POWER SUPPLY
STRATEGIC PLANNING

2026 Integrated Resource Plan (IRP)
Final Presentation

June 11, 2026

ZEELAND
Board of Public Works

POWER SUPPLY
STRATEGIC PLANNING

Opening Remarks and Introductions

Andrew Boatright

General Manager

Zeeland Board of Public Works

ZEELAND
Board of Public Works

POWER SUPPLY
STRATEGIC PLANNING

Welcome

Robert Mulder

Power Supply & Market Operations Manager / Utilities Manager Designee

Zeeland Board of Public Works

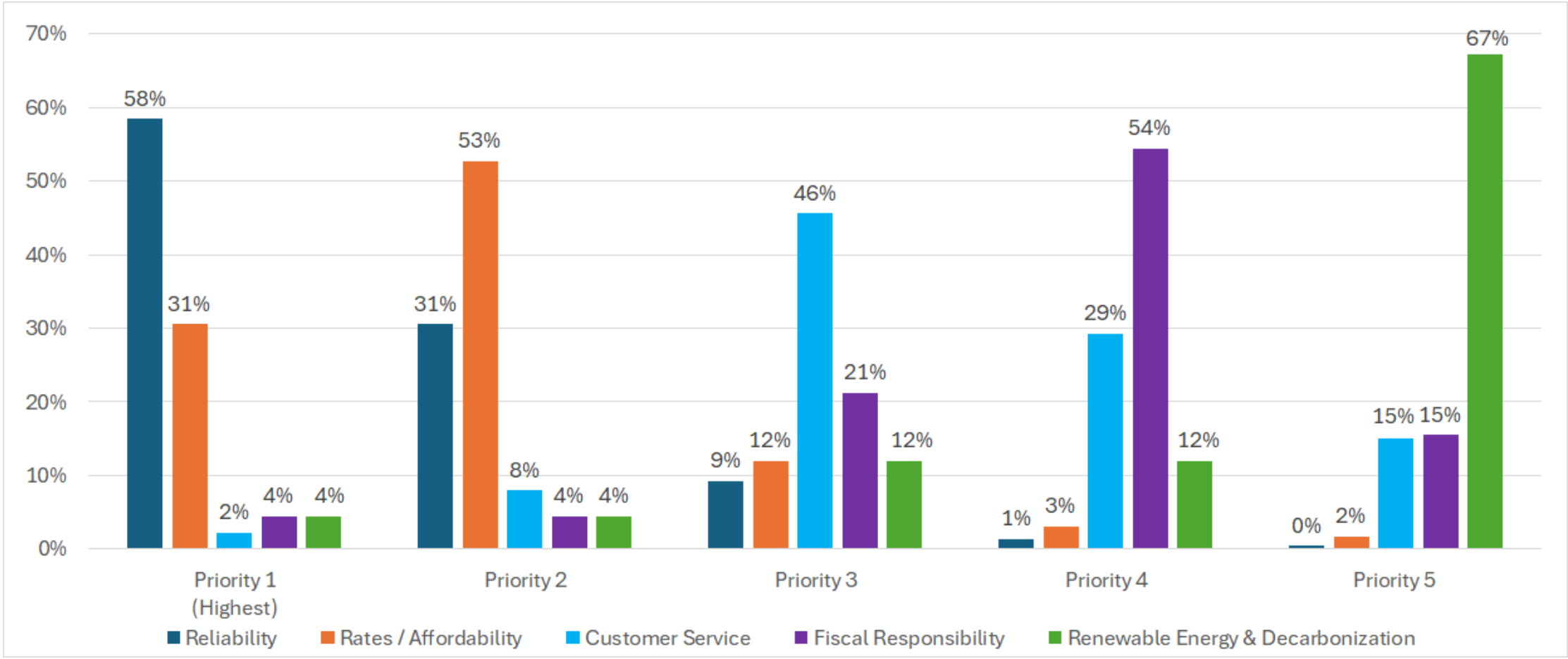
ZEELAND
Board of Public Works

Agenda

- October 2025 BPW Customer Survey Results
- 2026 IRP Process and Results
- Collaboration with Michigan Public Power Agency (MPPA)
- Near-Term Action Plan
- Questions and Discussion

Customer Survey Results

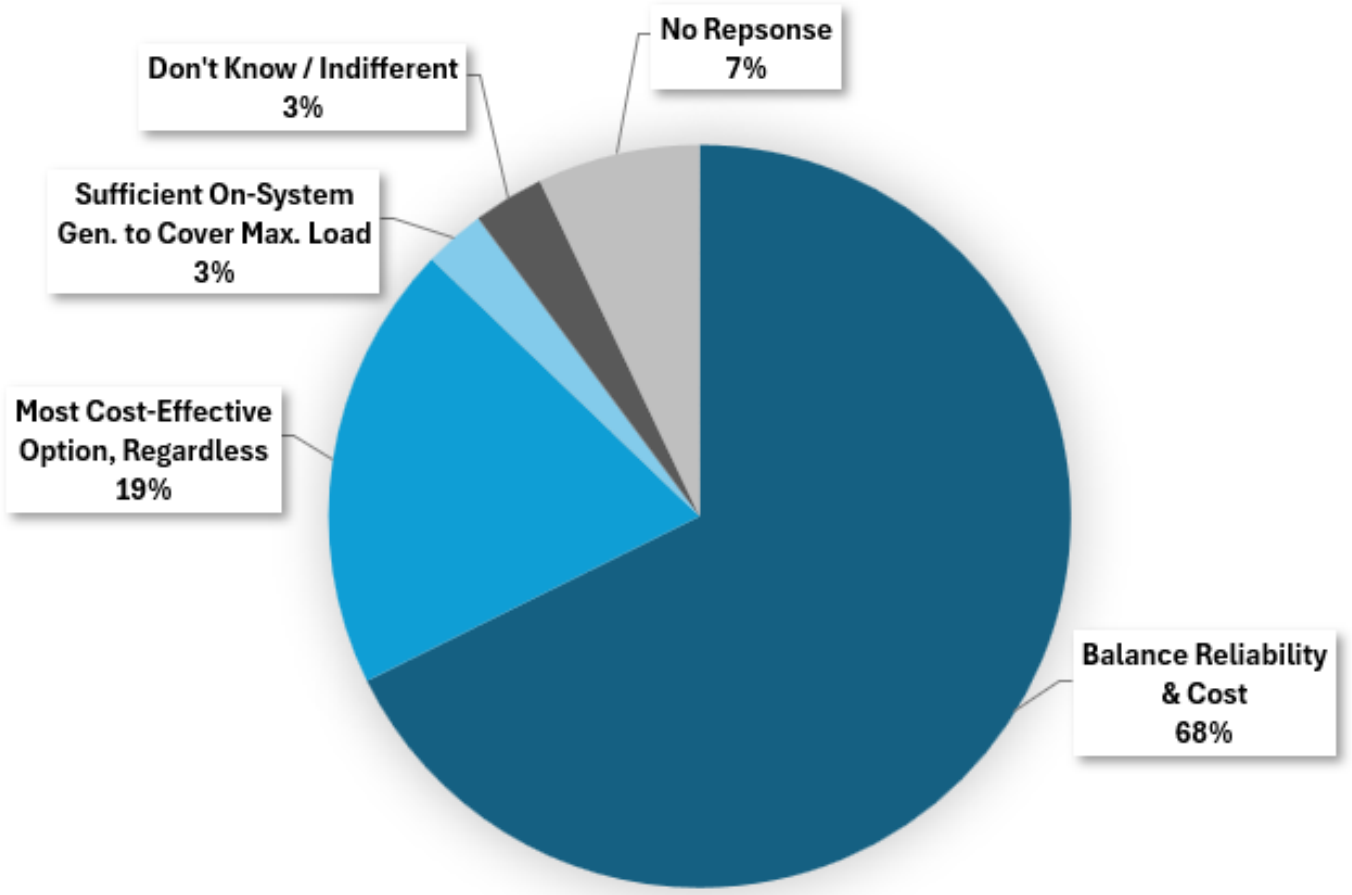
Customer Priorities: Electric Utility Service



- *October 2025 Survey Results Based on 226 Responses*

Customer Survey Results (continued)

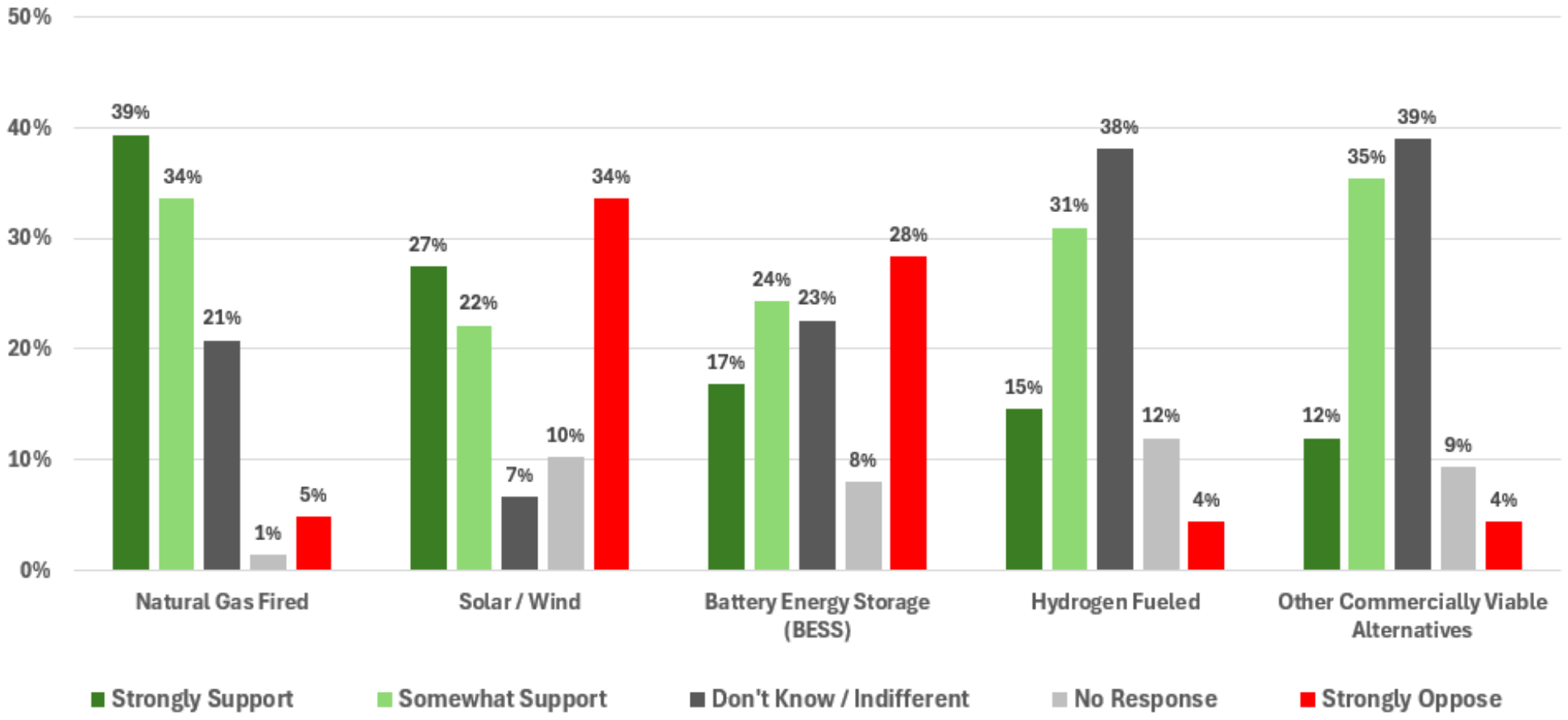
On-System Generation: Perceived Value & Scale



- *October 2025 Survey Results Based on 226 Responses*

Customer Survey Results (continued)

Generation Technologies: Support For Local Community Installation



- *October 2025 Survey Results Based on 226 Responses*

POWER SUPPLY
STRATEGIC PLANNING

IRP Process and Results

Brad Kushner

Managing Director, nFront Consulting LLC

BPW IRP Project Manager

nFront Consulting

Power Supply Basics

Energy

Electricity that is produced and consumed over a period of time, measured in units of kilowatt-hours (kWh) or megawatt-hours (MWh).

Capacity

The rated output of an electric generator, typically measured in megawatts (MW).

- To meet **Midcontinent Independent System Operator (MISO)** ***Resource Adequacy*** requirements, utilities must own or have rights to sufficient generating capacity to meet their projected peak demand plus an established reserve margin, a value referred to as the ***Planning Reserve Margin Requirement*** **(PRMR)**.
- MISO requires utilities have sufficient capacity to meet their annual PRMR.
- Michigan requires utilities to have 95% of their forecasted PRMR secured four years in advance.

What is an IRP?

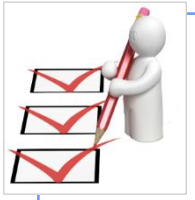
Integrated Resource Plans, or IRPs:

- Evaluate how an electric utility may meet the projected loads of its customers in a cost-effective and reliable manner
- Balance multiple objectives including:
    - System Reliability
    - Environmental Responsibility and Compliance with Statewide Requirements
    - Cost Impacts
    - Risks

IRP Key Components

Long-term view

- Forward looking
- Long-lived assets
- Time to develop



Impartial evaluation of resources

- Traditional and advanced technologies
- Supply-side and demand-side
- Cost to serve load
- Environmental impacts

Continuous planning process

- Flexible plans
- Adjust and improve as conditions change

Uncertainty and risks

- Load growth
- Fuel prices
- Environmental regulations

Transparency of process

- Engage with stakeholders
- Inform decision-makers
- Confidence in decisions

Analytics

- Identify resource needs
- Market and economic inputs
- Resource characteristics
- Simulation of portfolio costs and risks

IRP Goals

What is a Preferred Plan or Portfolio?

Preferred plan or portfolio means the utility's set of resources to serve customer requirements, including the addition of new resources and changes to existing resources.

The goal is a portfolio that reliably, efficiently, and cost-effectively meets the electric system demand in environmentally responsible manner, taking cost, risk, and uncertainty into consideration.

IRP Goals *(continued)*

An IRP Should Satisfy the Following Criteria:

1. Resource adequacy and capacity to serve anticipated peak electrical load, and applicable planning reserve margins
2. Consumer affordability and least cost
3. Compliance with applicable state and federal environmental regulations
4. Power supply reliability
5. Commodity price risks
6. Diversity of generation supply

2026 IRP Public and Stakeholder Meetings

Public Meeting

October 16, 2025

- Kick-Off BPW's 2026 IRP
- Discuss BPW
- Discuss Integrating Resource Planning Process
- Discuss BPW's 2026 IRP Process
- Begin Collaboration

SWG Meeting #1

November 18, 2025

- Discuss Results of October 2025 BPW Customer Survey
- Discussion of Major Assumptions

SWG Meeting #2

January 8, 2026

- Review Stakeholder Feedback
- Structure of IRP Analysis
  - Power supply portfolios
  - Sensitivity evaluations

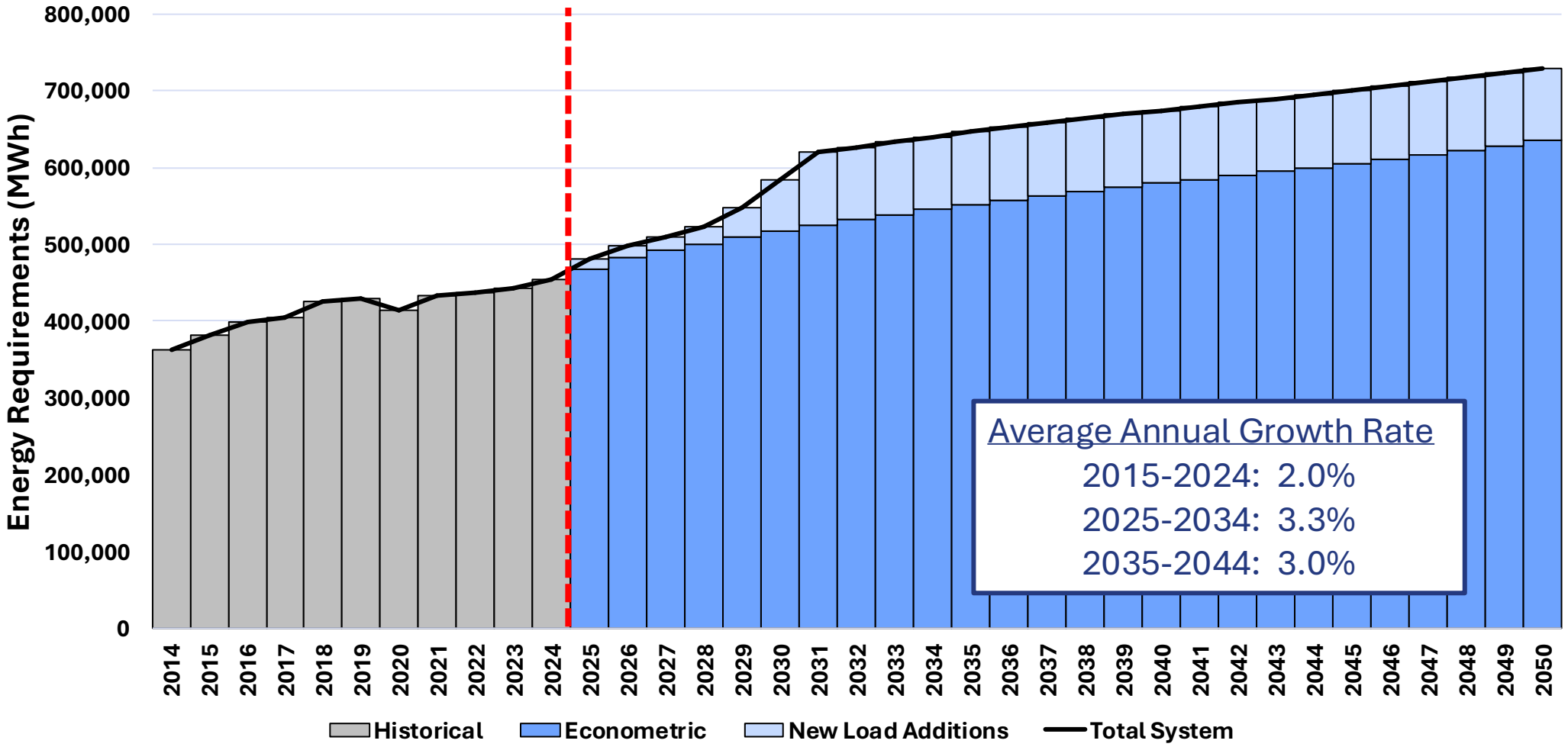
SWG Meeting #3

March 19, 2026

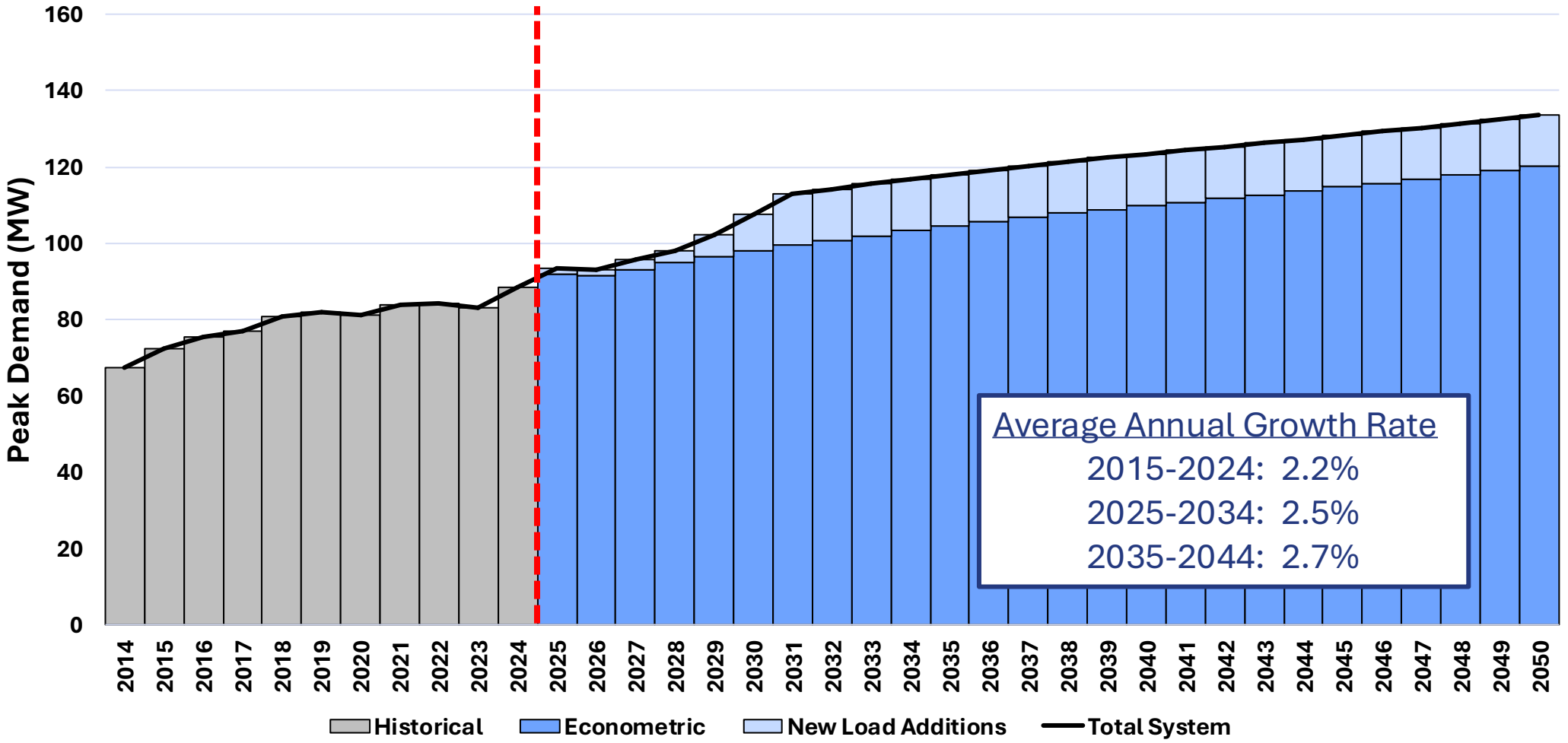
- Review Stakeholder Feedback
- Final IRP Assumptions
- Preliminary IRP Results
  - Power supply portfolios
  - Sensitivity evaluations
- Collaboration Opportunities

Stakeholder process provided transparency throughout the IRP process and allowed BPW to learn what is important to BPW's customers.

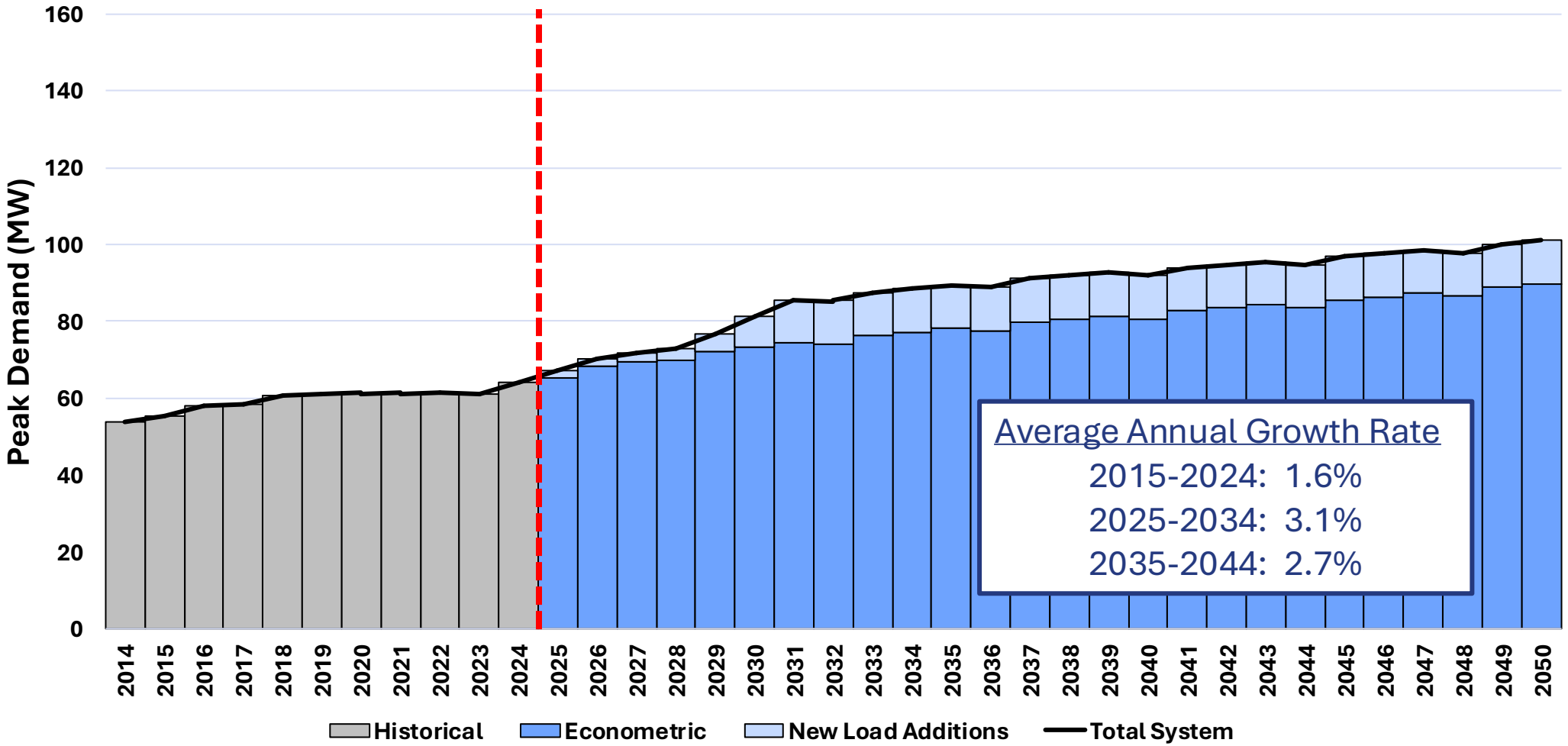
Load Forecast – Energy Requirements



Load Forecast – Peak Demand (Summer)

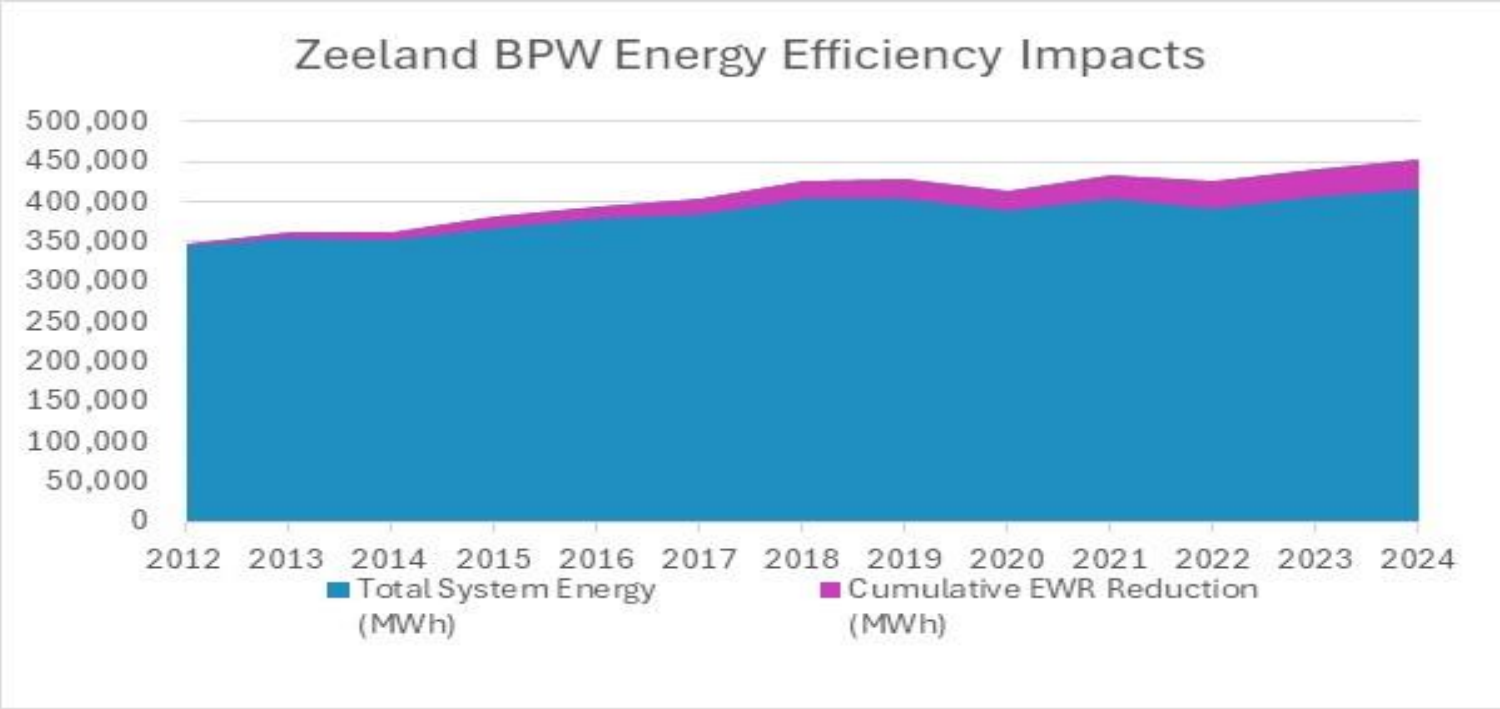


Load Forecast – Winter Peak Demand



Zeeland DSM/EE Program Impacts

- Cumulative DSM/EE program impacts (2012 - 2024) represented a reduction in energy usage of 8.5% (38,582 MWh) of BOW's 2024 total energy requirements
- With DSM/EE programs implemented, total energy requirements grew 30.6% (2.25% annually) from 2012 - 2024



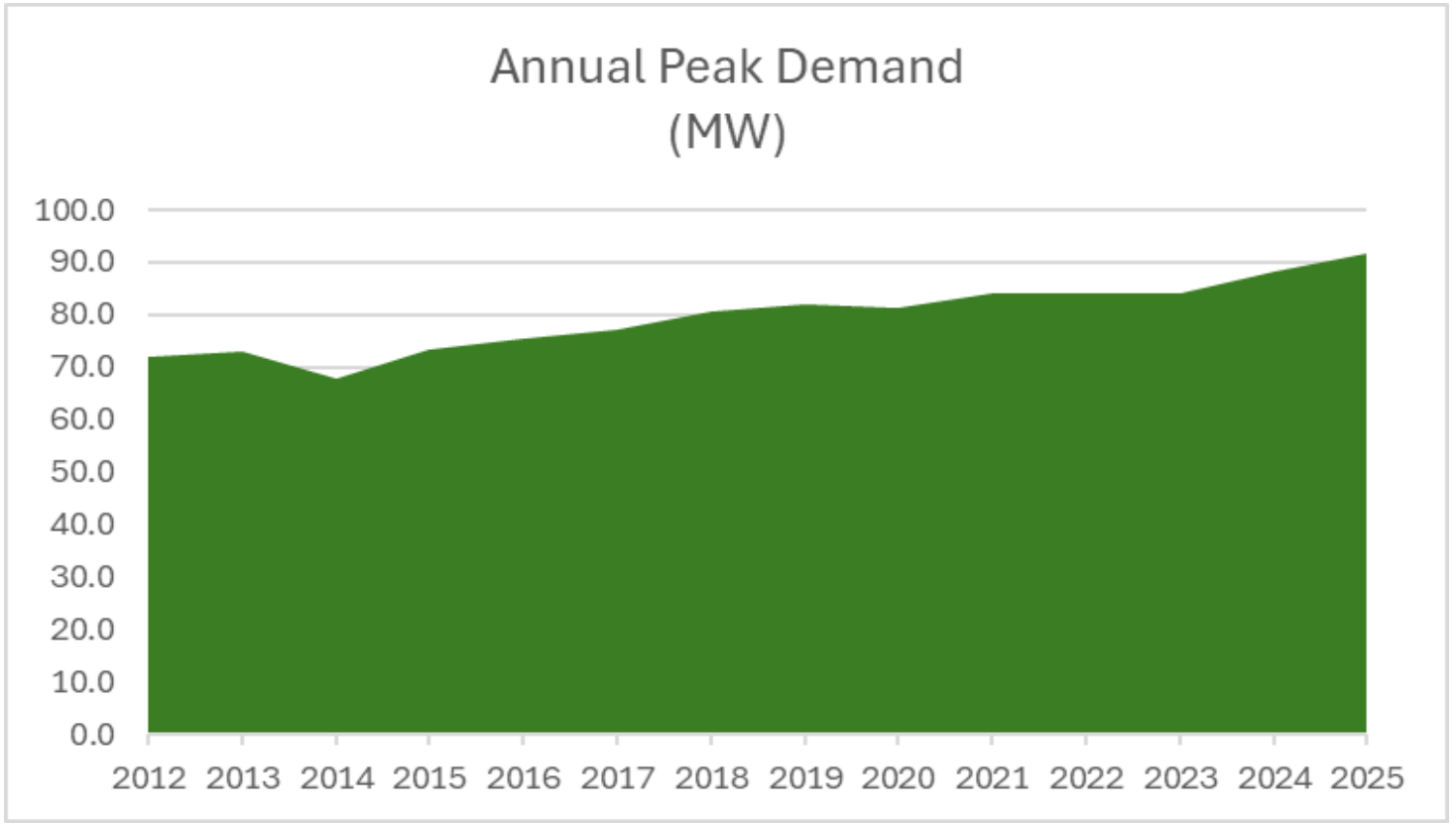
BPW DSM/EE programs to-date have primarily focused on Energy Efficiency (EE) rebates:

- Lighting Upgrades
- HVAC Equipment Upgrades
- Appliance Upgrades
- Other Related Upgrades

DSM/EE: Demand-Side Management / Energy Efficiency

Zeeland DSM/EE Program Impacts (continued)

- Increase in peak demand from 2012 - 2025 averaged 2.3% annually with an overall increase of 27% during that period, even with the implementation and successful uptake of DSM/EE programs



Existing Power Supply: On-System Generation

Washington Ave. Generation Facility

- Seven (7) R.I.C.E. Units *(1.0 MW – 6.0 MW Units)*
- Natural Gas / Diesel Fired
- 22.2 MW Total

Riley Generation Facility

- Five (5) R.I.C.E. Units *(2.0 MW each)*
- Natural Gas Fired
- 10.0 MW Total

West Washington Generation Facility

- Two (2) R.I.C.E. Units *(1.0 MW each)*
- Natural Gas Fired
- 2.0 MW Total

R.I.C.E.: Reciprocating Internal Combustion Engines

Existing Power Supply: Jointly-Owned Generation

DTE Energy's Belle River Power Plant

- Zeeland BPW Share: 11.58 MW (MPPA Project)
- 2 Units; Converting from Coal to Natural Gas

  Unit 1: Fall 2025 Unit 2: Fall 2026
- Date of Commercial Service: 1984 & 1985
- St. Clair County, MI

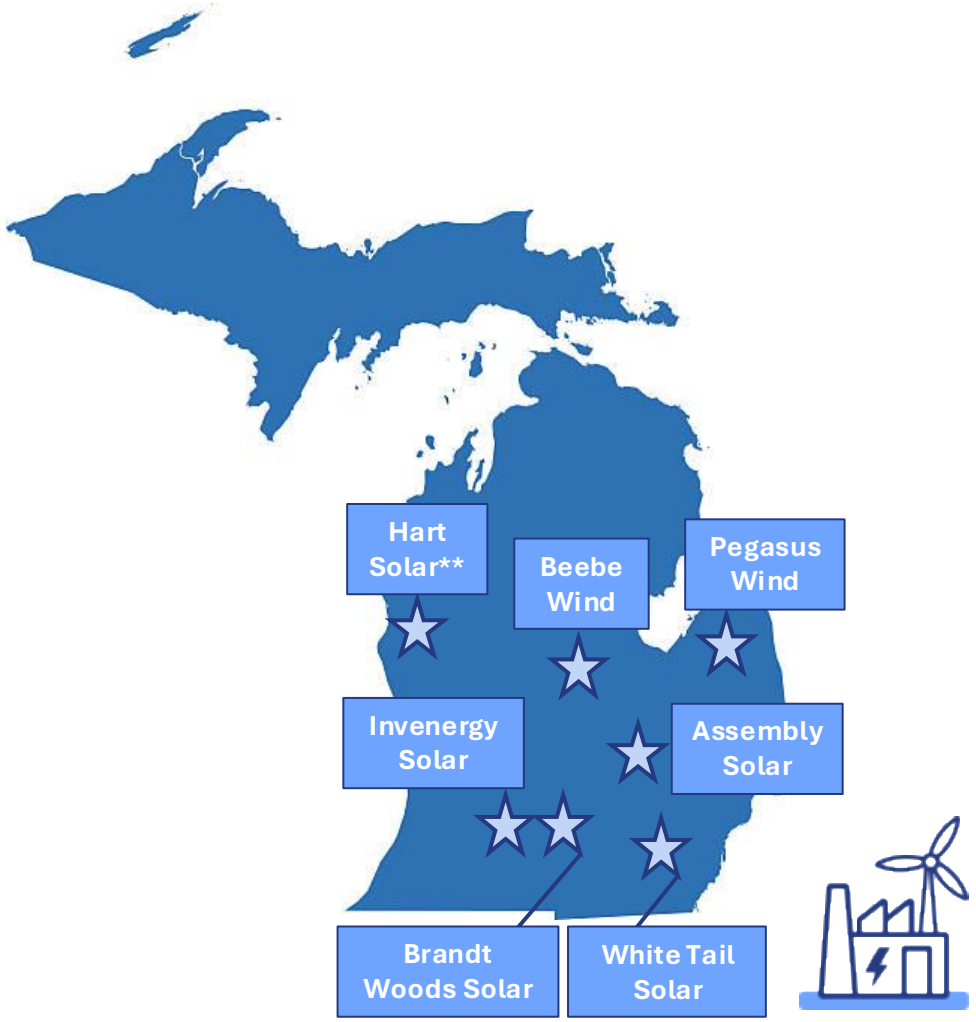
AMP Freemont Energy Center (AFEC)

- Zeeland BPW Share: 7.06 MW (MPPA Project)
- 2 Units, Natural Gas (Combined Cycle)
- Date of Commercial Service: 2012
- Freemont, OH (Located in PJM RTO)

Existing Power Supply: Purchase Power Agreements

Project	Location	Zeeland BPW Share (Nameplate MW)	Expiration Date
Beebe Wind	Ithaca, MI	2.3	Dec-34
Pegasus Wind	Caro, MI	12.2	Dec-39
Assembly Solar (Ph 1)	Shiawassee County, MI	6.4	Dec-45
Assembly Solar (Ph 2)	Shiawassee County, MI	7.8	Dec-46
Invenergy Solar	Calhoun County, MI	8.0	Apr-48
Brandt Woods Solar	Calhoun County, MI	2.9	Mar-45
White Tail Solar	Washtenaw County, MI	2.8	Nov-45
Hart Solar**	Oceana County, MI	5.6	Dec-46

** Under Construction



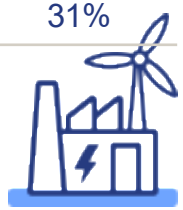
Midcontinent Independent System Operator (MISO) Planning Criteria

Seasonal Planning Reserve Margin (PRM)

Season	Unforced Capacity (UCAP) Basis (%)
Winter	18.4%
Spring	25.3%
Summer	7.9%
Fall	14.9%

New Resource Capacity Accreditation*

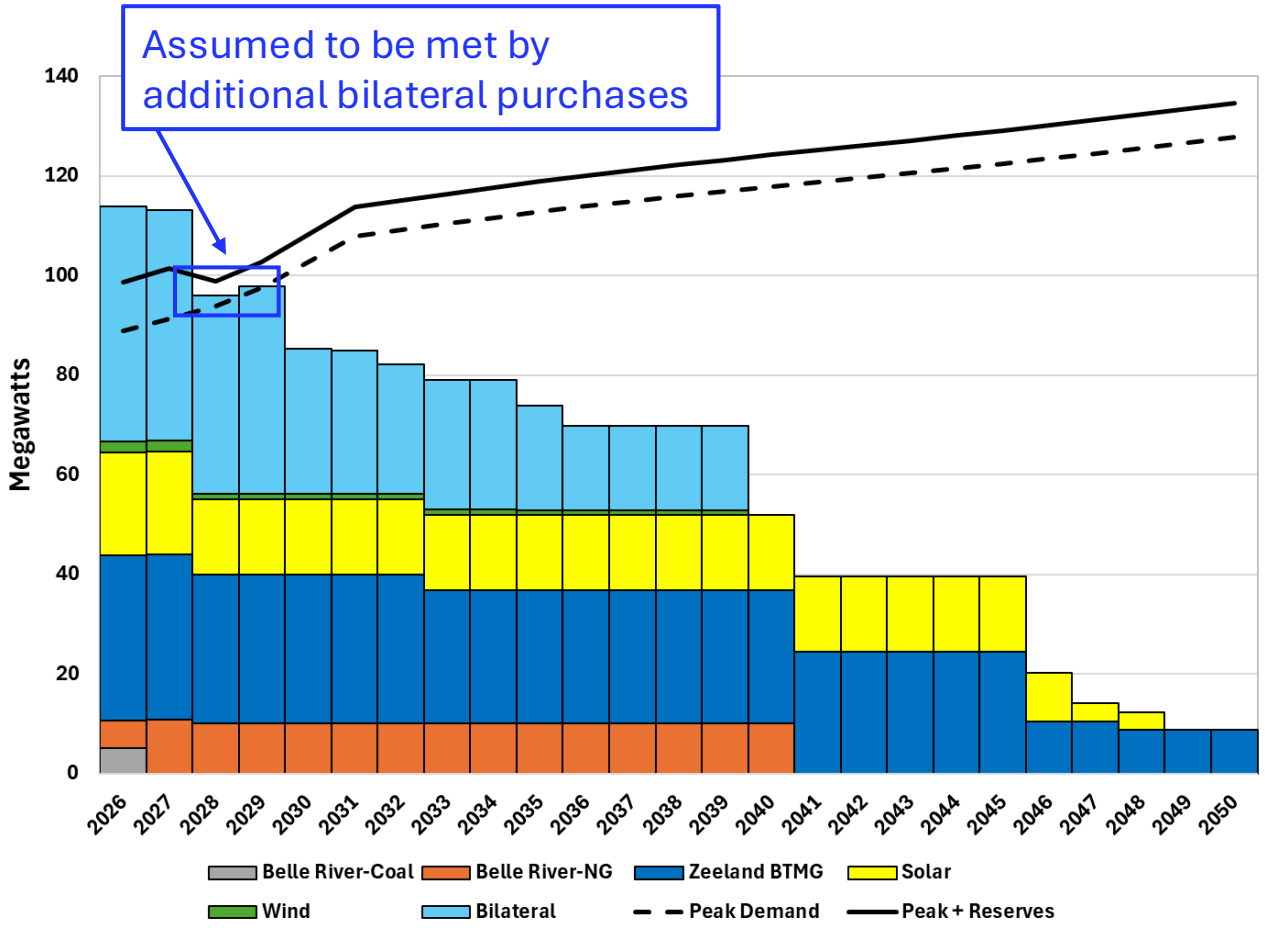
Technology Type	Winter (%)	Spring (%)	Summer (%)	Fall (%)
Coal	90%	90%	91%	91%
Natural Gas Steam Turbine	90%	91%	89%	87%
Natural Gas Combined Cycle	95%	94%	95%	93%
Natural Gas Combustion Turbine	66%	84%	89%	87%
Reciprocating Internal Combustion Engine (RICE)	75%	76%	82%	68%
Solar PV	5%	50%	50%	50%
Wind	29%	25%	21%	31%



**Seasonal capacity accreditation to be based on actual performance after 3 years of operation; IRP reflects applicable values for Zeeland BPW's existing resources, which may differ from the values shown herein.*

Capacity Expansion Approach

Projected Capacity Balance – Summer



Model Notes

- Zeeland is assumed to meet its Planning Reserve Margin (PRM) obligations without requiring additional capacity through 2029
- Beginning in 2028-2029, new resources can be added to meet energy needs, including:
  - Local peaking generation
  - Renewables PPAs (Solar, Wind, Battery Energy Storage System)
- Larger resources that would require partnership with other utilities are assumed available as soon as 2030

Michigan Public Act 235 (PA 235)

Michigan Public Act 235 could require utilities to base new resource decisions on more than just meeting load requirements at the lowest cost

IRP Planning Scenario	New Resource Addition	
	Resource Type	Resource Timing
Prior to PA 235	Achieving the most economical resource portfolio to reliably serve load is the primary driver for the selection of new resource technologies and fuel types	Capacity requirements are the primary driver for timing of new resource additions
PA 235	Compliance with the PA 235 requirements to meet the Renewable Portfolio Standard and the Clean Energy Standard: • ***Anticipated*** to become a primary driver for the type and timing of new resource additions. • Increases the ***potential*** of excess capacity relative to reserve margin requirements.	

Michigan Public Act 235 (PA 235)

Utility Compliance Requirements

PA 235 Requirement	Compliance
Renewable Portfolio Standard (RPS)	15% through 2029 50% by 2030 60% by 2035
Clean Energy Standard (CES)	80% by 2035 100% by 2040
Energy Storage Target*	2,500 MW by 2030

PA 235 Compliant Resources by Technology

Technology	Renewable Energy	Clean Energy
Biomass	Yes	Yes
Landfill Gas	Yes	Yes
Hydro	No	Yes
Solar	Yes	Yes
Wind	Yes	Yes
Nuclear	No	Yes
NG with 90% Carbon Capture and Sequestration	No	Yes

- Renewable Energy Credits (RECs) owned by customers that represent at least 25% of a utilities peak load ***may*** be utilized by the utility to meet the REC requirements of PA 235.

**Requirement for Michigan rate-regulated utilities in aggregate; not applicable to municipal utilities such as Zeeland BPW.*

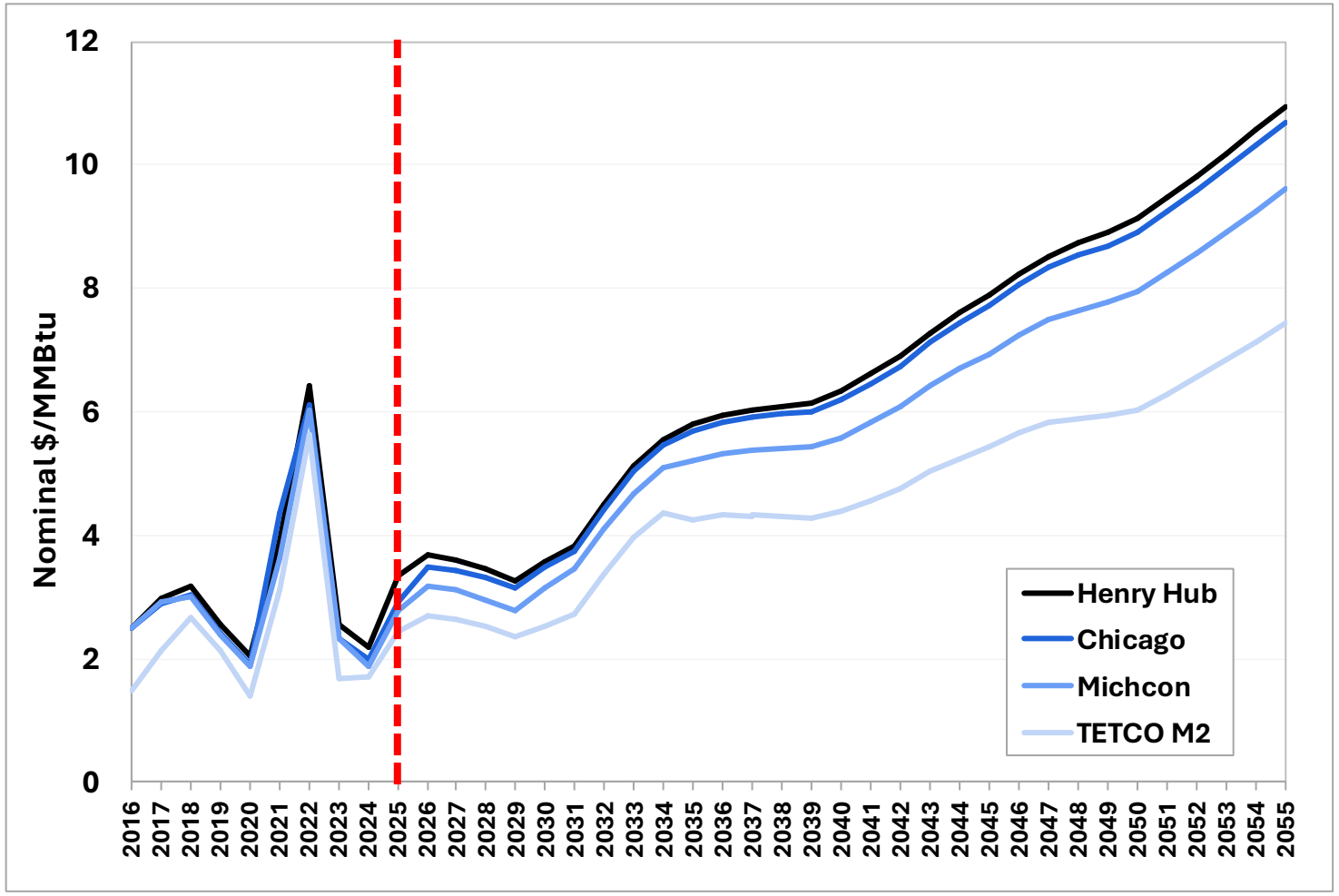
Tax Credit Considerations (representative information)

Technology Type	Maximum Tax Credits	Considerations
Solar PV	PTC of $27.50/MWh* for first 10 years of operation -or- ITC of 30%	Online by December 31, 2027, unless under construction before July 4, 2026
Wind	PTC of $27.50/MWh* for first 10 years of operation -or- ITC of 30%	Online by December 31, 2027, unless under construction before July 4, 2026
BESS	ITC of 30%	Tax Credits phase out over 2034 through 2036, based on construction start date
Nuclear	ITC of 30%	Tax Credits phase out over 2034 through 2036, based on construction start date
NG with 90% Carbon Capture and Sequestration	PTC of $85/metric ton* for first 10 years of operation -or-	Must be under construction by 2032
	ITC of 30%	Tax Credits phase out over 2034 through 2036, based on construction start date

**Based on 2022 dollars*

Information presented in this table is not being provided by nFront Consulting as an interpretation of tax incentives or tax advice to BPW, but instead reflects an estimate of how the tax incentives may apply to these resource types.

Natural Gas - Hub Price Forecast



NG Hub	Resources
Chicago Citygate	Zeeland Local Resources (Existing & Potential New Resources)
MichCon	Belle River Potential New Resources
TETCO M2	AMP Freemont

Supply Side Options

Evaluate resources that are feasible for Zeeland

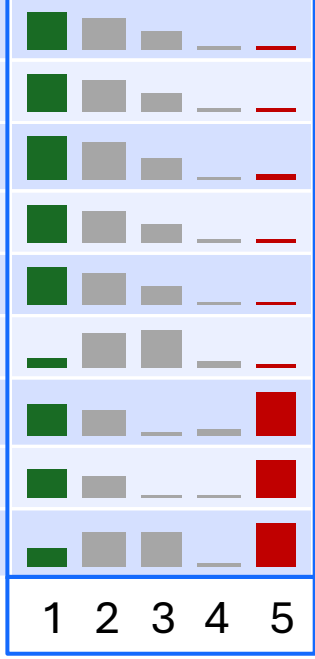
- *Dispatchable* - Resources that can be operated as needed by Zeeland
- *Renewable* - Solar and Wind
- *Energy Storage* - Battery Energy Storage System (BESS)

Include options that Zeeland may be able to solely develop/own as well as options requiring joint-development/participation

- Options that Zeeland may solely develop/own would be relatively smaller options
  - Higher in cost per MW and/or cost per MWh than relatively larger options
  - Likely utilized more for capacity than energy resources
  - Zeeland can develop/own without obtaining partner(s)
- Options requiring joint-development/participation would be relatively larger options
  - Lower in cost per MW and/or cost per MWh than relatively smaller options
  - Contingent on obtaining partner(s) to develop

Supply Side Options (continued)

Resource Option	Fuel Type	Approx. Nameplate Capacity (MW)[2]	PA 235 Renewable Energy Resource	PA 235 Clean Energy Resource	Resource Location[3]	Customer Survey 10/25[4]	
						General Support	Local Community Install Support
RICE	NG	2.5 - 10	No	No	Local	66%	
CT	NG	15 - 20	No	No	Local	66%	
CT	NG	300	No	No	Off-System	66%	
CC	NG	500	No	No	Off-System	66%	
CC w/CCS	NG	500	No	Yes	Off-System	66%	
SMR	Nuclear	300	No	Yes	Off-System	36%	
Large Scale PV[1]	Sun	75	Yes	Yes	Off-System	42%	
Large Scale Wind	Wind	100	Yes	Yes	Off-System	42%	
Large Scale BESS[1]	Various	100	Yes	Yes	Off-System	33%	



1 – Strong Support
2 – Somewhat Support
3 – Don't Know
4 – No Response
5 – Strongly Oppose

Notes
[1]Small scale projects may also be considered
[2]Capacity ratings are preliminary and subject to change
[3]Local resources to be solely owned by Zeeland at full capacity. Off-system resources available to Zeeland under offtake arrangements at 5 MW increments
[4]Per customer survey conducted by BPW in October 2025

IRP Scenarios and Sensitivities Considered

Scenarios

- **Business-As-Usual (BAU)** - Scenario assuming no change in State requirements pertaining to renewable or clean energy production are in effect throughout the IRP study period
- **Michigan Public Act 235 (PA 235)** - Scenario in which the requirements of the State of Michigan's Renewable Energy Standard and Clean Energy Standard remain in effect over the IRP study period

Sensitivities

- Simulate optimized portfolios under alternative projections of future variables
- Understand cost impacts of future conditions that differ from those assumed in the optimization
  - Alternative load projections
  - Alternative fuel price projections and associated market prices

IRP Portfolio Strategies

Aid in identifying the most robust, least-regrets resource portfolio across a range of potential future conditions

Economically Optimized

- Identifies the lowest-cost portfolio pathway for Zeeland to pursue

Large Units Available 2035

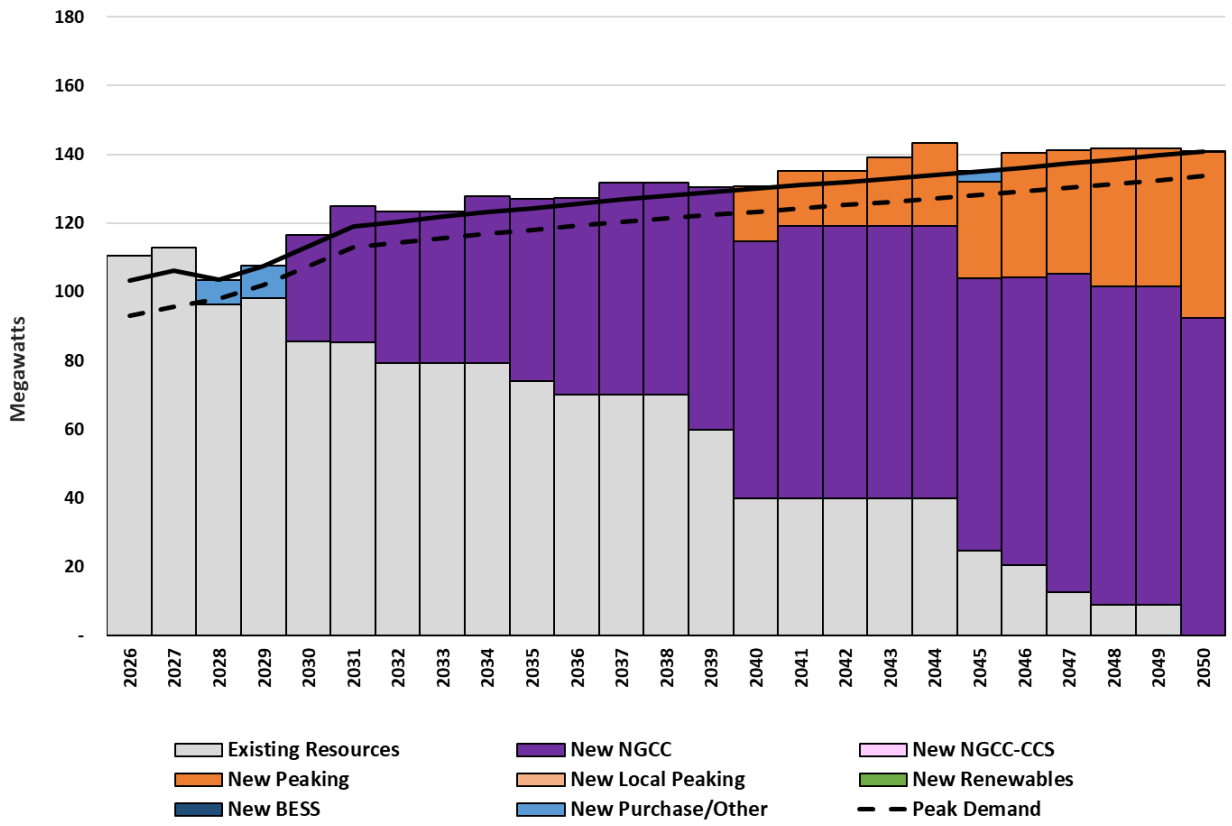
- Shifts the availability for CC/CT participation from 2030 to 2035
- Latest industry information indicates 2035 as the timeframe for a new CC/CT

Local Generation Only

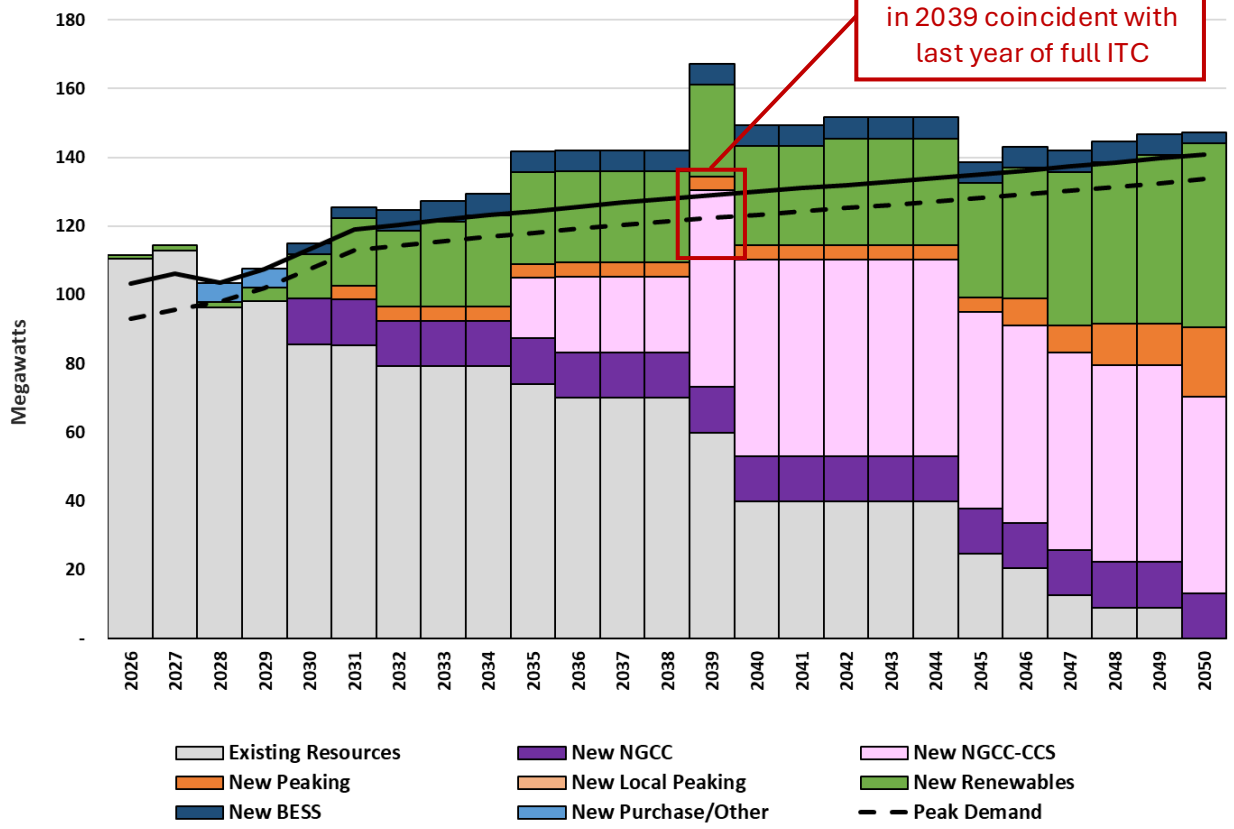
- Limits selection to new local resources that are 100% Zeeland-owned
- Maintains the option to contract renewable PPAs

Power Supply Portfolio
Capacity – Economically Optimized Strategy

Scenario: Business-As-Usual



Scenario: PA 235



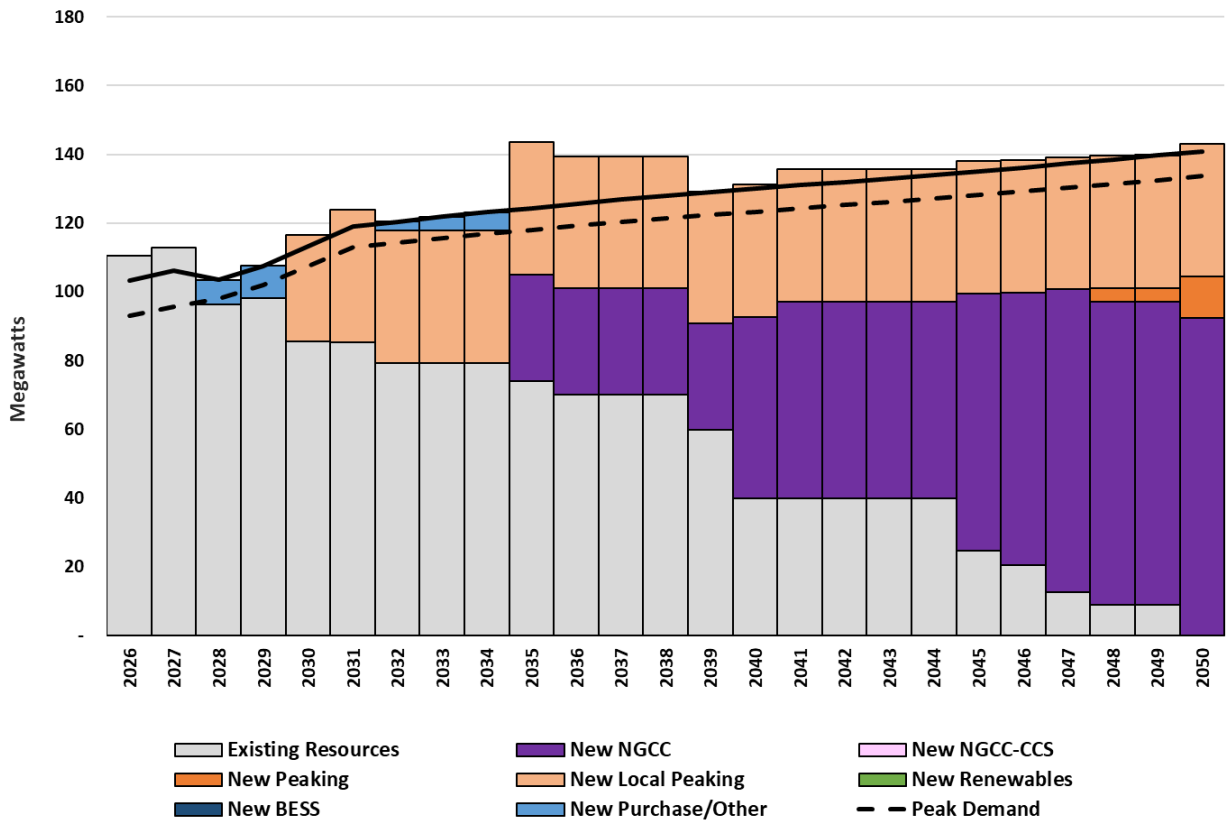
ZEELAND Board of Public Works

Notes:
- *Capacity values presented on a summer accredited capacity basis*
- *See Slide 70 for a glossary of defined terms*

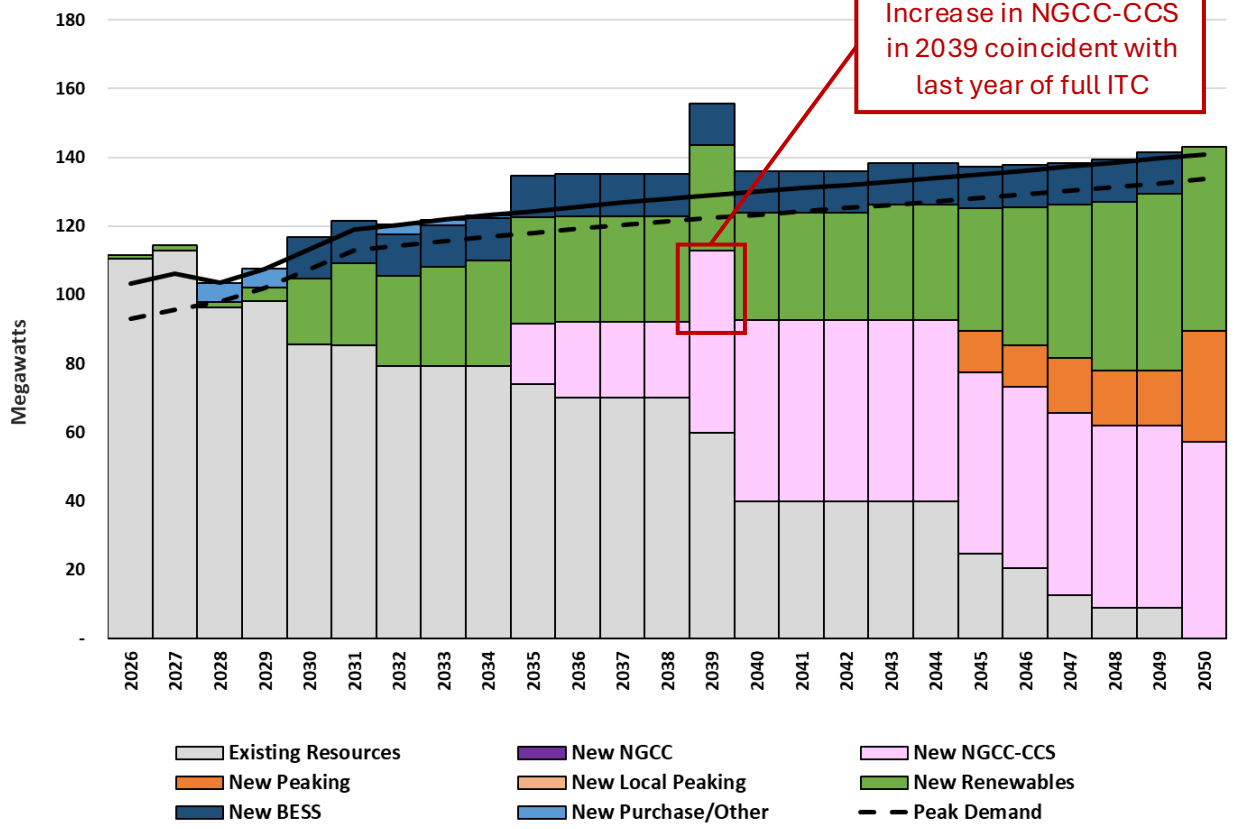
Power Supply Portfolio

Capacity – Large Units Available 2035 Strategy

Scenario: Business-As-Usual



Scenario: PA 235



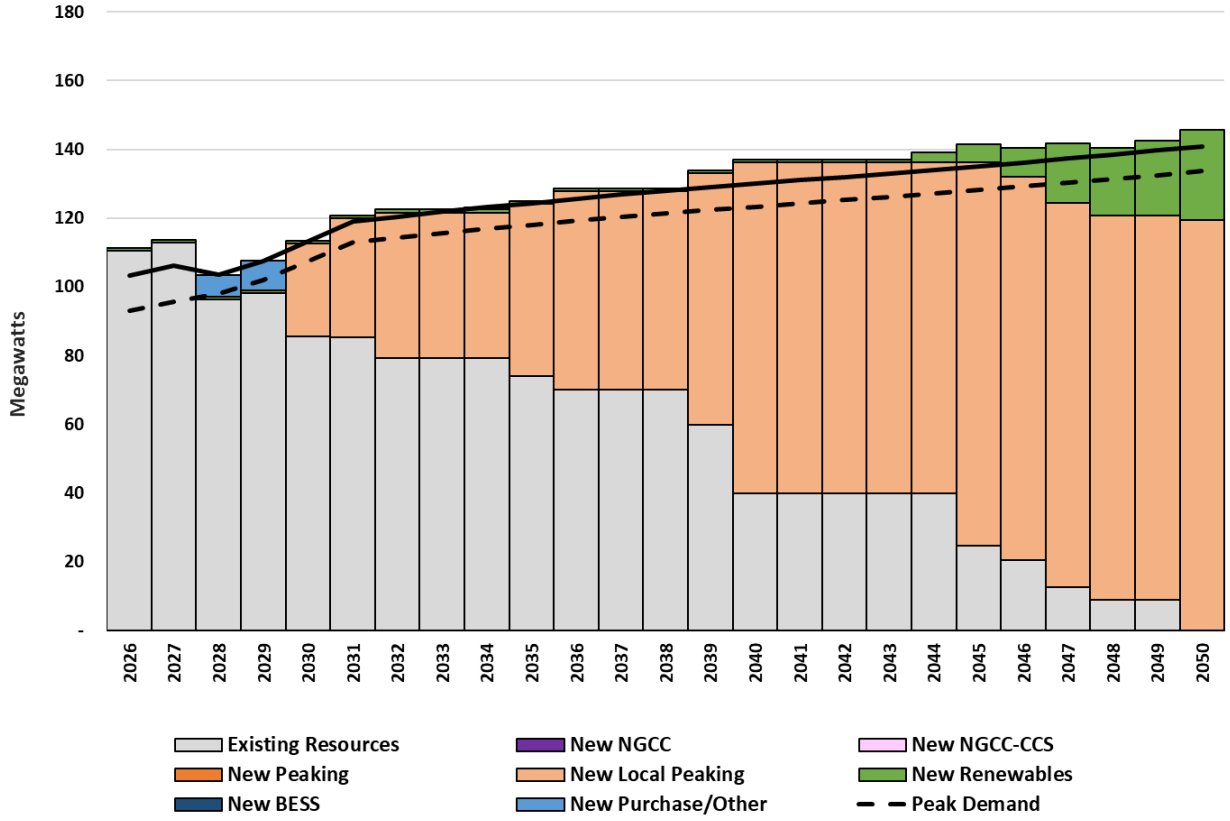
ZEELAND Board of Public Works

Notes:

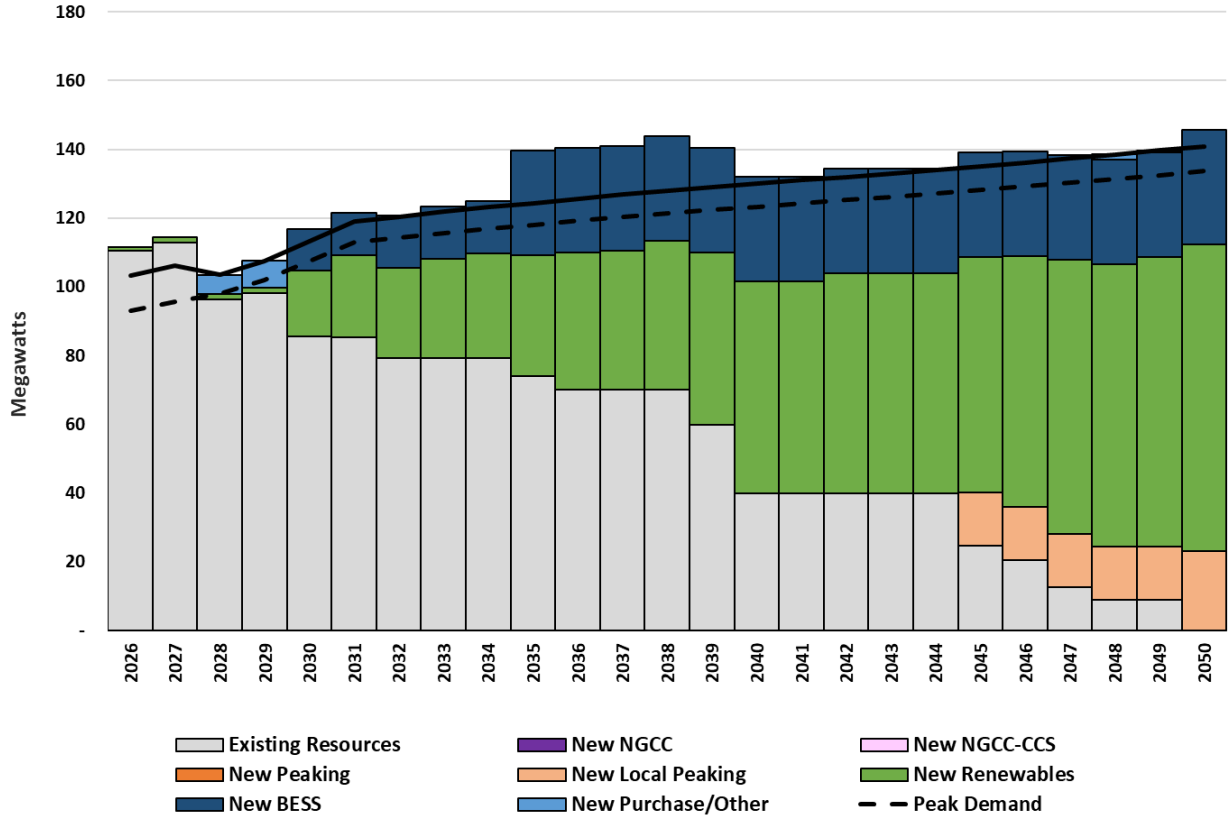
- *Capacity values presented on a summer accredited capacity basis*
- *See Slide 70 for a glossary of defined terms*

Power Supply Portfolio
Capacity – Local Generation Strategy

Scenario: Business-As-Usual



Scenario: PA 235



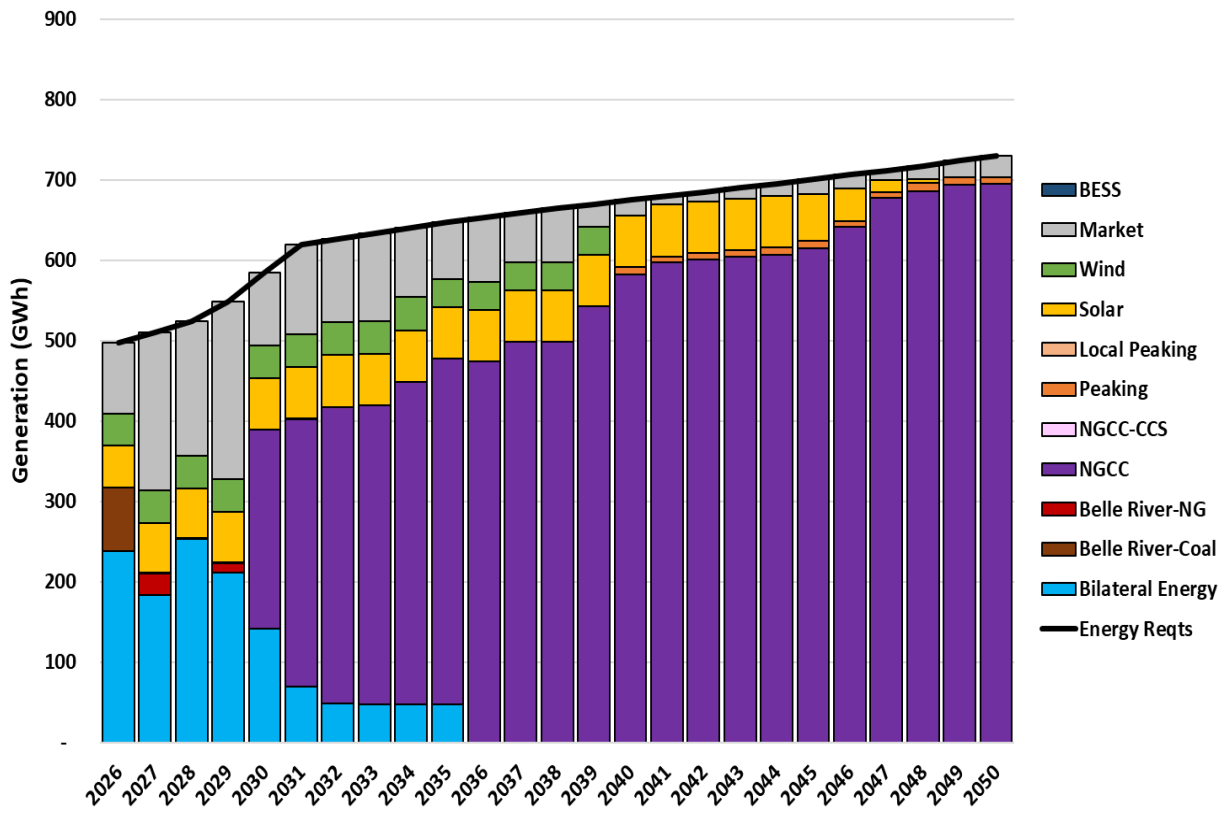
ZEELAND Board of Public Works

Notes:
- *Capacity values presented on a summer accredited capacity basis*
- *See Slide 70 for a glossary of defined terms*

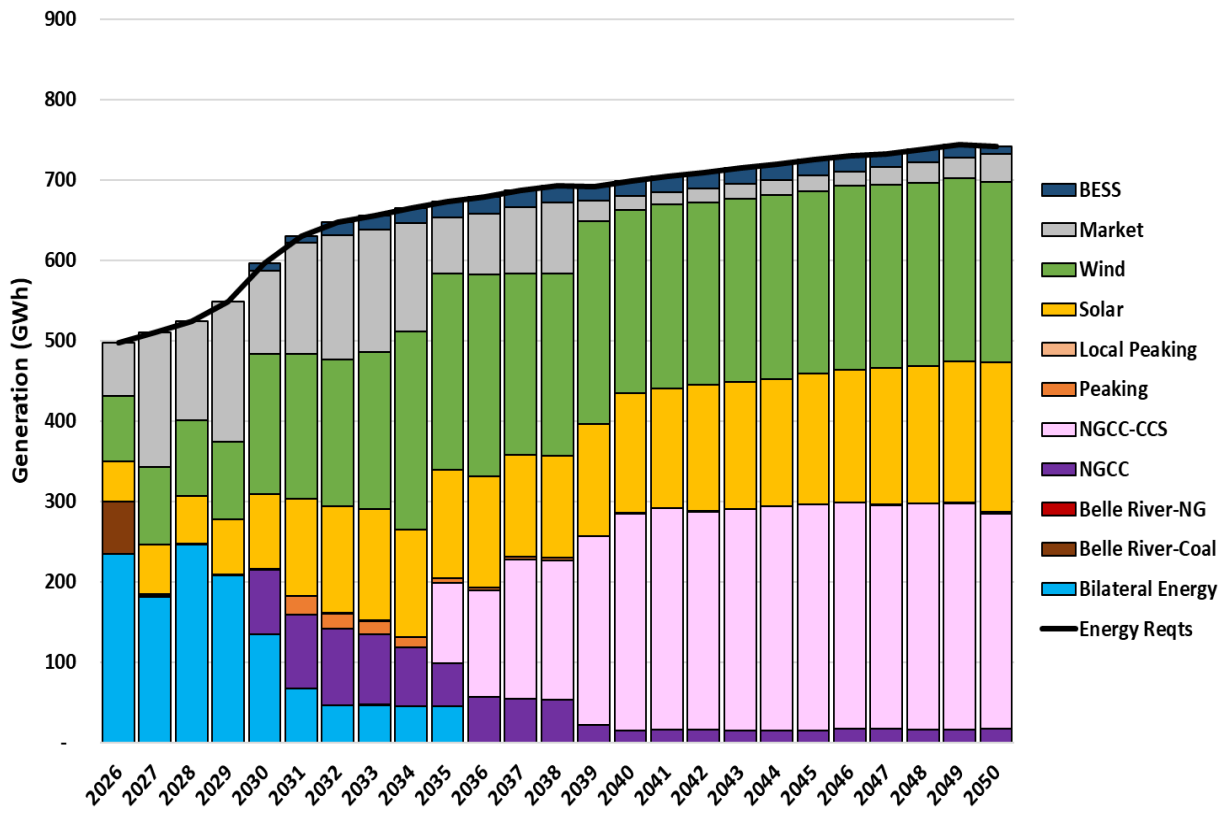
Power Supply Portfolio

Generation – Economically Optimized Strategy

Scenario: Business-As-Usual



Scenario: PA 235



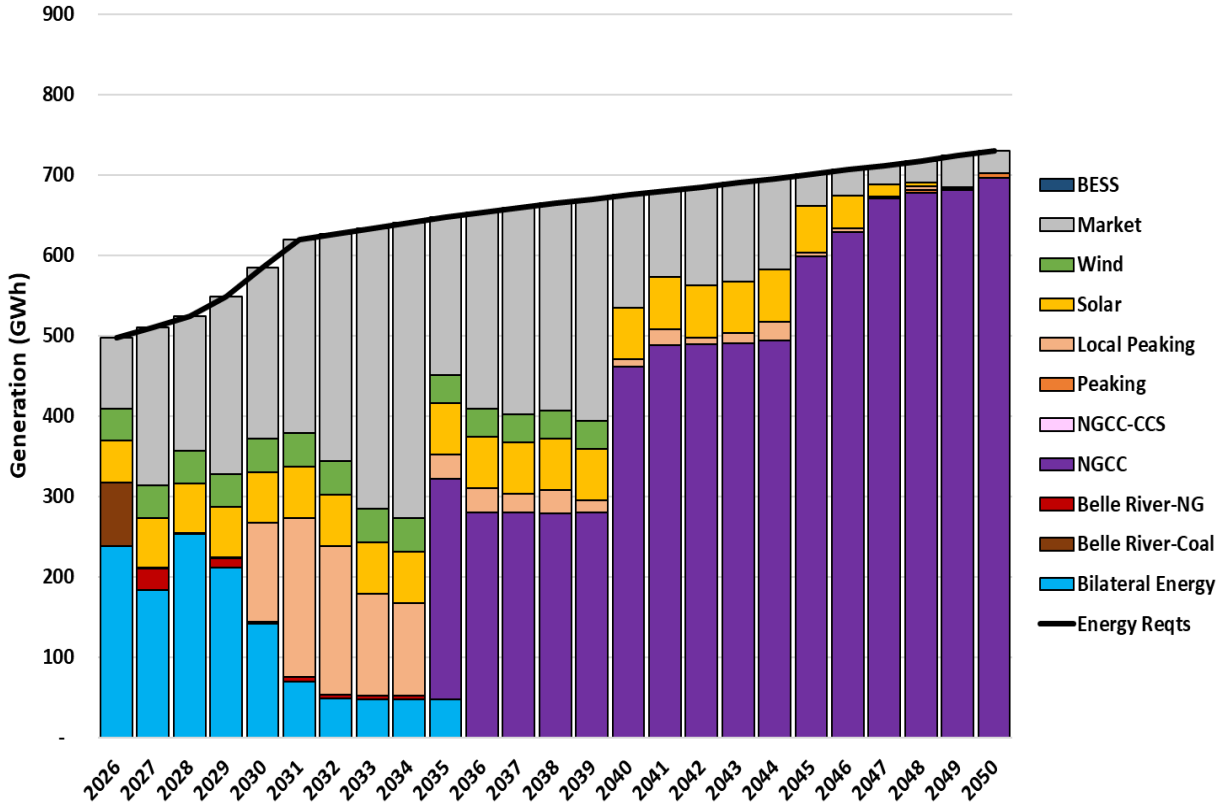
Notes:

- *See Slide 70 for a glossary of defined terms*

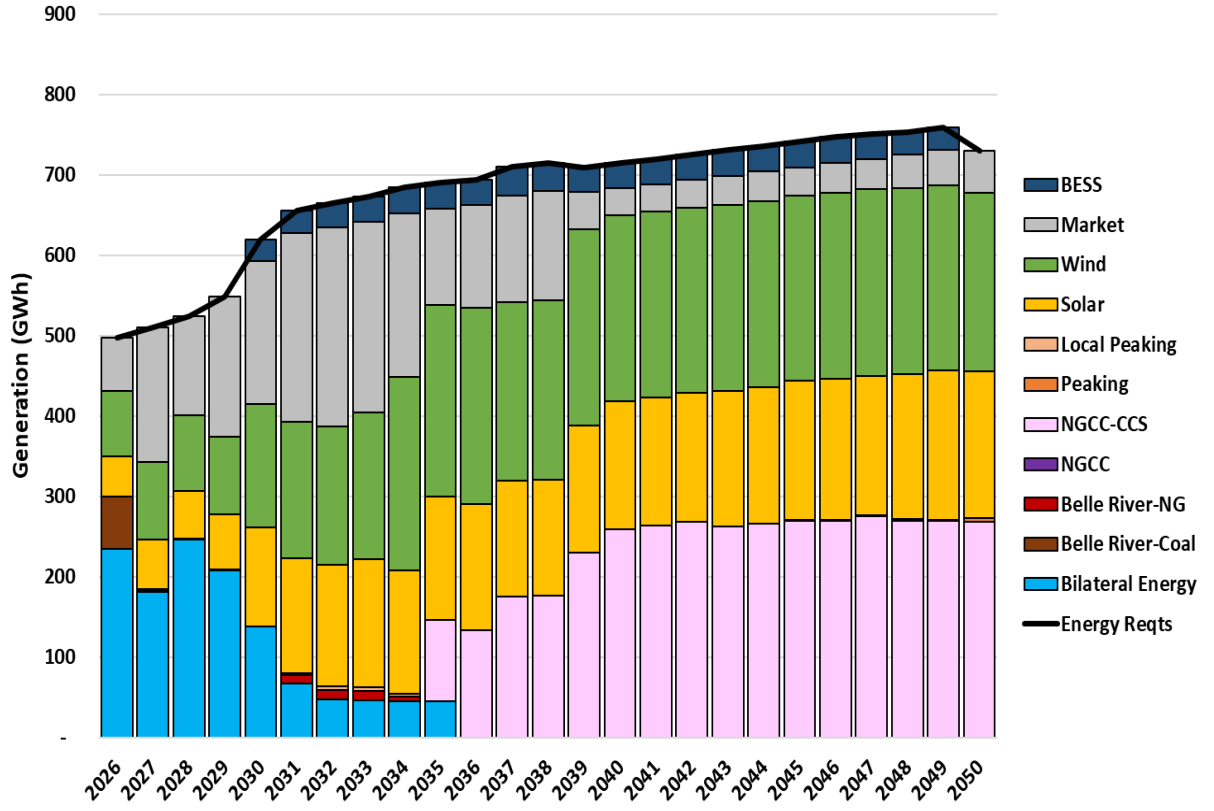
Power Supply Portfolio

Generation – Large Units Available 2035 Strategy

Scenario: Business-As-Usual



Scenario: PA 235



ZEELAND Board of Public Works

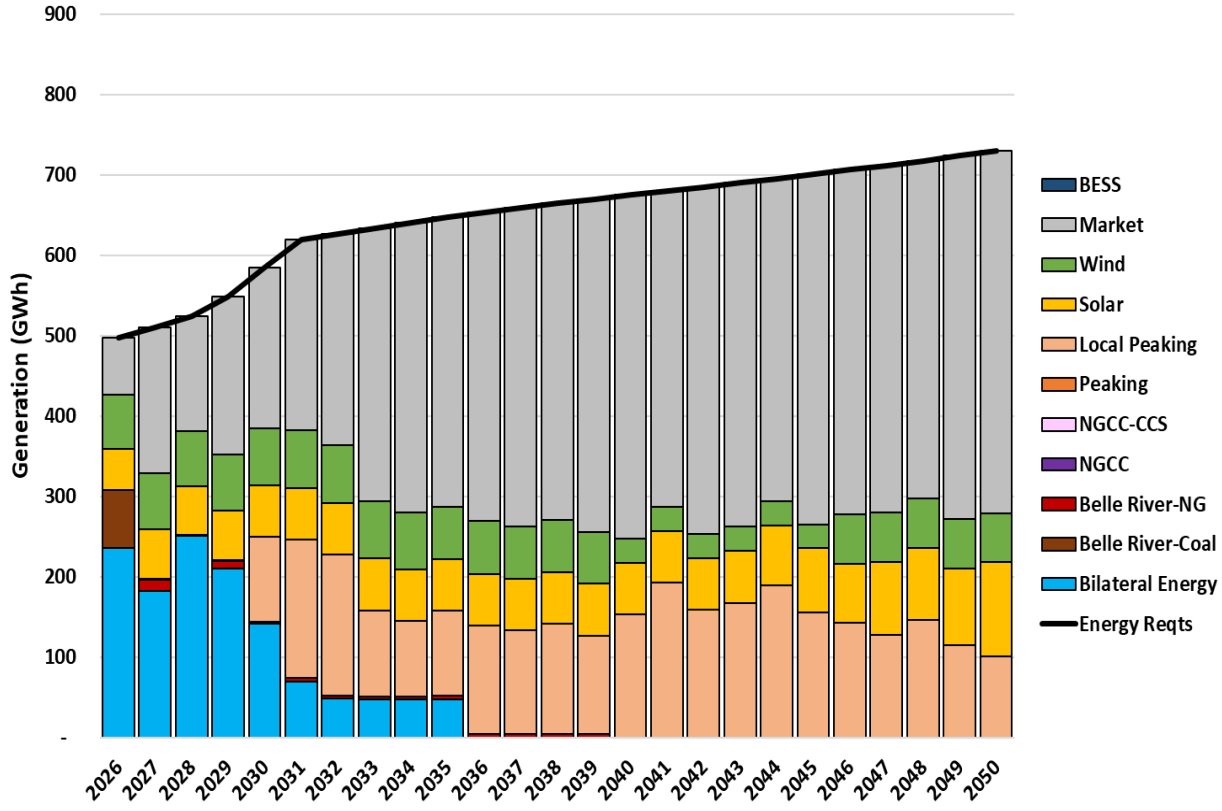
Notes:

- *See Slide 70 for a glossary of defined terms*

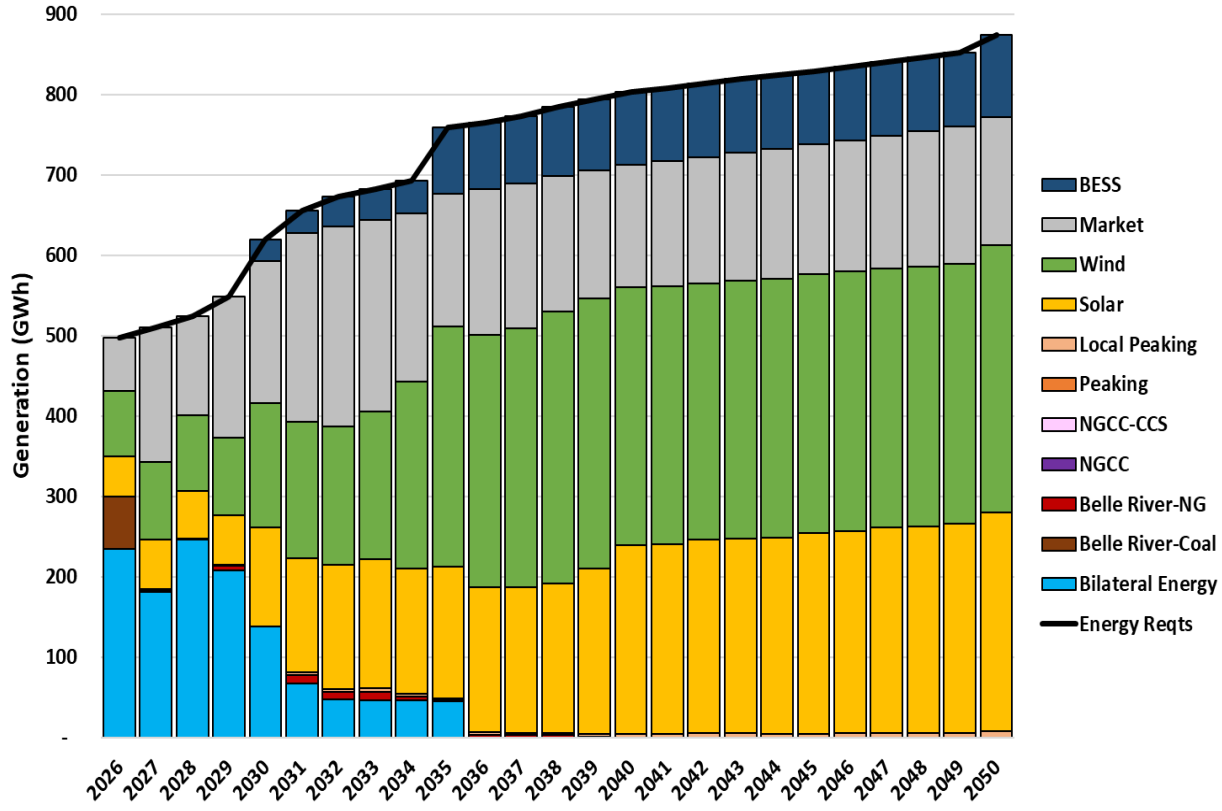
Power Supply Portfolio

Generation – Local Generation Strategy

Scenario: Business-As-Usual



Scenario: PA 235



Notes:

- *See Slide 70 for a glossary of defined terms*

Capacity Mix Table

Zeeland's open capacity position provides the flexibility to effectively pursue viable pathways as future conditions evolve

Resource	Nameplate Capacity Additions (MW)					
	Business-As-Usual			Public Act 235		
	Economically Optimized	Large Units Available 2035	Local Generation	Economically Optimized	Large Units Available 2035	Local Generation
New NGCC						
• 2030-2034	55	-	-	15	-	-
• 2035-2040	30	60	-	-	-	-
• 2041-2050	20	45	-	-	-	-
New NGCC-CCS						
• 2035-2040	-	-	-	65	60	-
• 2041-2050	-	-	-	-	5	-
New NGCT						
• 2030-2034	-	-	-	5	-	-
• 2035-2040	20	-	-	-	-	-
• 2041-2050	40	15	-	20	40	-
New Peaking						
• 2026-2029	-	-	-	-	-	-
• 2030-2040	-	25	65	-	-	-
• 2041-2050	-	-	15	-	-	15
New SMR						
• 2035-2050	-	-	-	-	-	-
New Solar						
• 2026-2029	-	-	-	5	5	-
• 2030-2040	-	-	-	45	50	115
• 2041-2050	-	-	55	55	50	60
New BESS						
• 2026-2030	-	-	-	5	20	20
• 2031-2040	-	-	-	5	-	30
• 2041-2050	-	-	-	(5)	(20)	5
New Wind						
• 2026-2030	-	-	10	50	40	40
• 2031-2040	-	-	-	30	40	85
• 2041-2050	-	-	10	-	-	5

ZEELAND Board of Public Works

Notes:

- *See Slide 70 for a glossary of defined terms*

Capacity Mix Table

Zeeland's open capacity position provides the flexibility to effectively pursue viable pathways as future conditions evolve

- Participation in larger CC units has value, provided the CC is equipped with CCS under PA 235

Resource	Nameplate Capacity Additions (MW)					
	Business-As-Usual			Public Act 235		
	Economically Optimized	Large Units Available 2035	Local Generation	Economically Optimized	Large Units Available 2035	Local Generation
New NGCC						
• 2030-2034	55	-	-	15	-	-
• 2035-2040	30	60	-	-	-	-
• 2041-2050	20	45	-	-	-	-
New NGCC-CCS						
• 2035-2040	-	-	-	65	60	-
• 2041-2050	-	-	-	-	5	-
New NGCT						
• 2030-2034	-	-	-	5	-	-
• 2035-2040	20	-	-	-	-	-
• 2041-2050	40	15	-	20	40	-
New Peaking						
• 2026-2029	-	-	-	-	-	-
• 2030-2040	-	25	65	-	-	-
• 2041-2050	-	-	15	-	-	15
New SMR						
• 2035-2050	-	-	-	-	-	-
New Solar						
• 2026-2029	-	-	-	5	5	-
• 2030-2040	-	-	-	45	50	115
• 2041-2050	-	-	55	55	50	60
New BESS						
• 2026-2030	-	-	-	5	20	20
• 2031-2040	-	-	-	5	-	30
• 2041-2050	-	-	-	(5)	(20)	5
New Wind						
• 2026-2030	-	-	10	50	40	40
• 2031-2040	-	-	-	30	40	85
• 2041-2050	-	-	10	-	-	5

Notes:

- *See Slide 70 for a glossary of defined terms*

Capacity Mix Table

Zeeland's open capacity position provides the flexibility to effectively pursue viable pathways as future conditions evolve

- Participation in larger CC units has value, provided the CC is equipped with CCS under PA 235
- Local-only strategies rely more heavily on renewables and peaking resources

Resource	Nameplate Capacity Additions (MW)					
	Business-As-Usual			Public Act 235		
	Economically Optimized	Large Units Available 2035	Local Generation	Economically Optimized	Large Units Available 2035	Local Generation
New NGCC						
• 2030-2034	55	-	-	15	-	-
• 2035-2040	30	60	-	-	-	-
• 2041-2050	20	45	-	-	-	-
New NGCC-CCS						
• 2035-2040	-	-	-	65	60	-
• 2041-2050	-	-	-	-	5	-
New NGCT						
• 2030-2034	-	-	-	5	-	-
• 2035-2040	20	-	-	-	-	-
• 2041-2050	40	15	-	20	40	-
New Peaking						
• 2026-2029	-	-	-	-	-	-
• 2030-2040	-	25	65	-	-	-
• 2041-2050	-	-	15	-	-	15
New SMR						
• 2035-2050	-	-	-	-	-	-
New Solar						
• 2026-2029	-	-	-	5	5	-
• 2030-2040	-	-	-	45	50	115
• 2041-2050	-	-	55	55	50	60
New BESS						
• 2026-2030	-	-	-	5	20	20
• 2031-2040	-	-	-	5	-	30
• 2041-2050	-	-	-	(5)	(20)	5
New Wind						
• 2026-2030	-	-	10	50	40	40
• 2031-2040	-	-	-	30	40	85
• 2041-2050	-	-	10	-	-	5

Notes:
- *See Slide 70 for a glossary of defined terms*

Capacity Mix Table

Zeeland's open capacity position provides the flexibility to effectively pursue viable pathways as future conditions evolve

- Participation in larger CC units has value, provided the CC is equipped with CCS under PA 235
- Local-only strategies rely more heavily on renewables and peaking resources
- Local peaking generation is not selected in any portfolio prior to 2030

Resource	Nameplate Capacity Additions (MW)					
	Business-As-Usual			Public Act 235		
	Economically Optimized	Large Units Available 2035	Local Generation	Economically Optimized	Large Units Available 2035	Local Generation
New NGCC						
• 2030-2034	55	-	-	15	-	-
• 2035-2040	30	60	-	-	-	-
• 2041-2050	20	45	-	-	-	-
New NGCC-CCS						
• 2035-2040	-	-	-	65	60	-
• 2041-2050	-	-	-	-	5	-
New NGCT						
• 2030-2034	-	-	-	5	-	-
• 2035-2040	20	-	-	-	-	-
• 2041-2050	40	15	-	20	40	-
New Peaking						
• 2026-2029	-	-	-	-	-	-
• 2030-2040	-	25	65	-	-	-
• 2041-2050	-	-	15	-	-	15
New SMR						
• 2035-2050	-	-	-	-	-	-
New Solar						
• 2026-2029	-	-	-	5	5	-
• 2030-2040	-	-	-	45	50	115
• 2041-2050	-	-	55	55	50	60
New BESS						
• 2026-2030	-	-	-	5	20	20
• 2031-2040	-	-	-	5	-	30
• 2041-2050	-	-	-	(5)	(20)	5
New Wind						
• 2026-2030	-	-	10	50	40	40
• 2031-2040	-	-	-	30	40	85
• 2041-2050	-	-	10	-	-	5

Notes:
- *See Slide 70 for a glossary of defined terms*

Capacity Mix Table

Zeeland's open capacity position provides the flexibility to effectively pursue viable pathways as future conditions evolve

- Participation in larger CC units has value, provided the CC is equipped with CCS under PA 235
- Local-only strategies rely more heavily on renewables and peaking resources
- Local peaking generation is not selected in any portfolio prior to 2030
- New renewable resources are not a focus under BAU

Resource	Nameplate Capacity Additions (MW)					
	Business-As-Usual			Public Act 235		
	Economically Optimized	Large Units Available 2035	Local Generation	Economically Optimized	Large Units Available 2035	Local Generation
New NGCC						
• 2030-2034	55	-	-	15	-	-
• 2035-2040	30	60	-	-	-	-
• 2041-2050	20	45	-	-	-	-
New NGCC-CCS						
• 2035-2040	-	-	-	65	60	-
• 2041-2050	-	-	-	-	5	-
New NGCT						
• 2030-2034	-	-	-	5	-	-
• 2035-2040	20	-	-	-	-	-
• 2041-2050	40	15	-	20	40	-
New Peaking						
• 2026-2029	-	-	-	-	-	-
• 2030-2040	-	25	65	-	-	-
• 2041-2050	-	-	15	-	-	15
New SMR						
• 2035-2050	-	-	-	-	-	-
New Solar						
• 2026-2029	-	-	-	5	5	-
• 2030-2040	-	-	-	45	50	115
• 2041-2050	-	-	55	55	50	60
New BESS						
• 2026-2030	-	-	-	5	20	20
• 2031-2040	-	-	-	5	-	30
• 2041-2050	-	-	-	(5)	(20)	5
New Wind						
• 2026-2030	-	-	10	50	40	40
• 2031-2040	-	-	-	30	40	85
• 2041-2050	-	-	10	-	-	5

Notes:
- *See Slide 70 for a glossary of defined terms*

Capacity Mix Table

Zeeland's open capacity position provides the flexibility to effectively pursue viable pathways as future conditions evolve

- Participation in larger CC units has value, provided the CC is equipped with CCS under PA 235
- Local-only strategies rely more heavily on renewables and peaking resources
- Local peaking generation is not selected in any portfolio prior to 2030
- New renewable resources are not a focus under BAU
- Wind is showing as the more economical renewable resource option in the near-term

Resource	Nameplate Capacity Additions (MW)					
	Business-As-Usual			Public Act 235		
	Economically Optimized	Large Units Available 2035	Local Generation	Economically Optimized	Large Units Available 2035	Local Generation
New NGCC						
• 2030-2034	55	-	-	15	-	-
• 2035-2040	30	60	-	-	-	-
• 2041-2050	20	45	-	-	-	-
New NGCC-CCS						
• 2035-2040	-	-	-	65	60	-
• 2041-2050	-	-	-	-	5	-
New NGCT						
• 2030-2034	-	-	-	5	-	-
• 2035-2040	20	-	-	-	-	-
• 2041-2050	40	15	-	20	40	-
New Peaking						
• 2026-2029	-	-	-	-	-	-
• 2030-2040	-	25	65	-	-	-
• 2041-2050	-	-	15	-	-	15
New SMR						
• 2035-2050	-	-	-	-	-	-
New Solar						
• 2026-2029	-	-	-	5	5	-
• 2030-2040	-	-	-	45	50	115
• 2041-2050	-	-	55	55	50	60
New BESS						
• 2026-2030	-	-	-	5	20	20
• 2031-2040	-	-	-	5	-	30
• 2041-2050	-	-	-	(5)	(20)	5
New Wind						
• 2026-2030	-	-	10	50	40	40
• 2031-2040	-	-	-	30	40	85
• 2041-2050	-	-	10	-	-	5

Notes:
- *See Slide 70 for a glossary of defined terms*

Portfolio Evaluation Considerations

Reliability	• Resource portfolio must reliably serve load requirements
Affordability	• Identify the most economic resource portfolios
Control of Resource Participation	• Local control vs. reliance on other entities for available resource options
Portfolio Resiliency	• Fuel price resiliency • Load growth responsiveness
Renewable Energy & Decarbonization	• Resource portfolio carbon dioxide (CO_2) emissions
Regulatory Flexibility	• Regulation of Public Act 235

Portfolio Evaluation
Economic Evaluation

Power supply portfolios that meet the requirements of Public Act 235 adds roughly 30%-40% to power costs over the study period

Levelized Cost (2026 $/MWh, 2026-2050)	BAU	PA 235	Incremental Cost ($/MWh)
Economically Optimized	$70.04	$97.75	$27.71
Large Units Available 2035	$76.16	$97.85	$21.69
Local Generation	$85.41	$109.06	$23.65

Levelized Costs are inclusive of variable operating costs and incremental capital and fixed costs to meet load requirements over the 2026-2050 period.

Portfolio Evaluation Ranking Table

Key:
1=Highest Ranked
3=Lowest Ranked

Identify the most robust Portfolio Strategy within each respective Scenario

Portfolios	Reliability	Affordability	Control of Resource Particpation	Fuel Cost Resiliency	Load Growth Response	CO2 Emissions	Weighted Average
Business-As-Usual							
Economically Optimized	1	1	3	3	1	3	1.6
Large Units Available 2035	1	2	2	2	2	1	1.7
Local Generation	1	3	1	1	3	2	1.9
MI Public Act 235							
Economically Optimized	1	1	3	3	1	3	1.6
Large Units Available 2035	1	2	2	2	2	2	1.7
Local Generation	1	3	1	1	3	1	1.8
Weights	30.0%	30.0%	15.0%	10.0%	10.0%	5.0%	

Economically Optimized

- The most robust portfolio
- Indicates that Zeeland should prioritize participating in large units as early as possible

Large Units Available 2035

- Indicates that Zeeland should make near-term decisions that preserve the ability to participate in a future large resource

Local Generation

- Presents the most control of future resources decisions, but is the highest cost portfolio and is not responsive to changes in load growth

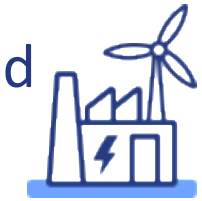
Portfolio Evaluation
Regulatory Uncertainty for PA 235

What is the certainty that PA 235 will carry through as currently written?

- Although Michigan Public Act 235 took effect in 2024, several aspects of regulatory compliance remain unclear, and the phase-out of IRA tax credits introduce additional considerations

Evaluating the regulatory uncertainty though a “What-if” analysis

- Zeeland’s open capacity position provides the flexibility to adjust future strategy as regulatory and economic conditions shift
- Early decisions may have long-term implications if the future regulatory environment differs from current expectations
- The “What-if” analysis helps isolate how a portfolio strategy is able to respond to changes in the assumed future regulatory environment



Portfolio Evaluation
Regulatory Uncertainty for PA 235

	Portfolio Response to Regulatory Uncertainty
What-If Scenario: **Early renewable additions but PA 235 is altered** • **Initial Decision** – Aggressively pursue renewables in the near-term in preparation of PA 235 requirements • **Regulatory Future** - PA 235 is altered • **Portfolio Flexibility** - What are the implications of that initial decision?	**Higher Incremental Cost**
What-If Scenario: **Early local RICE resources built but PA 235 is fully enforced** • **Initial Decision** - Delay decision on renewables and pursue local RICE in the near-term to meet capacity needs • **Regulatory Future** - PA 235 is fully enforced • **Portfolio Flexibility** - What are the implications of the initial decision?	**Lower Incremental Cost**

Observations and Conclusions

- Zeeland's open capacity position provides the flexibility to shift strategy as economics and policy evolve
- Delaying the decision to aggressively pursue renewable resources to meet PA 235 presents the least incremental cost exposure
  - Considering the uncertainty in how PA 235 may ultimately be implemented, Zeeland should structure its portfolio to provide flexibility and mitigate cost exposure
- Participation in large generating units offers strong value
  - Prioritize participating in large generating units as early as possible
  - Make near-term decisions that preserve the ability to participate in a future large resource
- Reliance on only local generation is the higher cost portfolio strategy
- Power supply portfolios that meet the requirements of Public Act 235 adds roughly 30% - 40% to power costs over the study period

POWER SUPPLY
STRATEGIC PLANNING

Michigan Public Power Agency

- Power Through Joint Action -

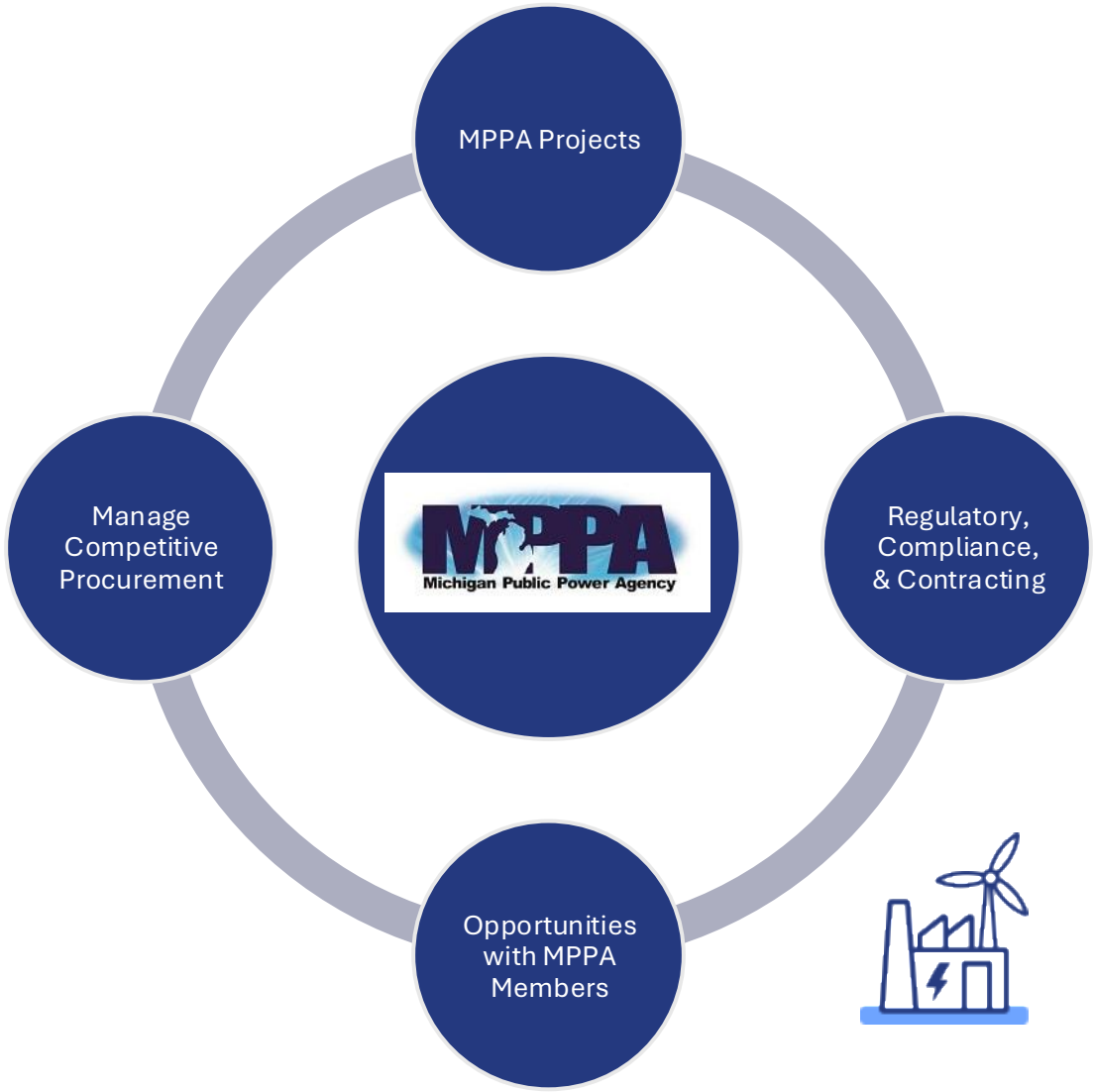
Steve Donkersloot

Director of Strategic Energy Resources & Services

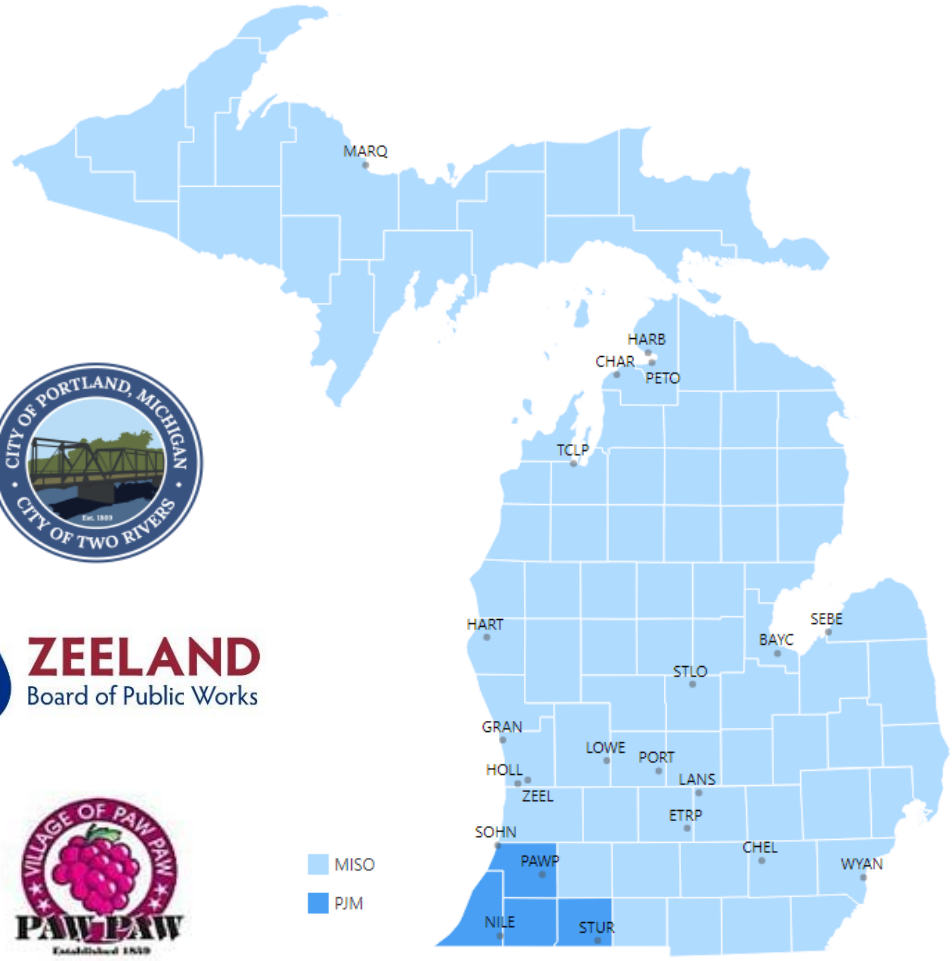
Michigan Public Power Agency

Michigan Public Power Agency (MPPA)

- Founded in 1978, MPPA is a not-for-profit project based joint action agency that works collectively with municipally-owned utilities to share energy supply and related service.
- MPPA is comprised of 22 Full Members (including Zeeland) and 12 Associate Members. MPPA's Full Members account for 85% of the public power electric load in the State of Michigan.
- MPPA provides economies (scale & scope), expertise, and shared development opportunities that individual municipal utilities cannot easily achieve alone.
- Translates into opportunities for Members to lower costs, reduce risk, leverage expertise, and facilitate implementation.
- Most Full Members rely on MPPA to manage and/or make recommendations for their power supply portfolio (energy & capacity, short and long-term).



MPPA
Michigan Public Power Agency



Resource Adequacy Focused…But Why?

Forecasted Capacity Deficit & Associated Risks:

- **Capacity Shortfall:** MPPA Members are forecasted to face a ~215 MW capacity deficit by June 1, 2030, increasing annually thereafter.
- **Risk of Inaction:** Delaying action exposes MPPA and its Members to financial, reliability, regulatory/compliance, and reputational risks.
- **Need to Act Now:** Addressing this shortfall now is essential given the long lead times and complexity of developing power supply resources.
  - **Phased Strategy:** MPPA recommends an iterative approach and layering in power supply resources over time. Addressing the forecasted needs of Members for a reasonable period beyond 2030 - but not too far out into the future - will allow for flexibility in future power supply investments and/or contracts.

Market Conditions:

- The bilateral capacity market, historically a primary option for most Members, is fragile (i.e., few sellers, low supply, price volatility) and costs have escalated. This could be further challenged by:
  - Retirements of large, baseload resources (Campbell, several Monroe units, etc.).
  - Load growth (potential data centers, electrification, etc.).

Resource Adequacy Focused…But Why?

Regional Transmission Operator ("RTO") Rule Changes:

- MISO and PJM's new power supply resource capacity accreditation rules are creating greater uncertainty (particularly with renewable resources) regarding the amount of reliability these resources will provide in the future.

Transmission-Connected Project Development Challenges:

- Building new transmission-connected generation is increasingly difficult
  - Lengthy RTO queues
  - Expensive studies
  - Transmission Upgrades
  - Permitting challenges
  - NIMBYism
  - EPC cost and availability

Addressing Resource Adequacy Head On

In 2025, MPPA initiated a multi-year, multi-phase resource adequacy objective:

- Phase I - Assessment of individual Members' **interest and capability to install behind-the-meter generation ("BTMG")** – natural gas and/or Battery Energy Storage Systems ("BESS") – within their service territories, connected to their distribution system.

This objective is essential to:

- Help address the forecasted **capacity deficit** starting in Planning Year/Delivery Year ("PY" or "DY") 2030/2031.
- Meet **PA 341's Capacity Compliance Demonstration** Requirements, for PY 30/31, in March 2027
- Address (mitigate or eliminate) risks previous highlighted.

MPPA's Position:

- Investments **in and/or contracts for new thermal and BESS power supply capacity** resources will be **required** to help meet our future resource adequacy needs and compliance requirements.
- **Locating power supply capacity** resources in our **Member communities** is a logical strategy that leverages our assets & control.

MPPA BTMG Project Timeline

- **Phase I (2025): Member Interest & Capability in BTMG Projects**
  - Identified **numerous sites** across Member communities with a potential capability to install **over 200 MWs**
- **Phase 2 (2026): BTMG Projects & Power Supply Portfolio Analysis; BTMG Project Ownership Structure; Member Engagement, Feedback & Direction**
  - Evaluated Technologies and Vendors for potential BTMG Projects (RFI)
  - Currently Economic Modeling & Power Supply Resource Fit and Portfolio Analysis
- **Phase 3 (2027): BTMG Projects Approval and Development Implementation**
- **Phase 4 (2028-2030): BTMG Project Development and Commercialization**

Next Steps: 2026 / 2027

Economic modeling of power supply resources

MPPA Project recommendation

Additional BTMG project due diligence and analysis

MPPA shares formal BTMG project recommendation with Zeeland

June | July | August | September | October | November | December | January | February

Zeeland finalizes ownership structure preference

Zeeland feedback & "soft commitment"

Zeeland decides whether to proceed with a local resource.

Ownership Structure Comparison

Locally/Member-Owned

Member is sole owner, financier, and off-taker of the local generation project.

MPPA-Owned

MPPA owns and finances all sites, rolled into one master Project; Members hold entitlement-percentage capacity.

Joint-Owned (Tenants-In-Common)

Member and MPPA each own a percentage share of the local project; each finances its own stake.

Ownership Structure Comparison

MEMBER		MPPA		JOINT	
PRO	CON	PRO	CON	PRO	CON
■ Full local ownership and equity ■ All economic benefits retained ■ Direct decision-making authority ■ Simplest governance, no co-owner ■ Strongest expression of local control	■ Member carries all debt alone ■ Higher individual borrowing costs ■ Single-site concentration risk ■ Smaller achievable project scale ■ Forfeits volume equipment discount ■ No fleet-wide long-term services agreement (LTSA) savings ■ Higher overall per-MW cost	■ Lower borrowing costs (~25–75 bps) ■ Pooled procurement savings (5–20%) ■ Lower O&M costs (pooled) ■ Diversified capacity across sites ■ Single coordinated development workstream ■ Larger local resource feasible ■ Enables other public power participation	■ No direct equity ownership ■ Local control by contract, not deed ■ Reduced day-to-day autonomy ■ Coordination with MPPA on non-economic operation ■ Requires trust in MPPA governance ■ May conflict with 100% owned narrative	■ Direct partial equity in asset ■ Local control via deed and contract ■ Larger local resource feasible ■ Captures OEM / LTSA pooling benefits ■ Some portfolio diversification possible	■ Higher administrative complexity ■ Higher A&G costs, both parties ■ Separate debt issuance per owner ■ Higher borrowing costs ■ Member-specific tax/accounting issues ■ Co-owner consent delays decisions

Michigan Energy Employment Act of 1976 (Act 448)

Act 448 is the legislation that created MPPA.

Per Act 448, for MPPA to stand up an Asset Project, it must provide better economics and lower risks compared to a similar Member-Owned project. This will be realized in at least the following 11 areas:

Economies of Scale in…

- Analysis & Assessment
- Development
- Equipment
- Construction
- Operations and Maintenance
- Administration

Reduced Risk from…

- Unit Contingency / Forced Outage
- Fuel Supply
- Electric Delivery System
- Economic performance
- Location / Community

MPPA-Owned Structure

The Joint Action Test:

- The joint-action value of an MPPA-Owned structure is derived from three sources:
  - **Economies of scale** — pooled procurement, standardized equipment, single OEM and long-term service agreements (monitoring, O&M) consolidated financing, shared engineering and legal work.
  - **Risk diversification** — spreading equipment, fuel, regulatory, and operational risk across multiple sites and participants, rather than concentrating it on one site and/or on one Member balance sheet.
  - **Administrative efficiency** — a single project team handling procurement, development, interconnection, environmental permitting, construction, financing, and then O&M.

Bottom Line:

- MPPA ownership allows for participating Members to share in the benefits and risks of all projects. This structure provides for the greater potential value and the minimum amount of risk to Member participants.
- Host Member will still retain control of the project in their community for distribution & transmission planning purposes and for all local reliability events.
- Alternative structures (e.g., individual or joint ownership) can dilute the previously listed benefits and requires a clear assessment of whether the trade-offs add enough value.

Key Questions and Considerations

For Zeeland:

- Will different legal titles (such as a Member Owned Structure) in a particular resource reduce or eliminate one or more of the previously identified 11 benefits?
- If so, what value is being exchanged (i.e., gained) for that detriment?

For MPPA and Zeeland:

- Will a non-MPPA owned structure impair:
  - Optimal participation among and between all Members (including non-host Members)
  - Financing

POWER SUPPLY
STRATEGIC PLANNING

Near-Term Action Plan

Robert Mulder

Power Supply & Market Operations Manager / Utilities Manager Designee

Zeeland Board of Public Works

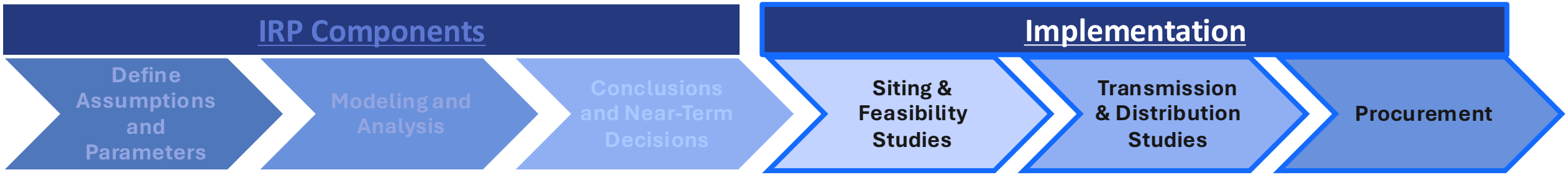
ZEELAND
Board of Public Works

Near-Term Action Plan

Action	Description
Advance Local Generation Site Due Diligence	Continue environmental, permitting, interconnection, fuel supply, and constructability evaluations of potential BPW-owned generation sites and identify additional strategic locations.
Reduce Near-Term Capacity Market Exposure	Pursue interim capacity procurement strategies to mitigate BPW's open capacity position while long-term solutions are evaluated.
Evaluate New Generation Alternatives	Evaluate both locally owned and jointly owned generation resources using lifecycle cost, performance, financing, risk, and portfolio optimization criteria.
Coordinate with Michigan Public Power Agency ("MPPA") Resource Development Initiatives	Maintain active participation in MPPA planning efforts and evaluate opportunities for economies of scale and shared development risk.

MPPA will continue to be a key partner as Zeeland evaluates and develops future energy and capacity opportunities.

IRP & Resource Implementation Processes



Implementation involves various considerations and activities

Siting & Feasibility Studies

- Timing and Type of Resource
- Size of Resource
- Location of Resource
  - Local vs. Off-System
  - Availability of Land
  - Fuel Supply
  - Permitting

Transmission & Distribution Studies

- Ability to Deliver the Power
- Needs for New or Upgraded Power Lines
- Impacts on Grid Reliability and Resiliency

Procurement

- Owned vs. Contracted
- Competitive Solicitation
- Resource Construction / Contract Execution

POWER SUPPLY
STRATEGIC PLANNING

Questions and Discussion

Michigan Public Power Agency

ZEELAND
Board of Public Works

nFront Consulting

In Closing…

Public and Stakeholder Meeting presentations and recordings and the IRP Final Report and Executive Summary are available at:

https://zeelandbpw.com/power-plan/

POWER SUPPLY
STRATEGIC PLANNING

Thank You!

ZEELAND
Board of Public Works

Commonly Used Terms

Term	Definition	Term	Definition
AEO	Annual Energy Outlook	**MW**	Megawatt (1,000 kW)
BESS	Battery Energy Storage System	**MWh**	Megawatt-Hour (1,000 kWh)
BTMG	Behind the Meter Generation	**NG**	Natural Gas
BTU	British Thermal Unit	**PA 235**	Public Act 235 (State of Michigan)
CC	Combined Cycle	**PTC**	Production Tax Credit
CCS	Carbon Capture Sequestration	**PRM**	Planning Reserve Margin
CT	Combustion Turbine	**PPA**	Power Purchase Agreement
DLOL	Direct Loss of Load	**PV**	Photovoltaic
DSM/EE	Demand-Side Management/Energy Efficiency	**PY**	Planning Year
HHV	Higher Heating Value	**RICE**	Reciprocating Internal Combustion Turbine
ITC	Investment Tax Credit	**REC**	Renewable Energy Credit
kW	Kilowatt	**SMR**	Small Modular Reactor
kWh	Kilowatt-Hour	**UCAP**	Unforced Capacity
MISO	Midcontinent Independent System Operator	**Wind**	On-Shore Wind