Integrated Resource Plan
Stakeholder Engagement Meeting Series
Stakeholder Meeting # 2 – June 6, 2023

Welcome

Cantrece Jones
Acuity Design Group

IRP Stakeholder Meeting # 2 Agenda

Review of Stakeholder Meeting # 1

Cantrece Jones, Acuity Design Group Team

GRU and The Energy Authority

Eric Walters, GRU- Interim Chief Sustainability Officer

IRP Variables

Brad Kushner, Acuity Design Group Team

Open Discussion & Next Steps

Cantrece Jones, Acuity Design Group Team

Stakeholder Meeting # 1 Recap

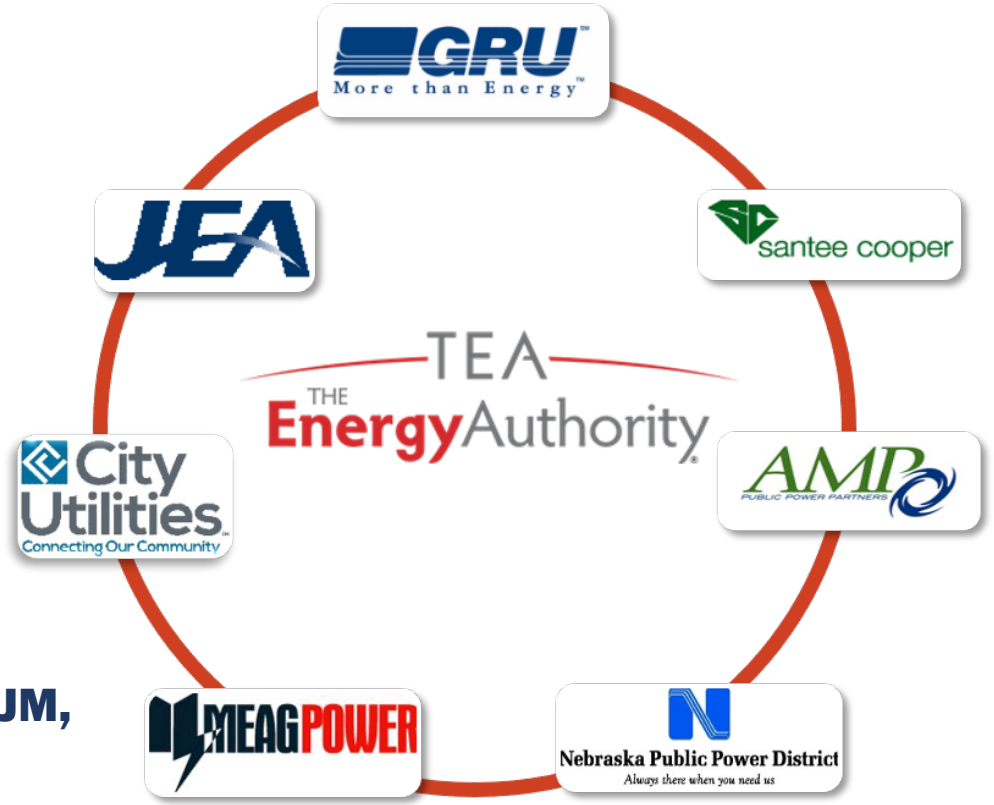
- Stakeholder Meeting #1 Review
- IRP Website Updates
- Our Process
- Questions/Comments

Welcome

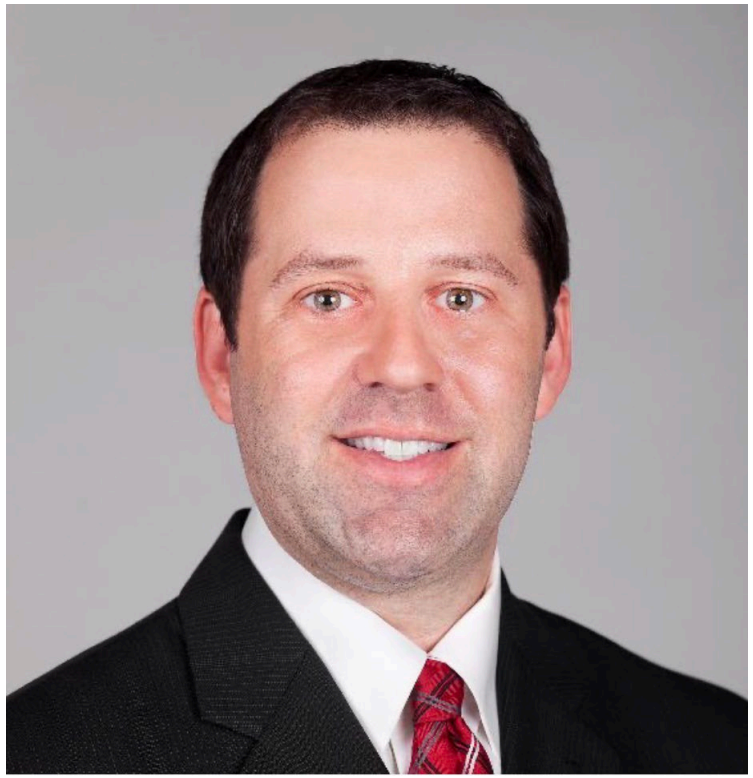
Eric Walters
Interim Chief
Sustainability Officer

GRU and The Energy Authority

- The Energy Authority ("TEA"), is a non-profit entity that works on behalf of public power and other community owned organizations in the power and natural markets
- GRU is one of seven owners in The Energy Authority, joining in 1999
- Tony Cunningham, GRU's General Manager, is a Board member of TEA
- GRU utilizes many of TEA's services, including:
  - Bilateral energy trading
  - Natural gas trading
  - Portfolio management
  - Risk management
  - Advisory services
- TEA has completed over 20 IRPs for utilities operating in PJM, MISO, SPP, CAISO, and the bilateral Southeast and WECC
- TEA worked with GRU to complete its 2016 and 2019 IRP

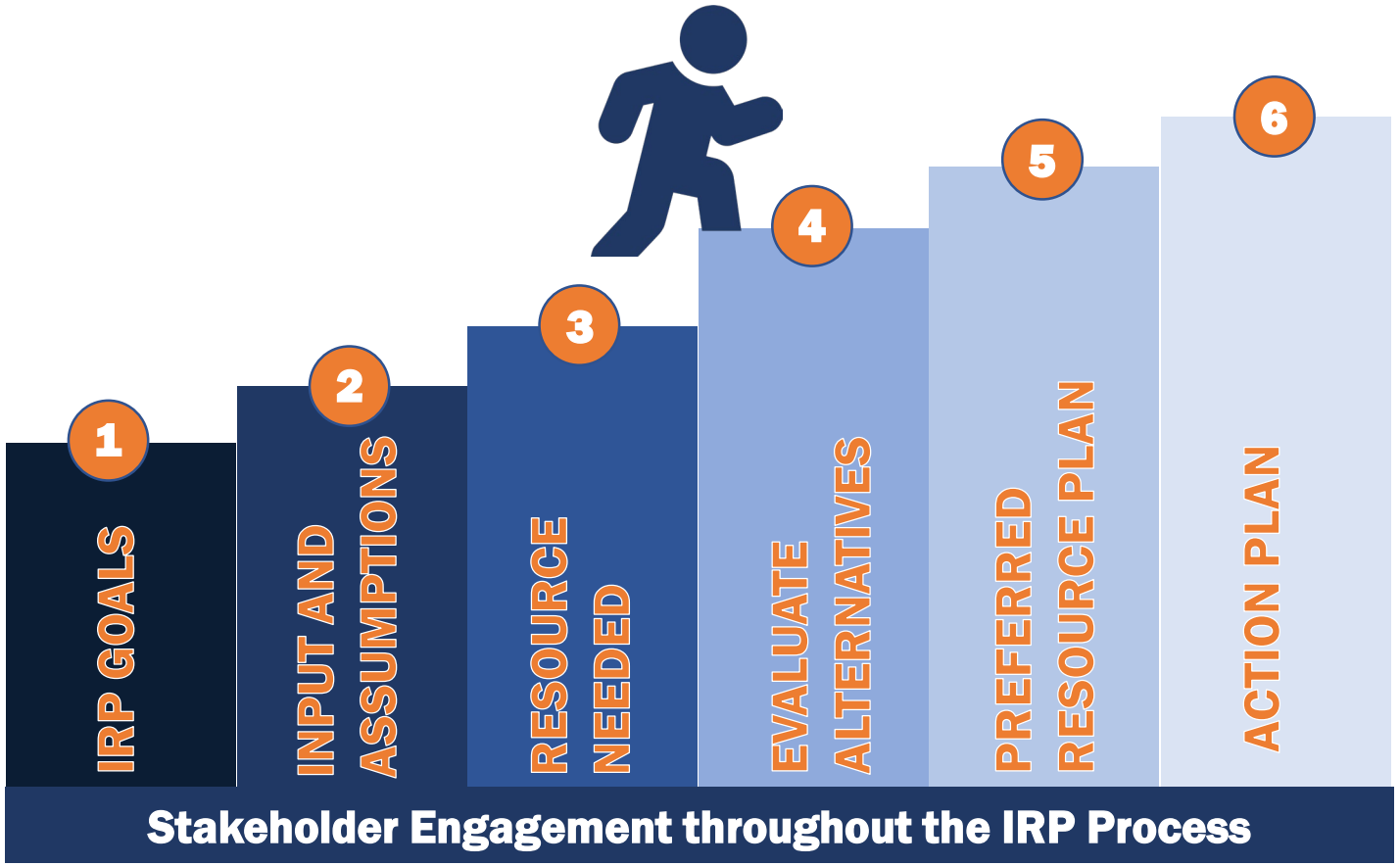


IRP Variables



Brad Kushner
Acuity Design Group

The IRP Process



IRP Variables

- What do we mean by “IRP Variables”
  - Factors that can be quantified
- Examples of IRP Variables
  - Economic Parameters
  - Load Forecast
  - Existing and Planned Resources
  - Need for Capacity
  - Fuel Prices
  - New Supply-Side Resources

Economic Parameters

- **IRP Economic Evaluations Reflect:**
  - **Annual Inflation *(Long Term)* Rate: 2.3%**
  - **Discount Rate: 4.5%**
  - **Tax Exempt Bond Interest Rate: 4.5%**
  - **Finance Period (for Supply-Side Resources): 30 Years**
    - **Nuclear [Small Modular Reactors (SMR)]: 40 Years**
  - **Capital Recovery Factor (CRF):**
    - **30 Years: ~6.5%**
    - **40 Years: ~6%**

Load Forecast

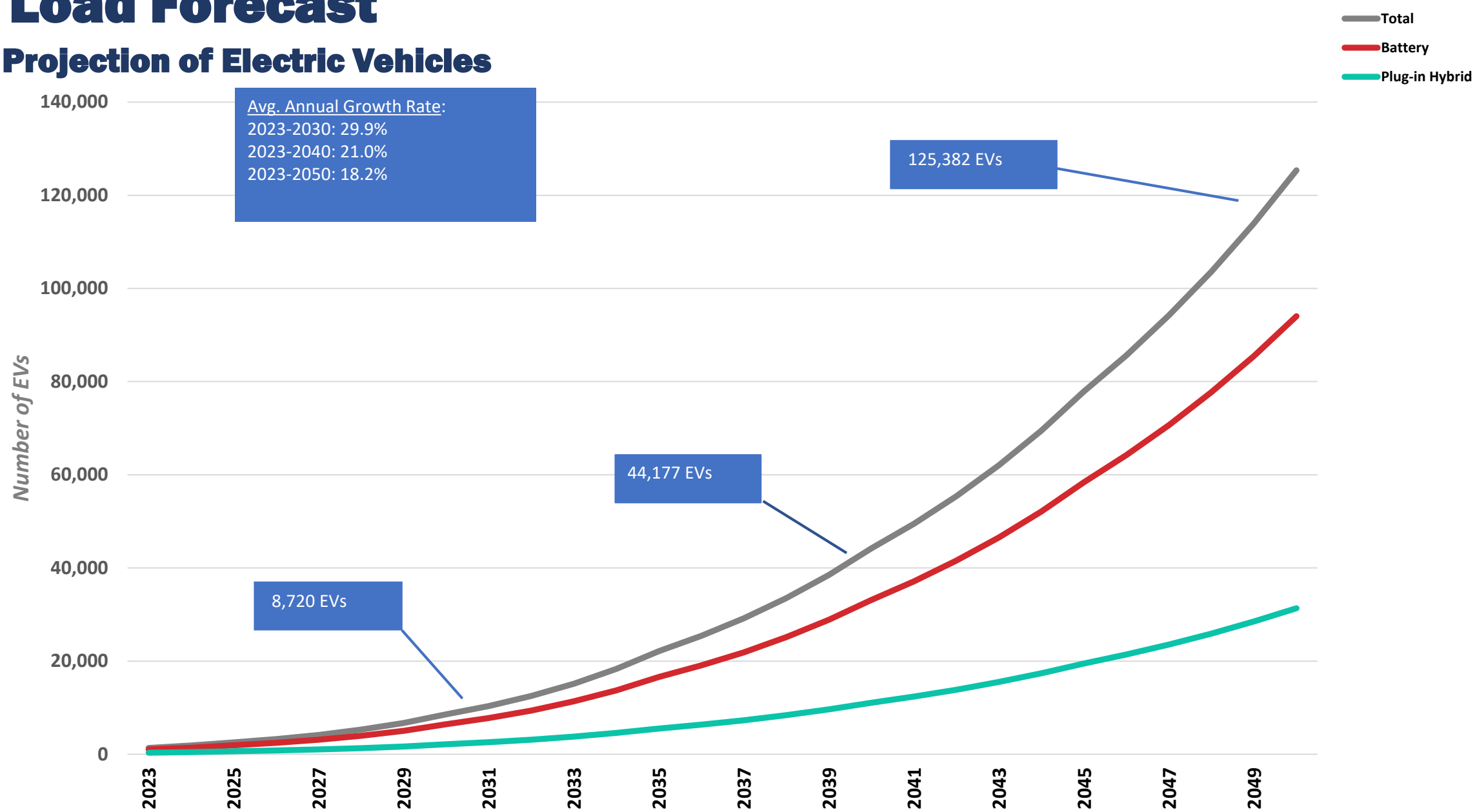
- **Energy and Peak Demand**
  - **Net Energy for Load – GRU's overall energy requirements**
    - **Energy required by GRU's customers each year**
  - **Peak Demand**
    - **Maximum power required to serve GRU's customers for any given period**
  - **Energy and Peak Demand Forecasts:**
    - **Customer Growth**
    - **Electric Vehicles**
    - **Customer-Sited Renewables (Solar Distributed Generation)**
    - **Demand-Side Management/Energy Efficiency/Conservation**

Load Forecast

- **Load Modifiers**
  - **Electric Vehicles (EVs)**
    - Alachua County Department of Motor Vehicles (DMV) data
      - 1,826 EVs as of 1/1/23
    - Assume 75% charged by GRU
      - 1,370 EVs as of 1/1/23
    - S&P Commodity Insights
      - Florida EV load growth
    - EVs reach 8% of total on road vehicles by 2030
    - National Renewable Energy Laboratory (NREL) tool for charging load shape (slow charge)
  - **Solar Distributed Generation**
    - Start with current GRU data
    - Customer growth based on Florida solar distributed power generation forecast from S&P Global Commodity Insights (S&P)
    - Representative solar load shape for NE Florida applied

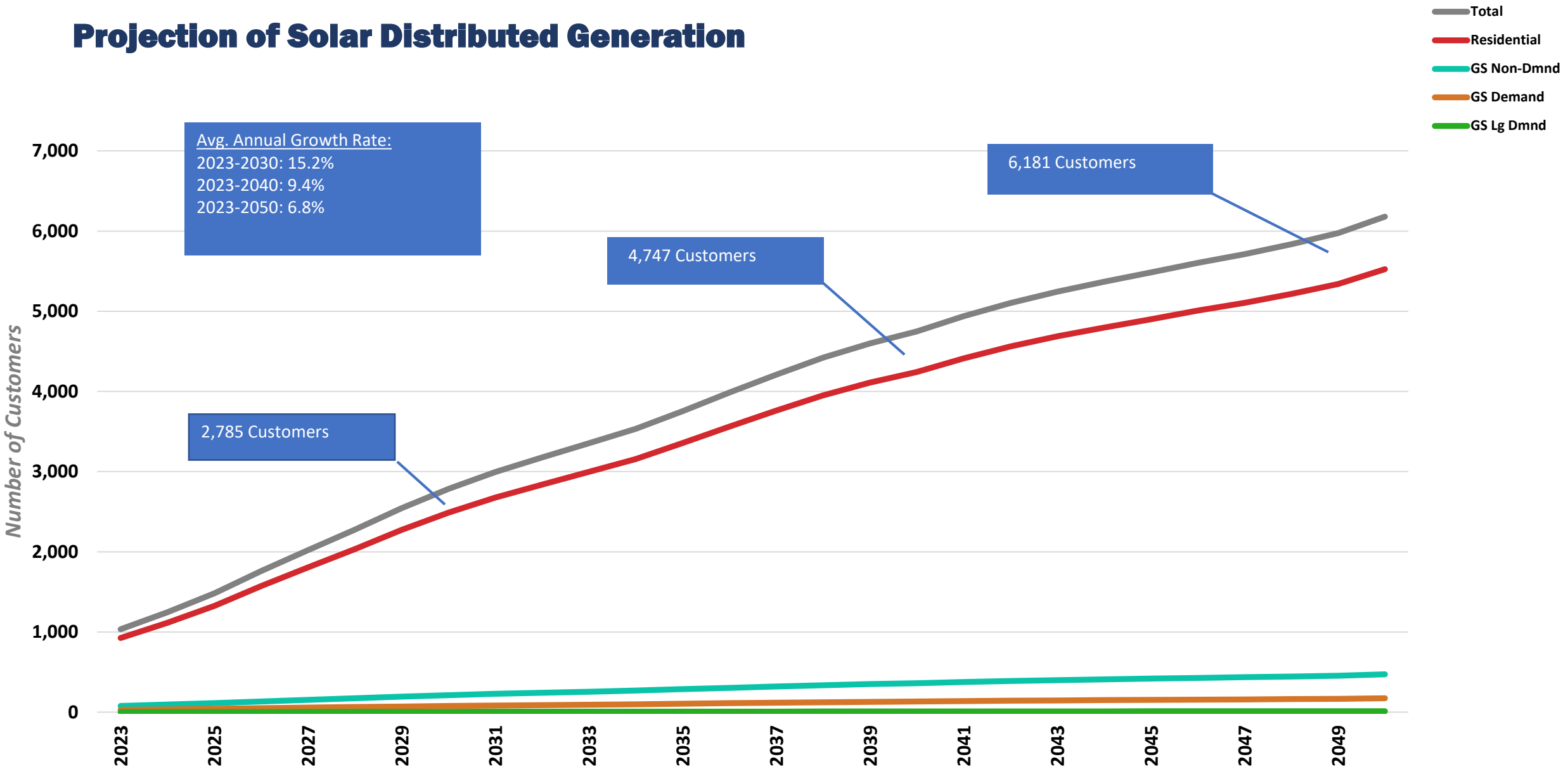
Load Forecast

Projection of Electric Vehicles

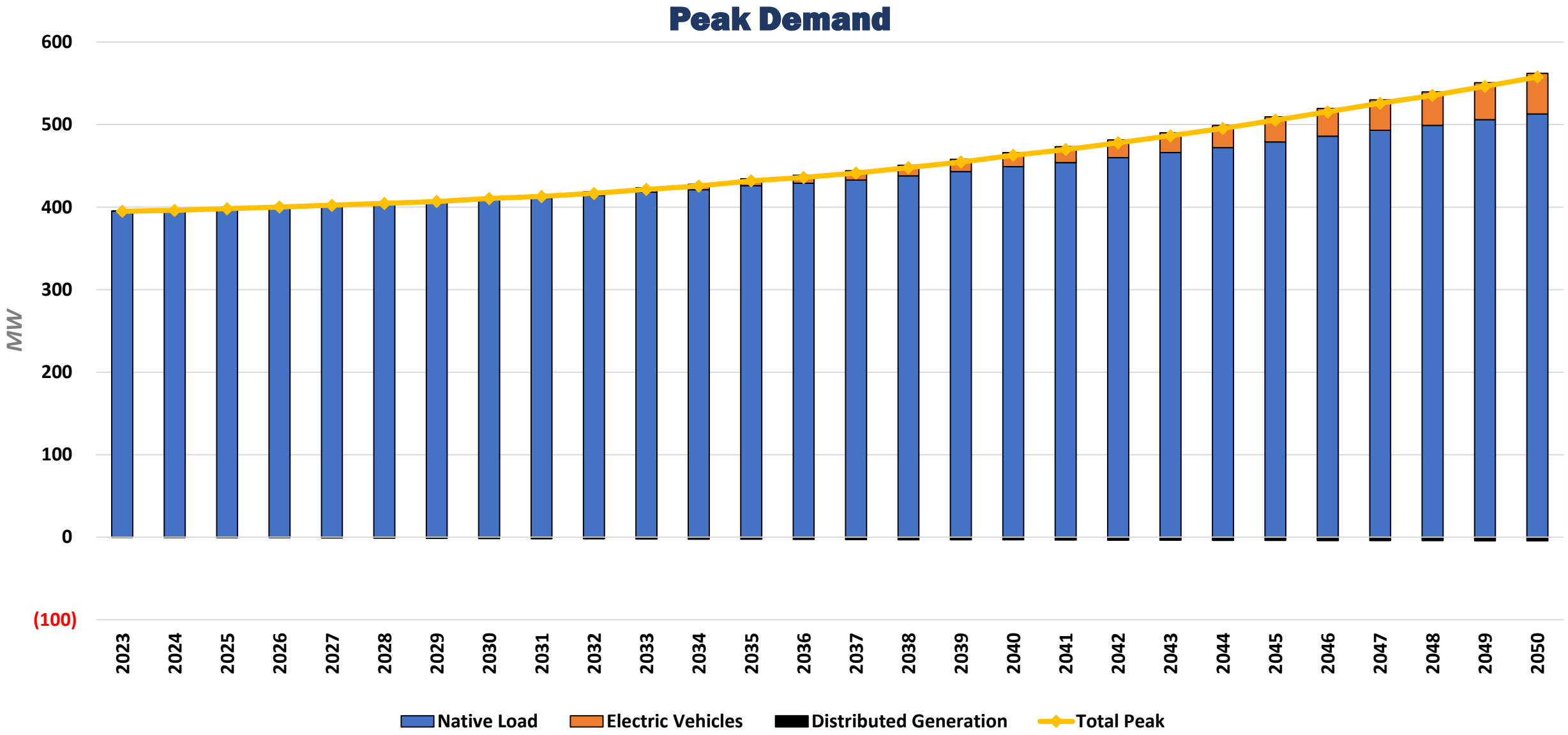


Load Forecast

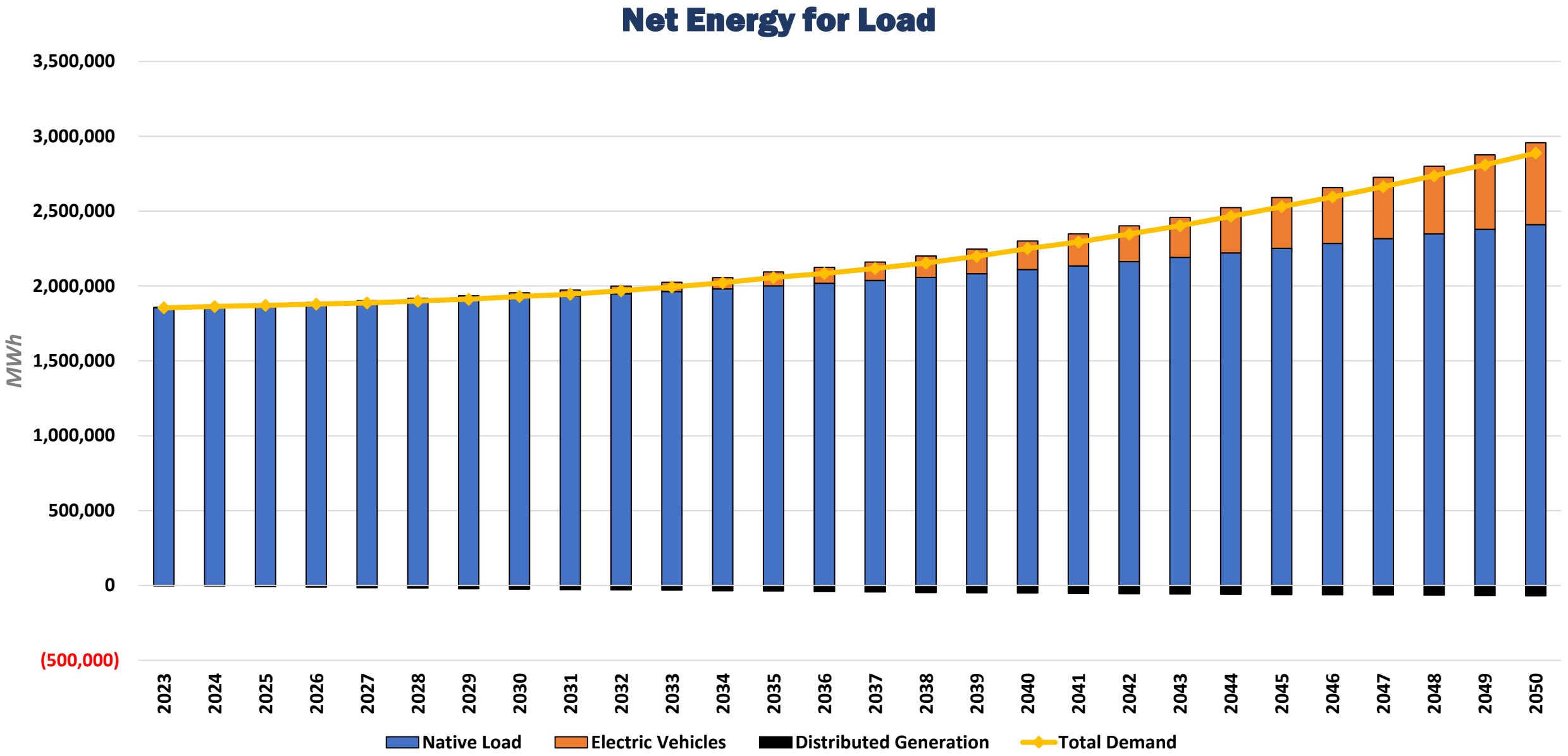
Projection of Solar Distributed Generation



Load Forecast



Load Forecast



Existing and Planned Resources

Plant Name	Unit Number	Primary Fuel Type	In-Service Date	Expected Retirement Date	Contribution to Summer Peak Demand (MW)
J.R. Kelly	Combined Cycle 1	Natural Gas	5/2021	12/2051	112.0
Deerhaven	Steam Turbine 2	Natural Gas	10/1981	12/2031	232.0
Deerhaven	Steam Turbine 1	Natural Gas	8/1972	12/2027	76.0
Deerhaven	Gas Turbine 3	Natural Gas	1/1996	12/2046	71.0
Deerhaven	Gas Turbine 2	Natural Gas	8/1976	12/2026	17.5
Deerhaven	Gas Turbine 1	Natural Gas	7/1976	12/2026	17.5
South Energy Center	Gas Turbine 1	Natural Gas	5/2009	12/2039	3.8
South Energy Center	IC 2	Natural Gas	12/2017	12/2047	7.4
Deerhaven Renewable	Unit 1	Biomass	12/2013	12/2043	103.0
Sand Bluff Solar	Solar	Solar	12/2024	12/2044	41.2

Supply-Side Resources

- GRU Need for Capacity
  - ~140 MW beginning in Summer 2032
  - More than 410 MW by Summer 2047
- New Supply-Side Options Evaluated in IRP
  - Solar PV PPA (Utility Scale)
  - Energy Storage
  - Biomass
  - Natural Gas
  - Nuclear (Small Modular Reactors)
  - Efficiency Improvements for J.R. Kelly Combined Cycle
  - Transmission System Upgrades
  - Firm Capacity Purchase
- Sources – Sargent & Lundy, U.S. Energy Information Administration

Supply-Side Resources

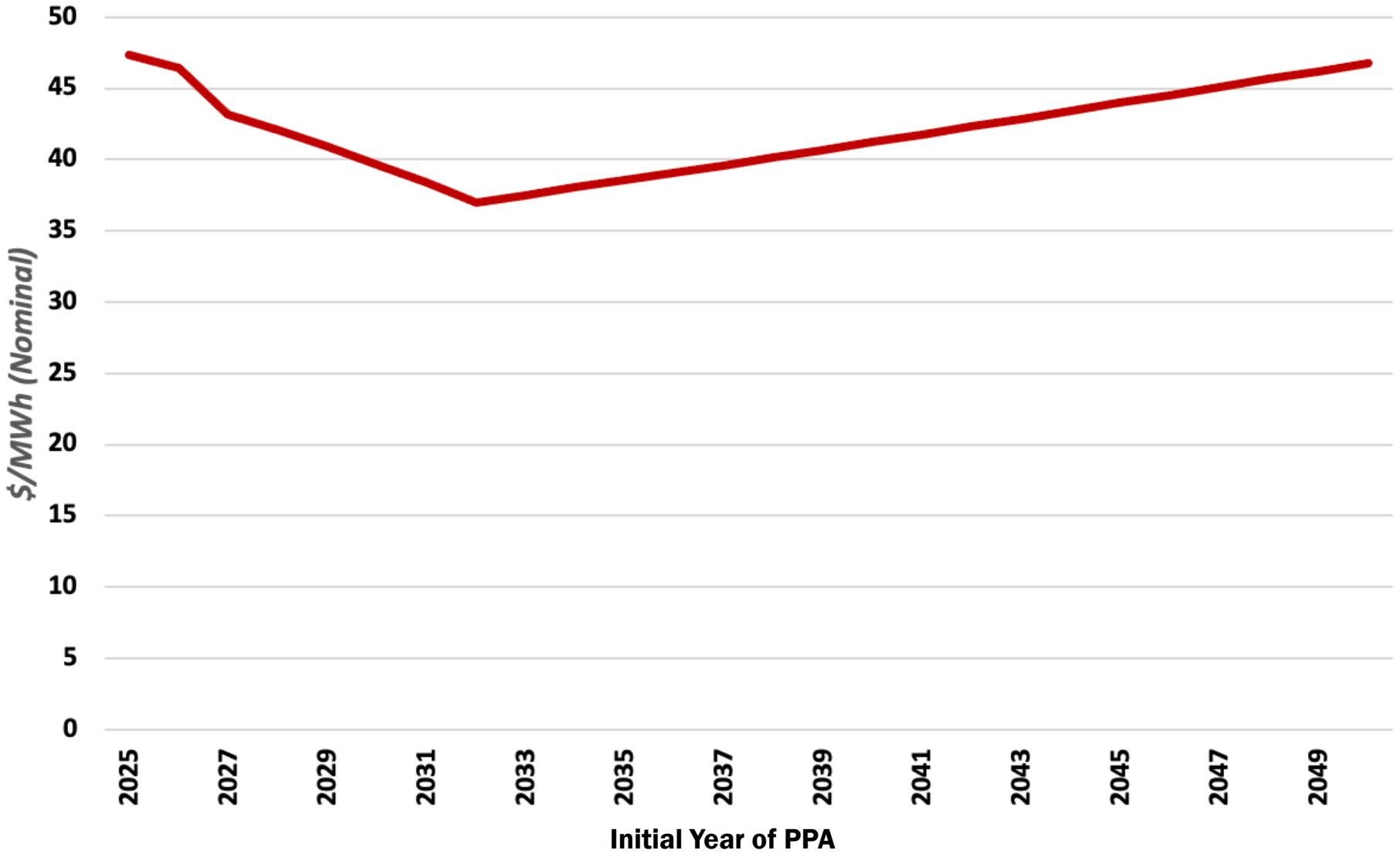
GRU Owned

Supply-Side Resource	Description	Finance Period	Max. Capacity Summer	Net Full Load Heat Rate Summer	Capital Costs	Capital Costs per kW	Variable O&M	Fixed O&M
		Years	Net MW	Btu/kWh	(2023 $, Millions)	(2023 $, Summer)	(2023 $/MWh)	(2023 $/Year)
Combined Cycle Combustion Turbine	NGCC - Siemens SGT-800 1x1	25	74.7	7,172	$162.3	$2,173	$2.97	$1,405,237
	NGCC - Siemens SGT-800 2x1	25	143.5	7,172	$320.9	$2,236	$2.97	$2,873,631
	NGCC - Siemens SGT-800 3x1	25	224.0	7,172	$471.7	$2,106	$2.97	$4,310,446
Simple Cycle Combustion Turbine	Siemens SGT-800	20	52.4	9,818	$83.9	$1,601	$5.24	$489,992
	2 x Solar Titan 250	20	52.6	10,851	$97.2	$1,849	$5.48	$1,216,904
	2 x General Electric LM2500+G4	20	55.9	10,358	$123.7	$2,213	$5.48	$1,244,141
Reciprocating Internal Combustion Engine	RICE - MAN 3x20 MW	20	59.0	8,680	$94.7	$1,605	$6.78	$2,138,699
Nuclear [Small Modular Reactors (SMR)]	Participant in 600 MW SMR Project	40	100.0	10,447	$865.3	$8,653	$3.50	$11,082,258
Biomass	Steam Turbine Fueled with Urban Waste Wood	30	30.0	10,500	$286.7	$9,556	$5.64	$7,333,238

PPA

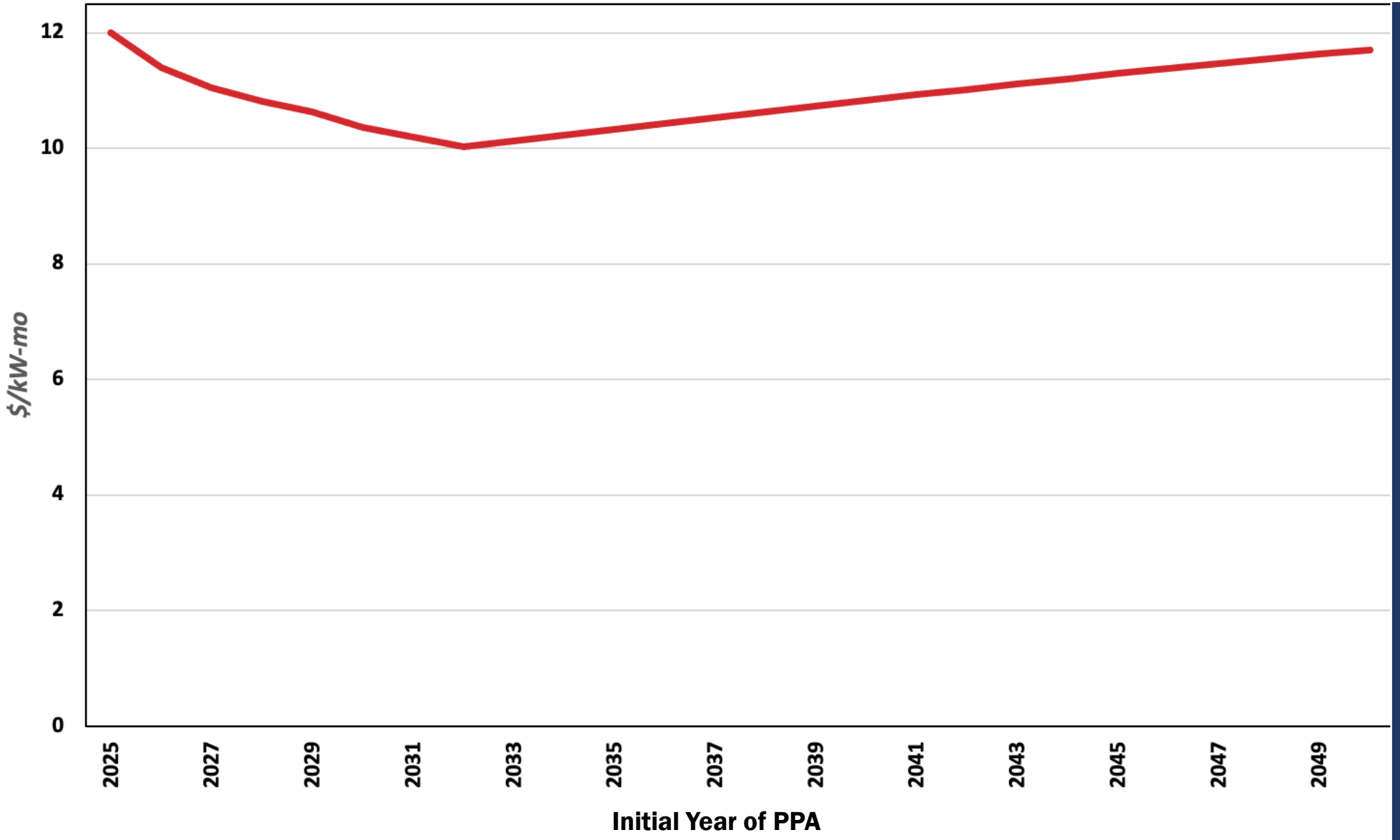
Supply-Side Resource	Description	PPA Term	Max. Capacity Summer	Net Full Load Heat Rate Summer	Capital Costs	Capital Costs per kW	Energy Price	Capacity Price
		Years	Net MW	Btu/kWh	(2023 $, Millions)	(2023 $, Summer)	(2025 $/MWh)	(2025 $/kW-Mo)
Utility Scale Solar PV	20 Year PPA for 75 MW	20	41.2	N/A	N/A	N/A	$47.35	N/A
Storage	20 Year PPA for 50 MW of 4 Hour Storage	20	50.0	N/A	N/A	N/A	N/A	$12.00

Solar PV PPA Pricing



- Based on utility scale solar PV (w/o energy storage) overnight capital cost estimates in the 2022 Annual Technology Baseline produced by the National Renewable Energy Laboratory (NREL).
- 20 Year PPA price is fixed for the entire contract period.

Battery Energy Storage System PPA Pricing



- Based on battery energy storage overnight capital cost estimates in the 2022 Annual Technology Baseline produced by the National Renewable Energy Laboratory (NREL).
- 10 Year PPA price is fixed for the entire contract period.
- 4 Hour storage duration

Open Discussion and Next Steps

Cantrece Jones
Acuity Design Group

Open Discussion and Next Steps

- **Upcoming IRP Stakeholder Engagement Meetings**
  - **Meeting 3 – Potential IRP Sensitivities and Scenarios 7/26/23**
  - **Meeting 4 – Preliminary Modeling Results 10/19/23**
  - **Meeting 5 – Refined Modeling Results and GRU's Path Forward 1/10/24**
- **We value YOUR feedback**