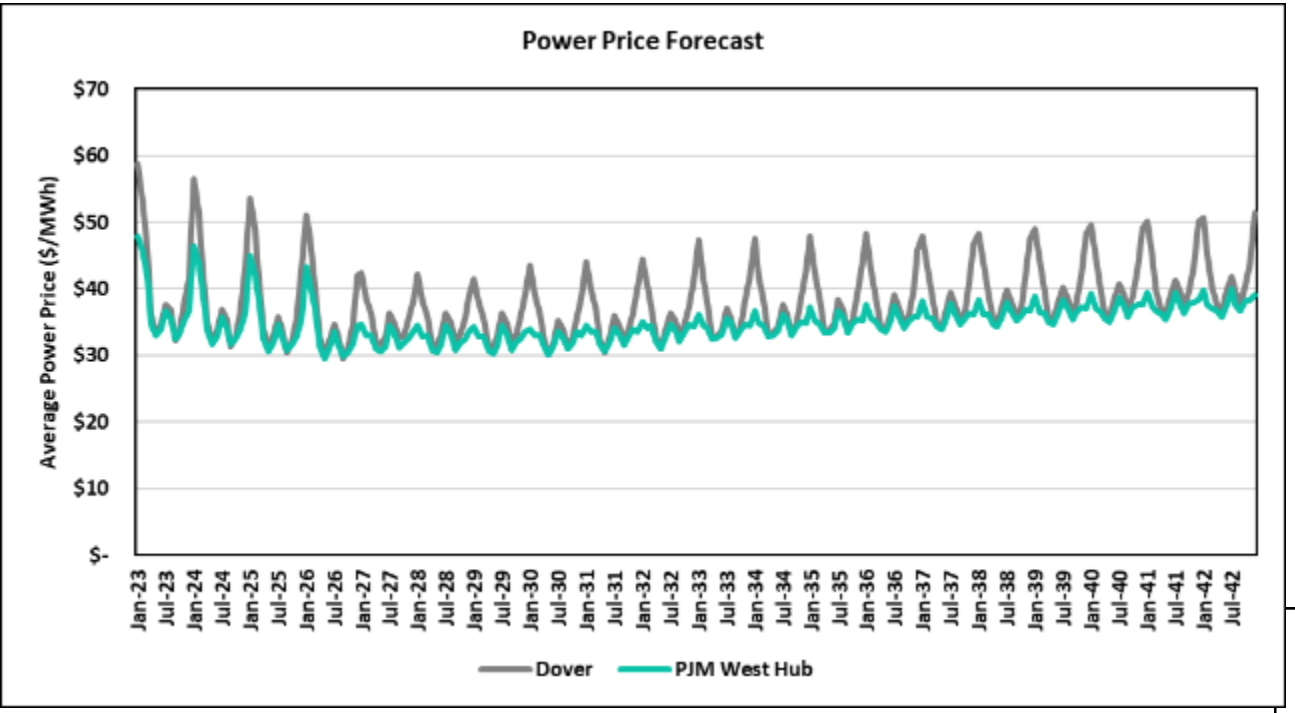
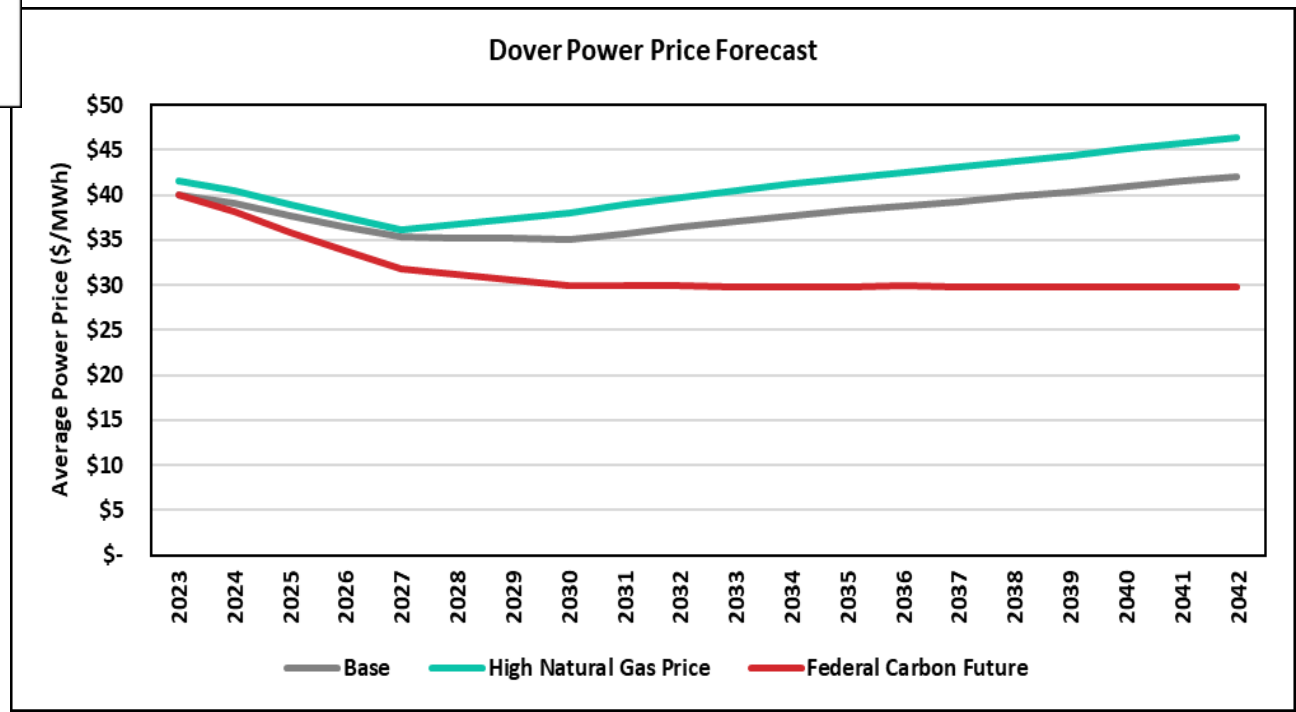
2042

MARKET POWER PRICES





EXISTING GENERATION

Plant	Type	Year of Commercial Operation	Year of Retirement	Net (MW)	PJM Capacity (MW)
VanSant	CT	1992	2041	42	42
SunPark	Renewable	2010	2031	10	BtMG
Total				52	42

RESOURCES

RESOURCE OPTION	FUEL TYPE	Overnight Capital Cost ($/kW)	Variable O&M ($/MWh)	Fixed O&M ($/kW-yr)	Full Load Heat Rate (mmBtu/MWh)	CAPACITY (MW)
Combustion Turbine (Industrial Frame)	Natural Gas	800	5	8	9,500	56
1x1 Combined Cycle	Natural Gas	1,250	3	16	6,500	81
Reciprocating Engine	Natural Gas	1,250	7.5	23.5	8,450	81
Solar PPA	Solar	N/A	53	0	N/A	9/19
Community Solar	Solar	N/A	69	0	N/A	50
Nuclear: Small Modular Reactors	Uranium	7,300	3.5	106	10,450	10
Battery Storage PPA (4-Hour Li-ion)	N/A	N/A	0	128	N/A	50 per reactor
Bilateral Capacity PPA (5-year duration)	N/A	N/A	0	Market	N/A	50

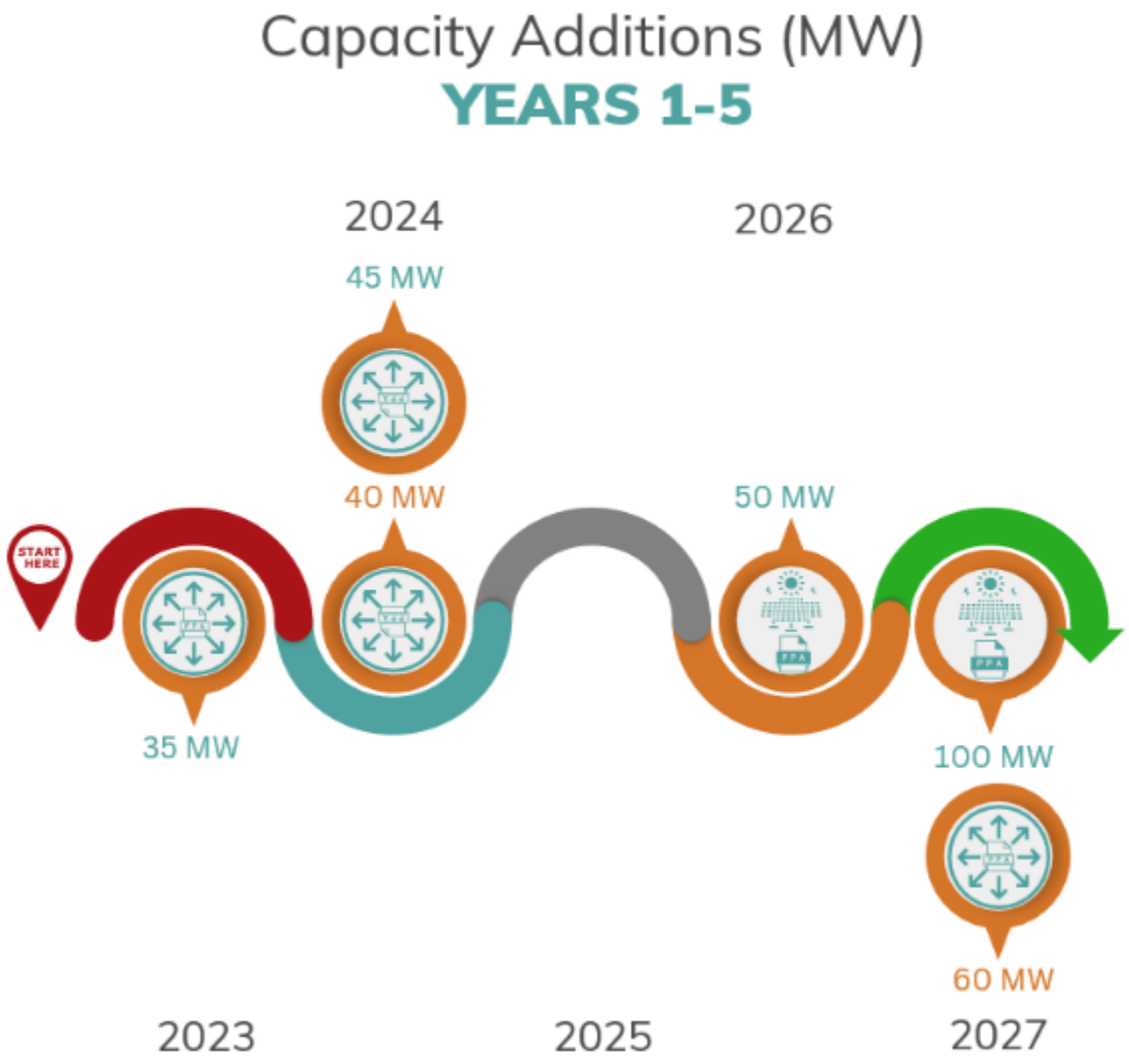
Resource options analyzed based on:

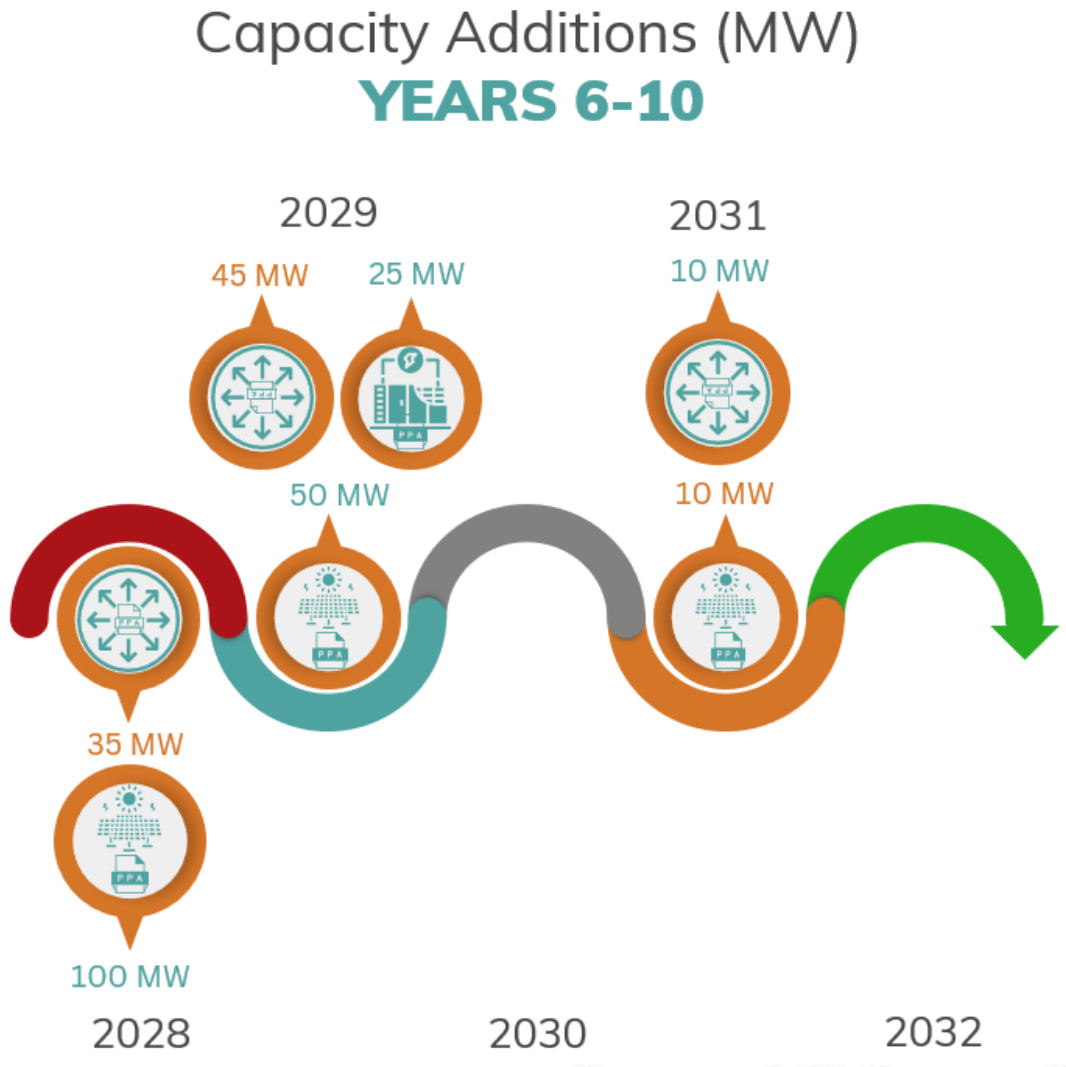
- Cost and economic returns
- Accredited capacity provided
- Reliability benefits
- Environmental compliance

TEA

BASE CASE SOLUTION

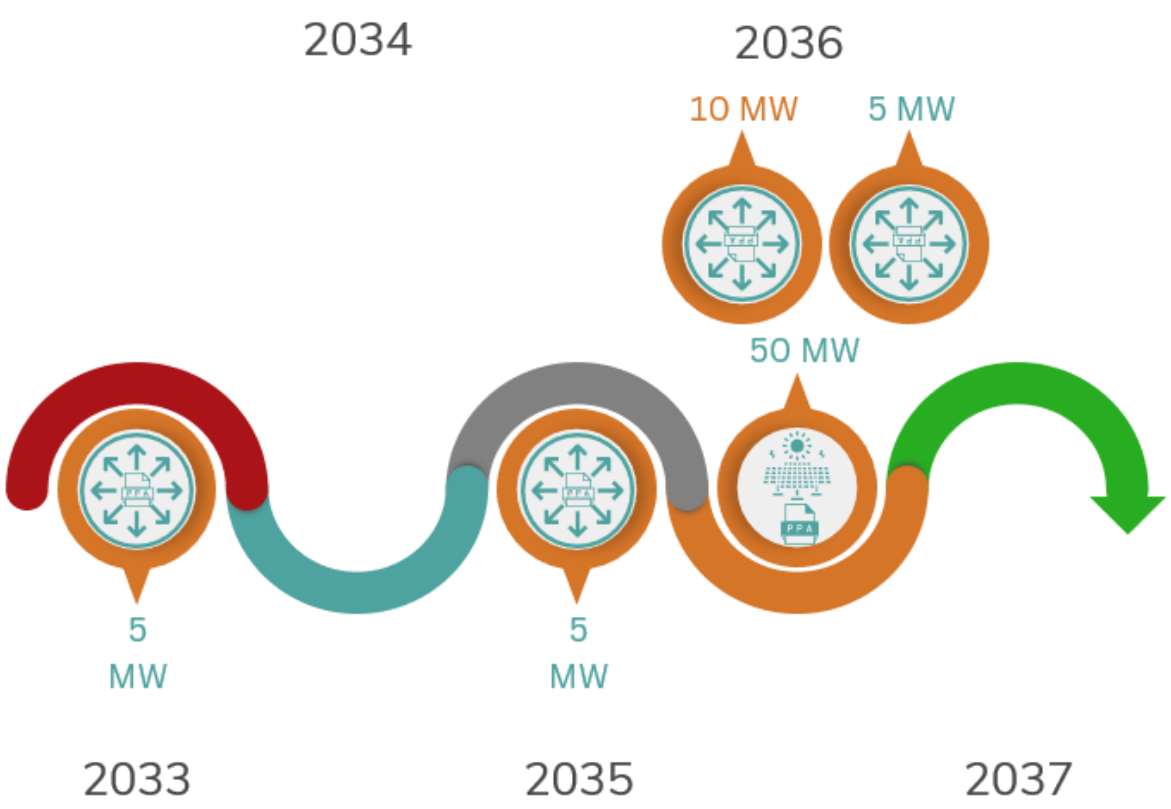
BASE CASE SOLUTION (YEARS 1-10)



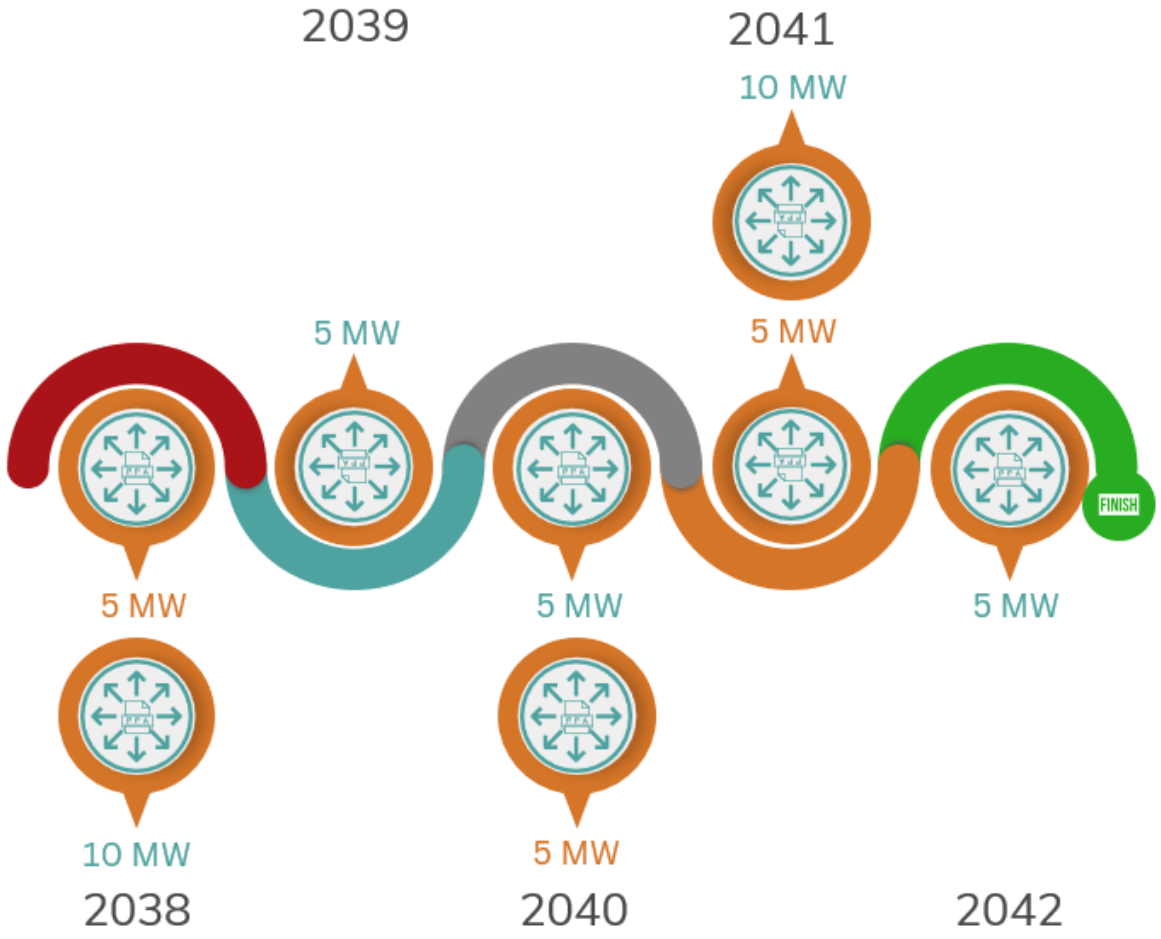


BASE CASE SOLUTION (YEARS 11-20)

Capacity Additions (MW)
YEARS 11-15

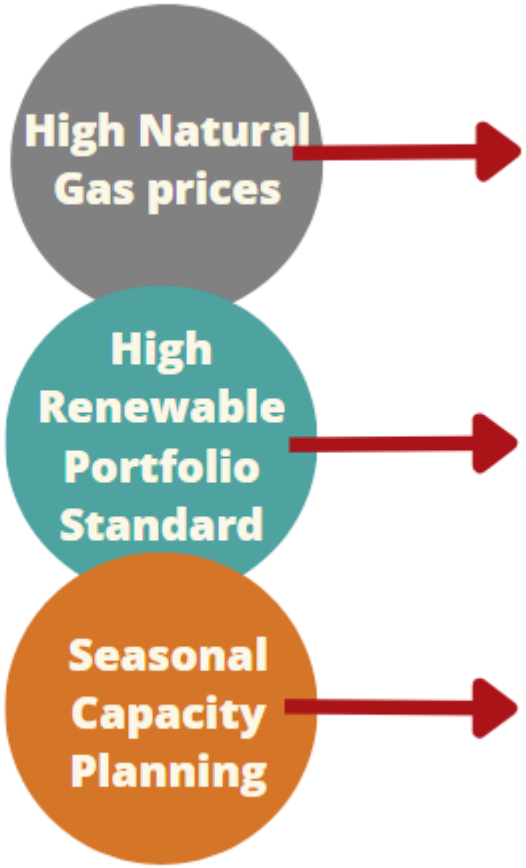


Capacity Additions (MW)
YEARS 16-20



SCENARIOS AND ALTERNATE BASE CASE PORTFOLIOS

LONG TERM SCENARIO ANALYSIS OPTIONS

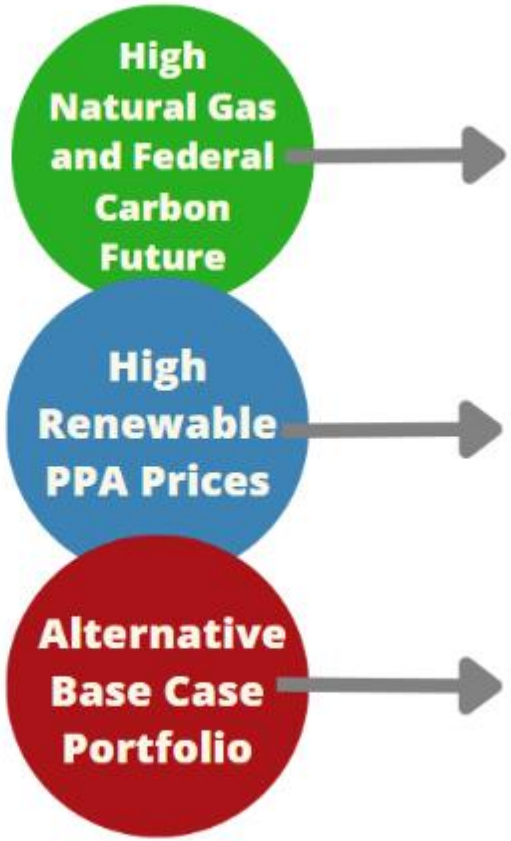


A restriction of federal drilling leases limits domestic natural gas production, and an increase in fracking regulations and/or Liquified Natural Gas (LNG) exports, have reduced inventory and created higher gas prices.

The State of Delaware utility renewable requirements are increased for both the total renewable portfolio and the solar specific carveout.

PJM adopts a seasonal capacity planning construct where Summer and Winter requirements must be met.

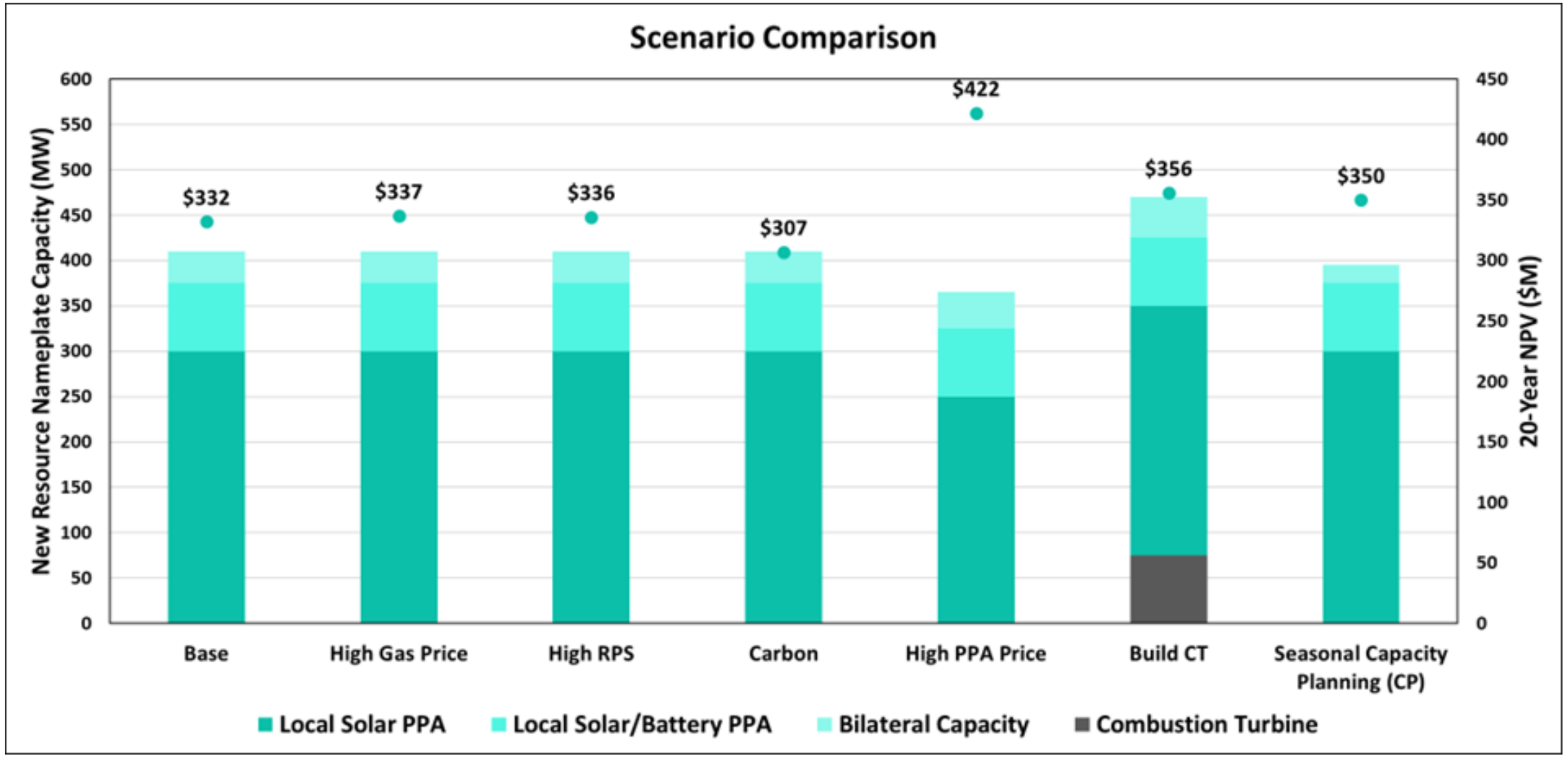
LONG TERM SCENARIO ANALYSIS OPTIONS



Zero emission credit paired with a clean energy standard assumed to begin in 2030, high natural gas prices, and increased renewable generation.

Near-term issues affecting PPA rates are assumed to remain throughout the study.

Build Combustion Turbine: A combustion turbine is a forced build in 2027 to assess the cost difference of strictly adding solar and solar/battery hybrid resources.


Scenario Comparison
New Resource Nameplate Capacity (MW)
20-Year NPV ($M)
600
550
500
450
400
350
300
250
200
150
100
50
0
450
400
350
300
250
200
150
100
50
0
$332
$337
$336
$307
$422
$356
$350
Base
High Gas Price
High RPS
Carbon
High PPA Price
Build CT
Seasonal Capacity Planning (CP)
Local Solar PPA
Local Solar/Battery PPA
Bilateral Capacity
Combustion Turbine


Any Questions?