

2023 IRP Sales and Load Forecast

2023 IRP Advisory Council

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Agenda

01

Executive Summary

- ✓ Forecast Results Operational/Financial
- ✓ System Sales/Peak/Customer Graphics

02

Economic Discussion

- ✓ Economic Headline
- ✓ Inflation

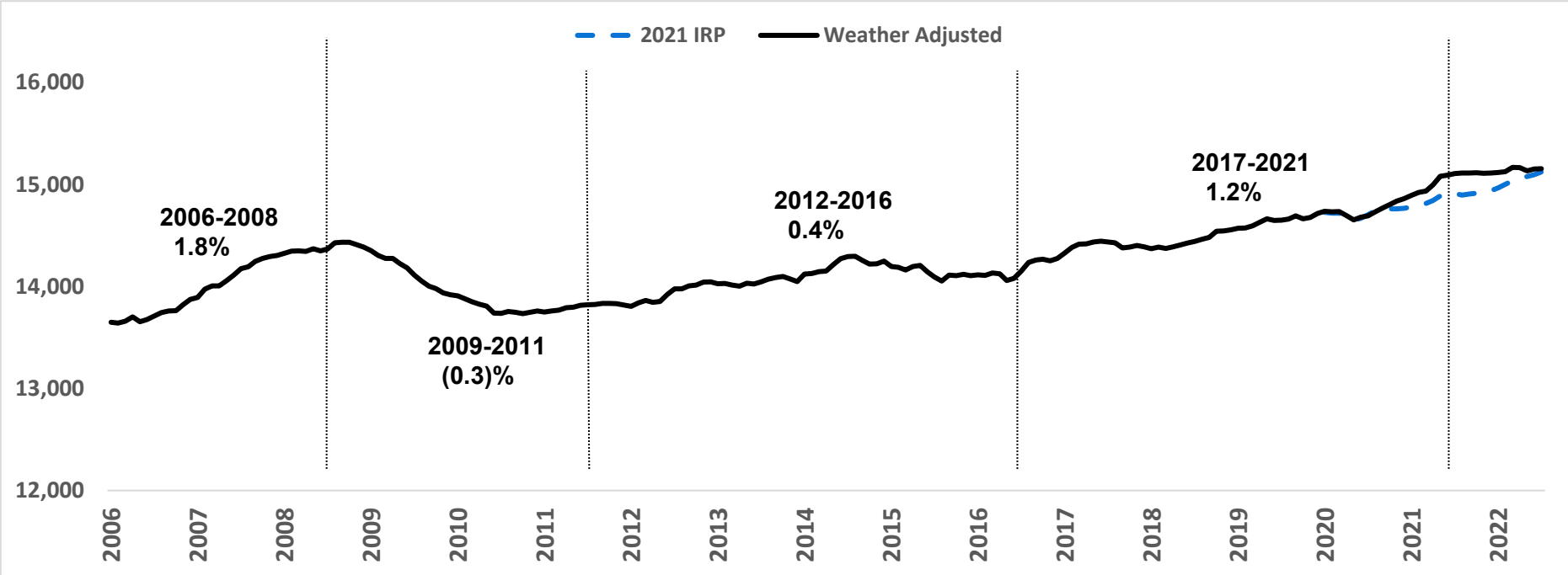
03

Class-Level Results

- ✓ Special Contracts
- ✓ C/I, Large Load
- ✓ Residential
- ✓ Irrigation
- ✓ Distributed Energy Resources (DER) and Electric Vehicles (EVs)

System Sales Historic Results

System Sales (GWh)

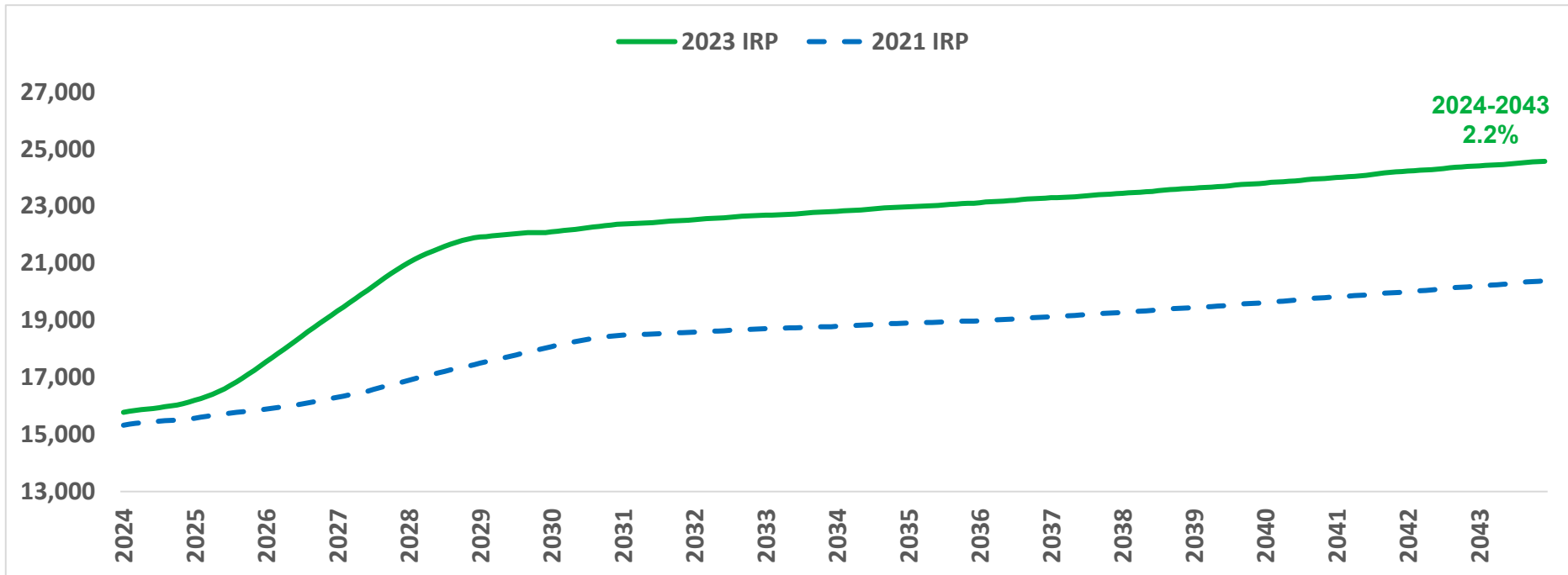


System Sales Forecast Results

01

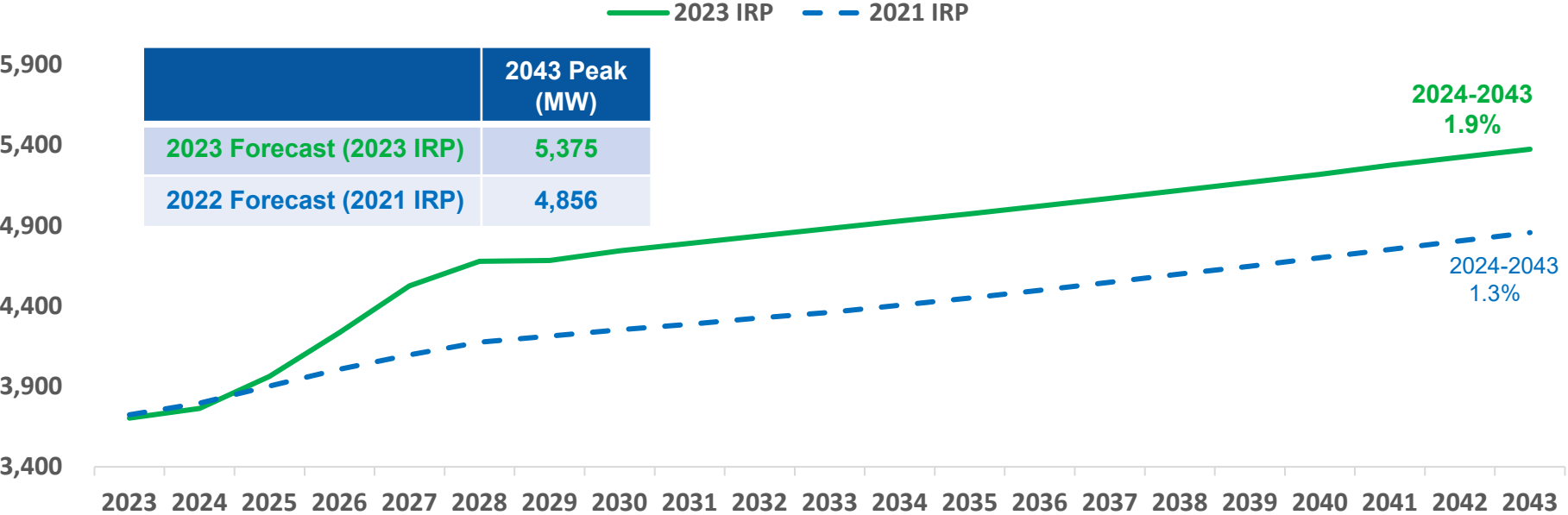
Executive Summary

System Sales (GWh)



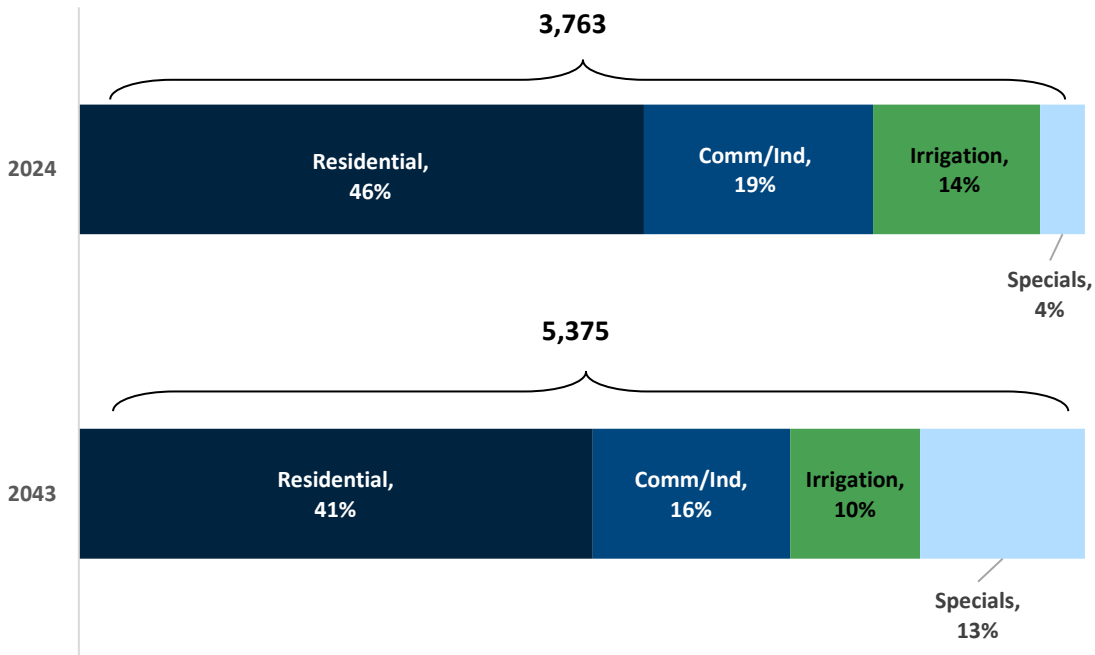
System Peak Forecast Results

System Peak (50th Percentile MW)



System Peak Forecast Contributions

Customer Class Compositional Analysis of System Coincident Peak (MW) at 50th Percentile



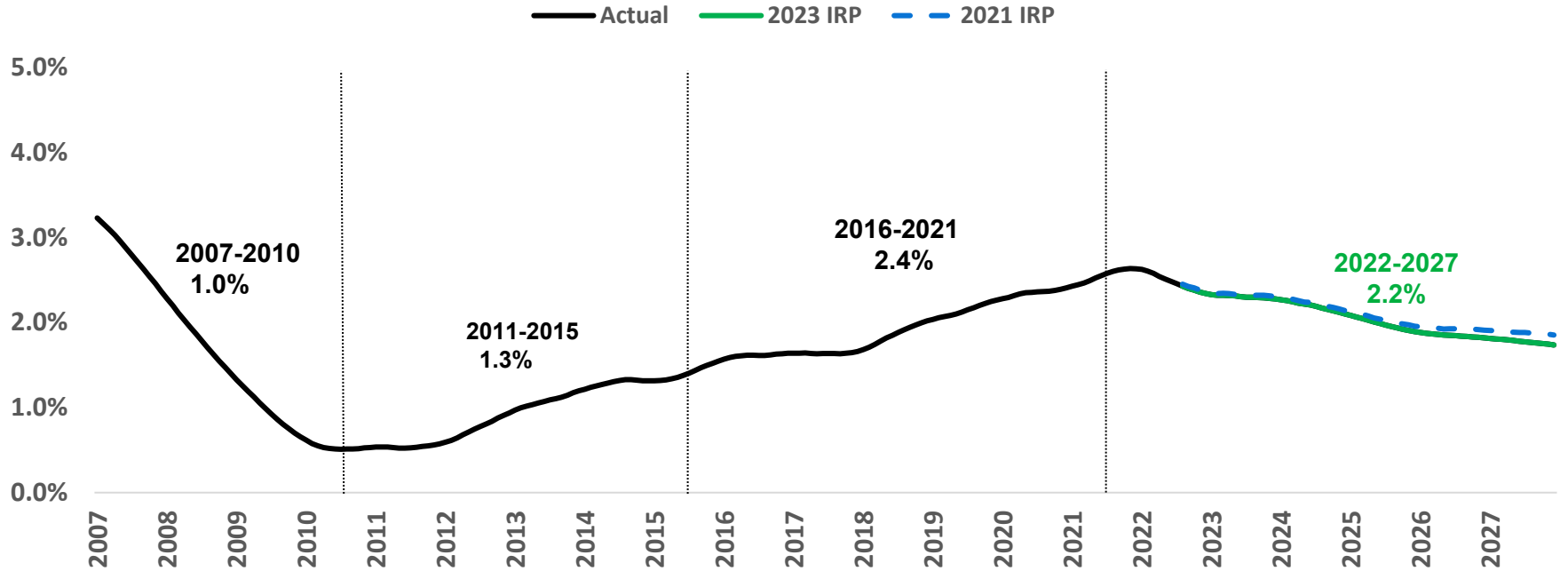
Month	Date	DOW	MW
Jan	1/24/2024 8:00	Wed	2,466
Feb	2/29/2024 8:00	Thu	2,268
Mar	3/1/2024 8:00	Fri	2,102
Apr	4/18/2024 8:00	Thu	1,960
May	5/15/2024 9:00	Wed	2,613
Jun	6/25/2024 18:00	Tue	3,652
Jul	7/30/2024 19:00	Tue	3,763
Aug	8/2/2024 18:00	Fri	3,507
Sep	9/9/2024 19:00	Mon	2,941
Oct	10/7/2024 20:00	Mon	2,209
Nov	11/26/2024 8:00	Tue	2,318
Dec	12/12/2024 8:00	Thu	2,551

System Customer Forecast

01

Executive Summary

System Customer Growth (12 month % change)



Historic Recession Impacts

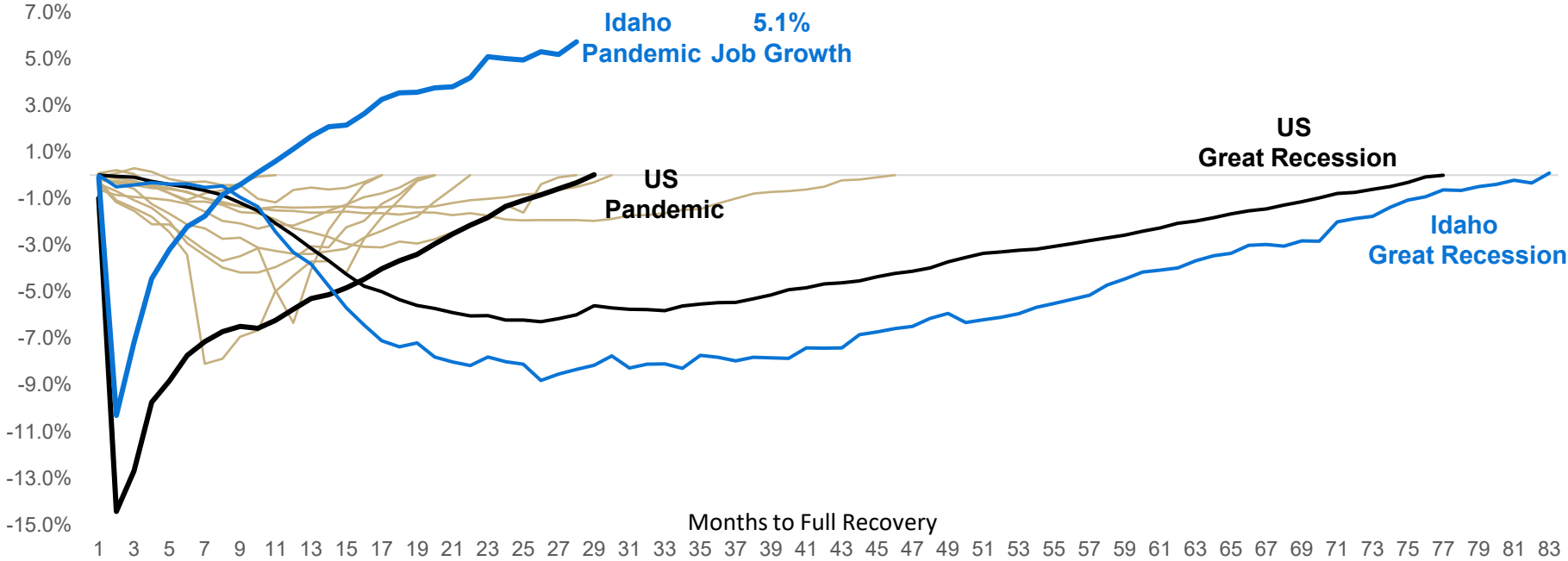
Tabular Historic Recession Sales Impacts

Recession	Peak (pre-recession) to Trough (during recession) Absolute Change in Sales Growth	Peak (pre-recession) to Trough (during recession) How long did that fall take?	Duration of Trough How long did we sit in negative sales territory?
Financial (1987)	Fell 4%	6 months	6 months
Dot Com (2000)	Fell 6%	18 months	12 months
Great Recession (2008)	Fell 7.2%	24 months	24 months
CV19 (2020)	Fell 1.1%	6 month	0 months

Notes:
Above information is for all classes.
Analysis is weather adjusted to remove impact of weather changes on data.

Idaho's Labor Market During Recessions

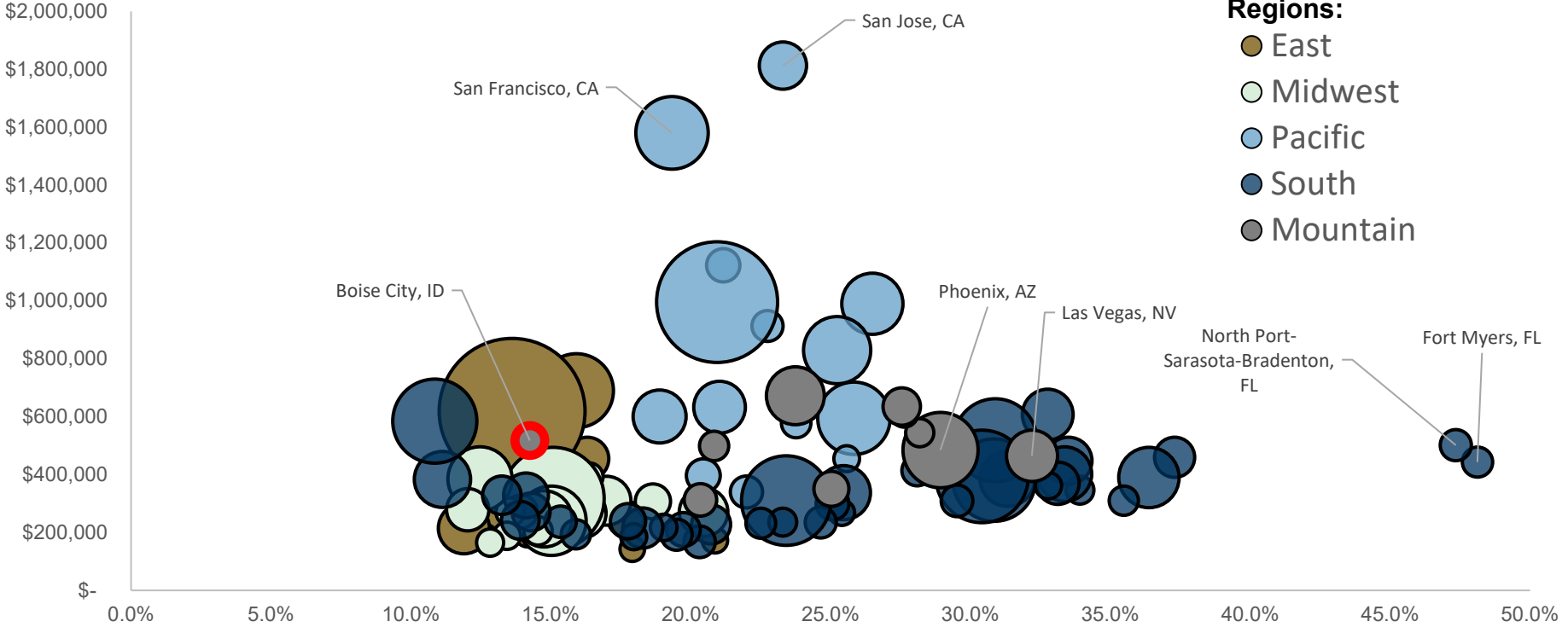
Percent Job Loss During Post-WWII Recessions



Source: U.S. Bureau of Labor Statistics (BLS): Current Employment Statistics (CES), Quarterly Census of Employment and Wages (QCEW). Actual data through Jun 2022, Jun 2022 preliminary estimates

Relative Home-Value Growth

Year over Year June 2022: Top 100 U.S. Cities' Home-Value Growth



SOURCE: Zillow research. Zillow Home Value Index (ZHVI) of single-family homes. Author's calculations.

Age Demographics of Idaho

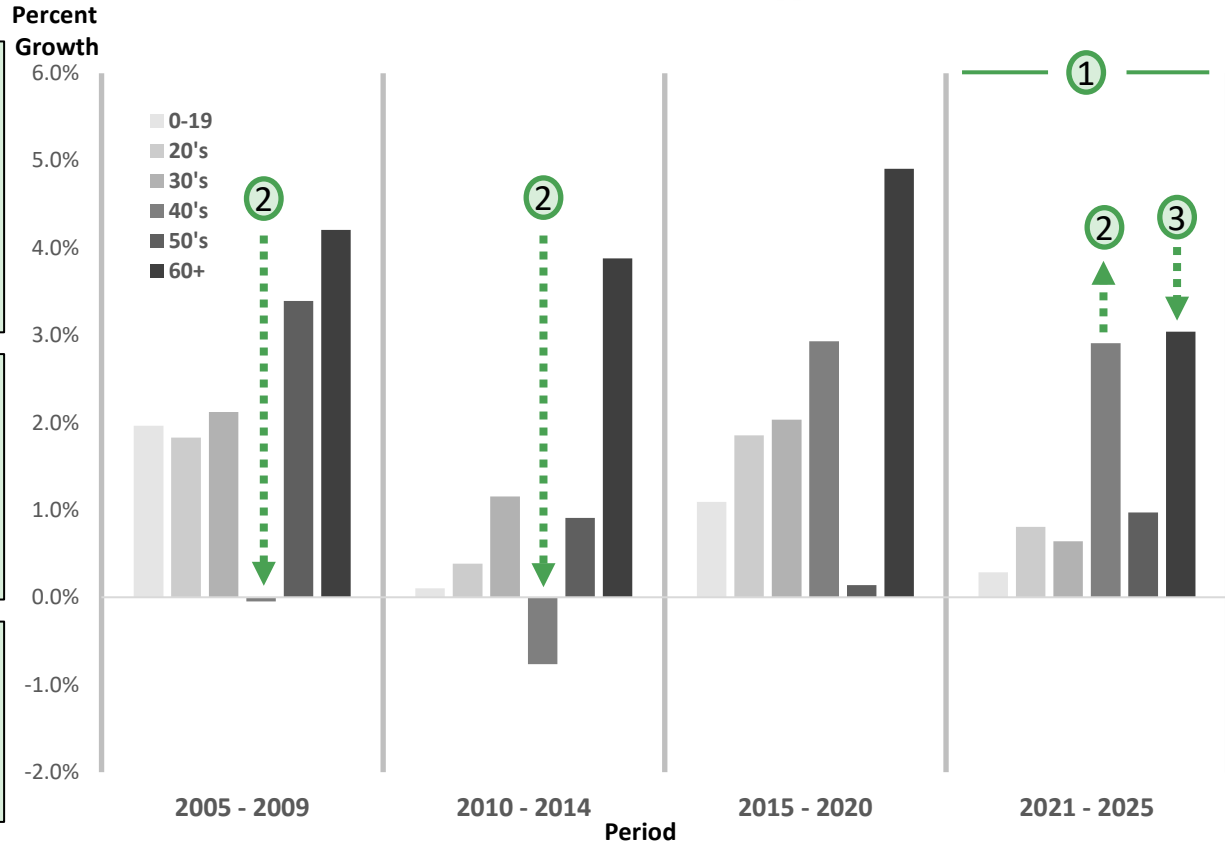
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Economic Discussion

Continued above-average growth in labor force that has, since the onset of the pandemic, expanded more in percentage terms than 45 other states is certainly being fueled, at least in part, by residents moving into Idaho. ①

The growing popularity of Idaho among younger generations, coupled with expanding and diversifying employment opportunities, will support continued in-migration. ②

Rising mortgage rates and rents, combined with weak equity markets, may deter some retirees from relocating. ③

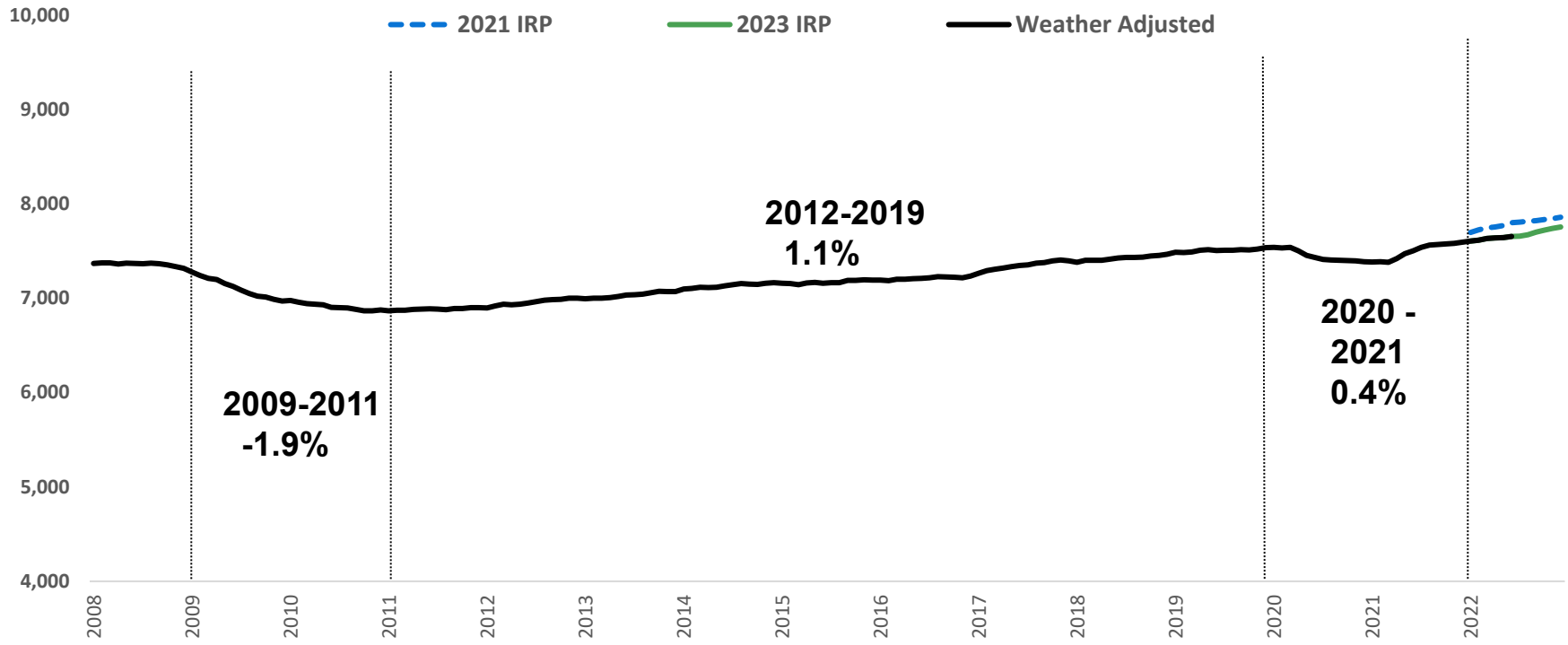




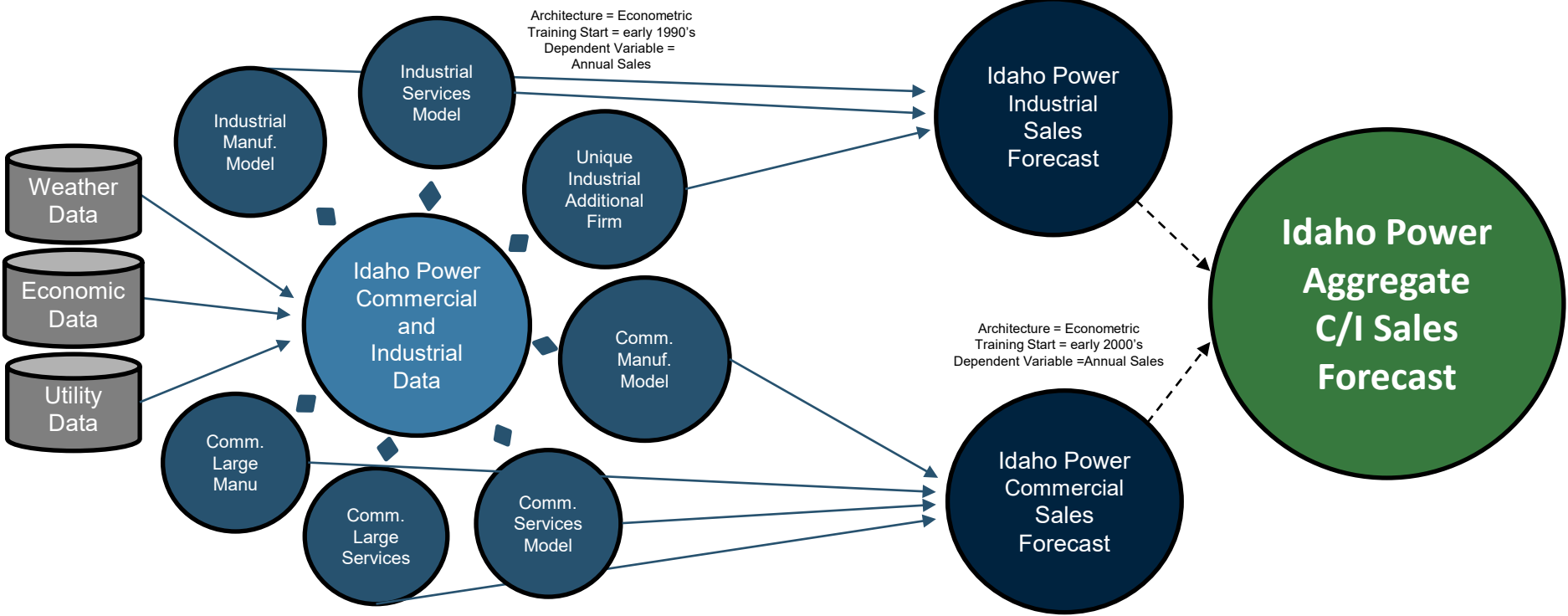
Class-Level Results

Commercial and Industrial History

Commercial and Industrial Sales (GWh)



C/I Econometric Modeling

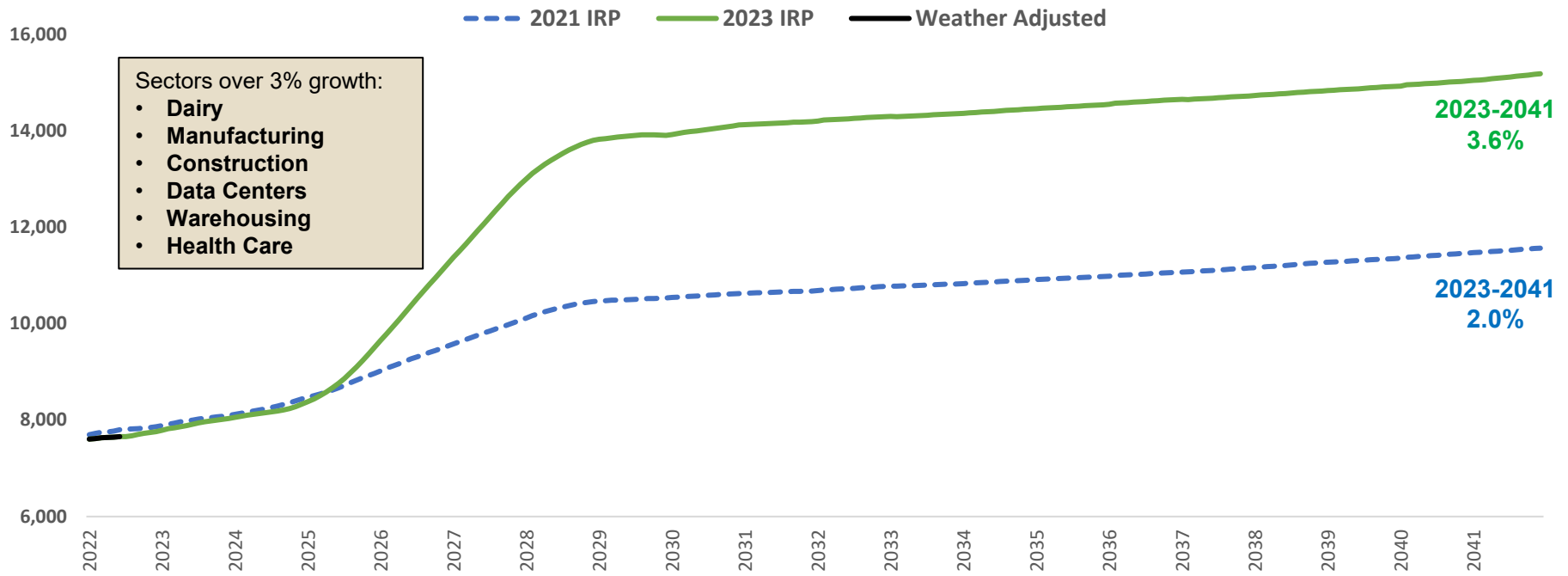


C/I (including all firm load) Sales Forecast

03

Class-Level Results

Commercial and Industrial and Additional Firm Load Sales (GWh)

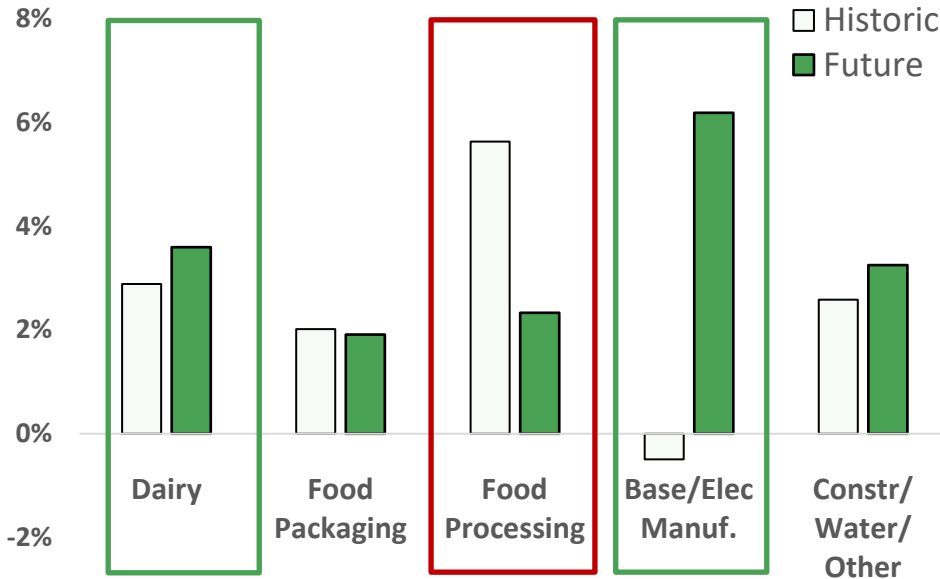


Large C/I Sales by Category – Manufacturing

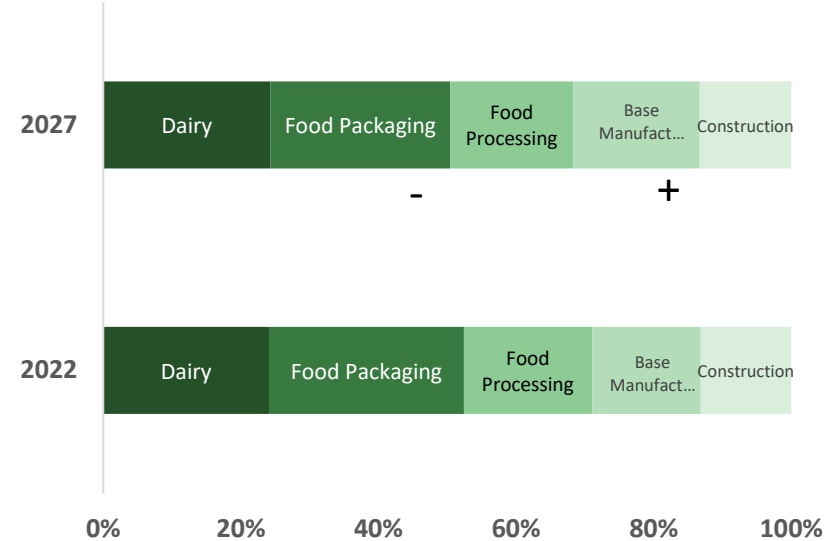
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Class-Level Results

Segment Growth Rates in Manufacturing-Based Industries



Segment Contributions to Sales



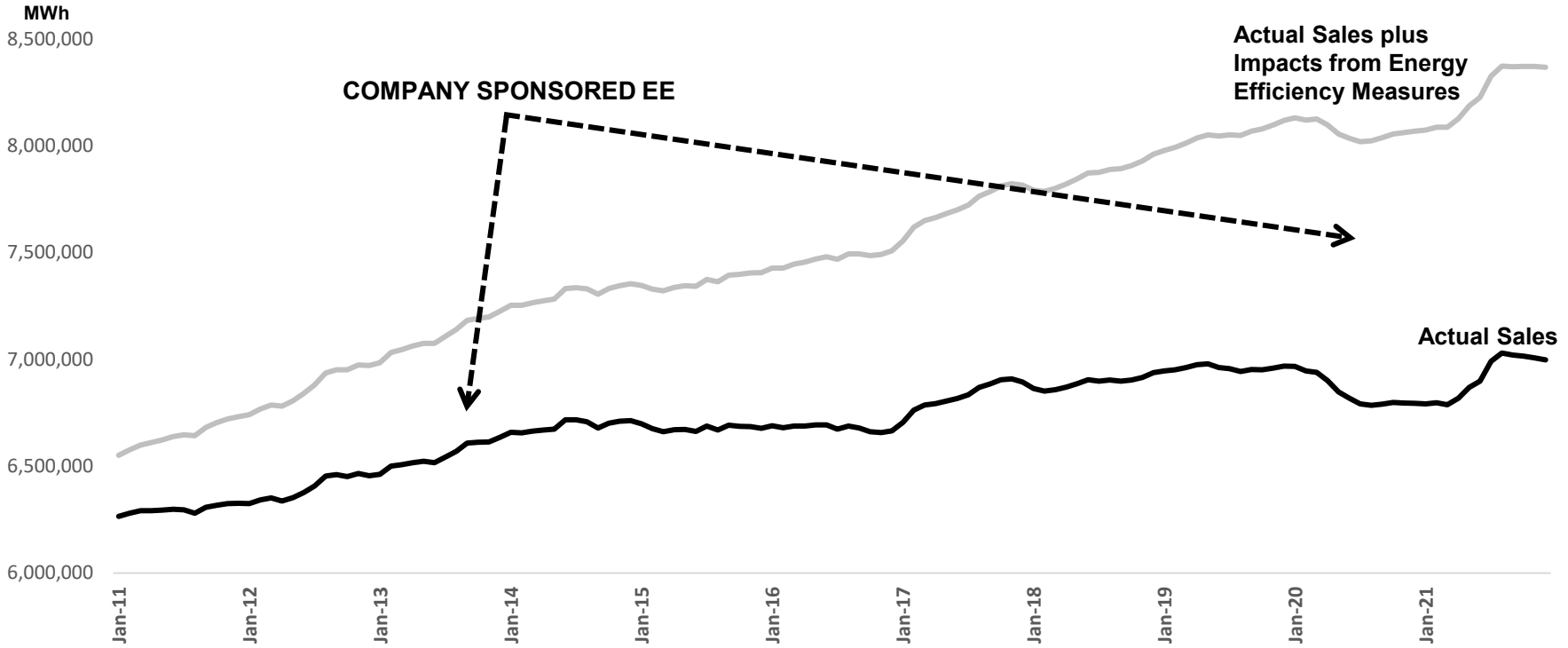
¹ Historic represents the actual average annual growth rate from 2017-2021

² Future represents the forecasted average annual growth rate between 2022-2027

³ Does NOT include impacts of future DSM programs

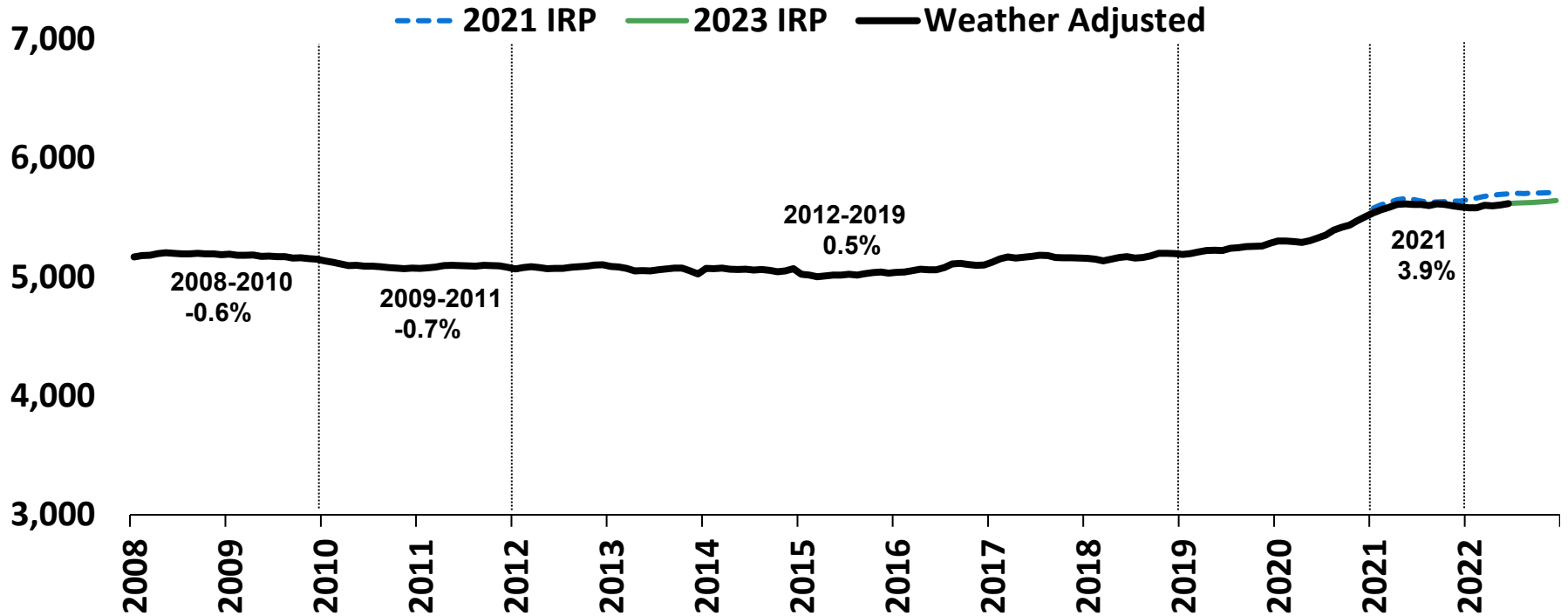
C/I Sales - Historical Impact of EE

Annual Energy Efficiency in Commercial and Industrial (x/special contracts)



Residential Sales: Historic

Residential Sales (GWh)



Residential Usage Drivers: End-Use

03

Class-Level Results

Residential Use Per Customer Regression Inputs

Forecast Composition

Sources of Increases

Larger Home Size

AC Saturation

Urban Saturation

Plug-ins

Household Income

Sources of Decreases

Lighting Efficiency

App Efficiency/Bldg. Codes

Single/Multi-family Shares

Rooftop Solar

Gas/Electric Share

Elasticity: How much bend or snap the plank has depends on Electricity and Gas Prices

Residential
UPC
Regression



Residential
Customer
Forecast

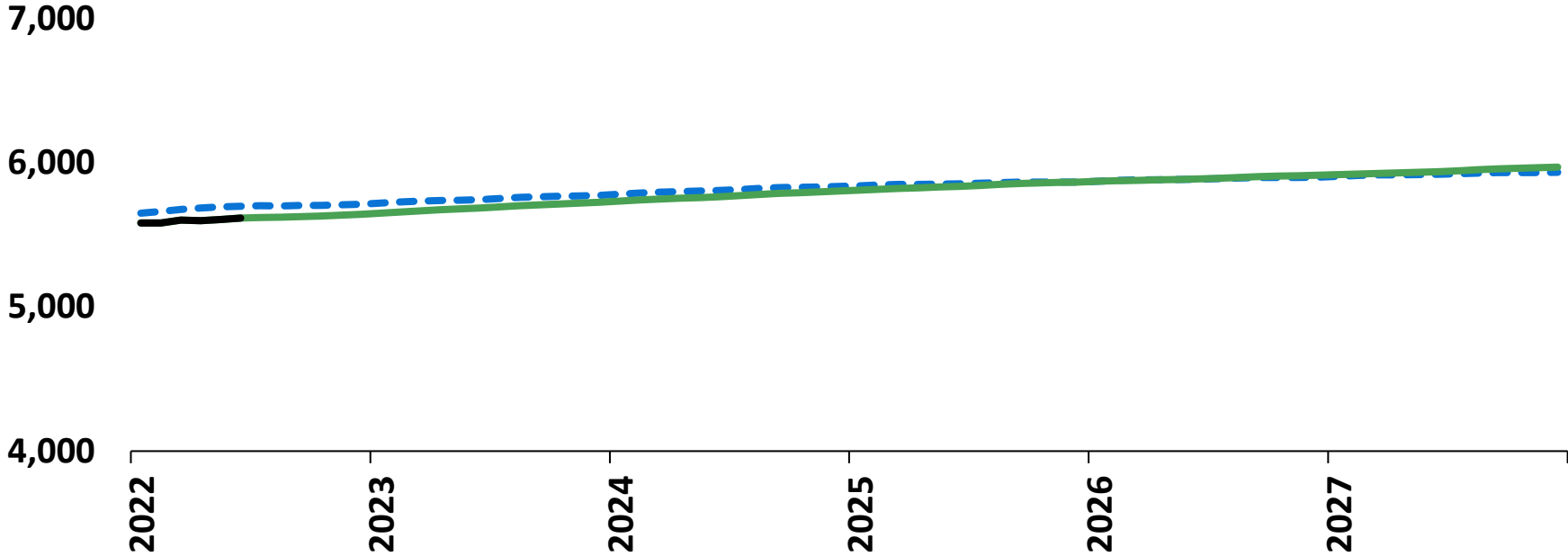


Idaho
Power
Residential
Sales
Forecast

Residential Sales Forecast

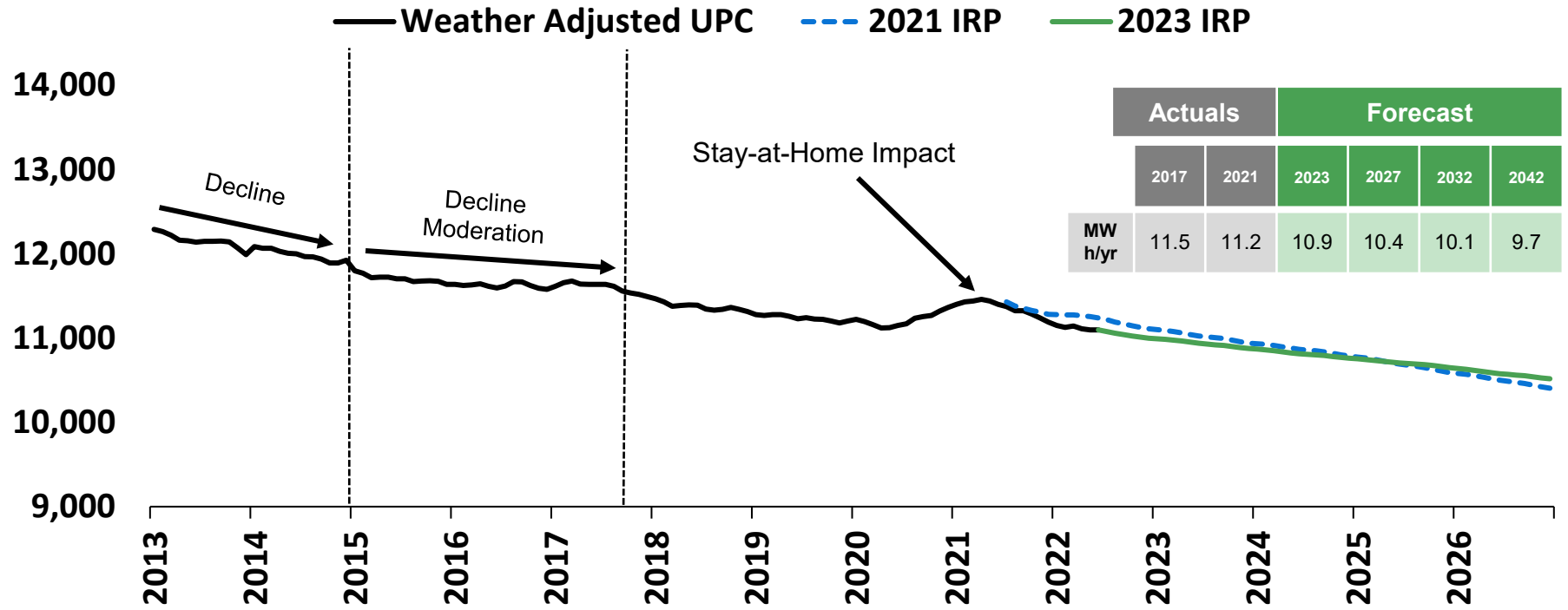
Residential Sales (GWh)

--- 2021 IRP — 2023 IRP — Weather Adjusted



Residential Use Per Customer

Use Per Customer Forecast (annual weather-adjusted kWh/Customer)

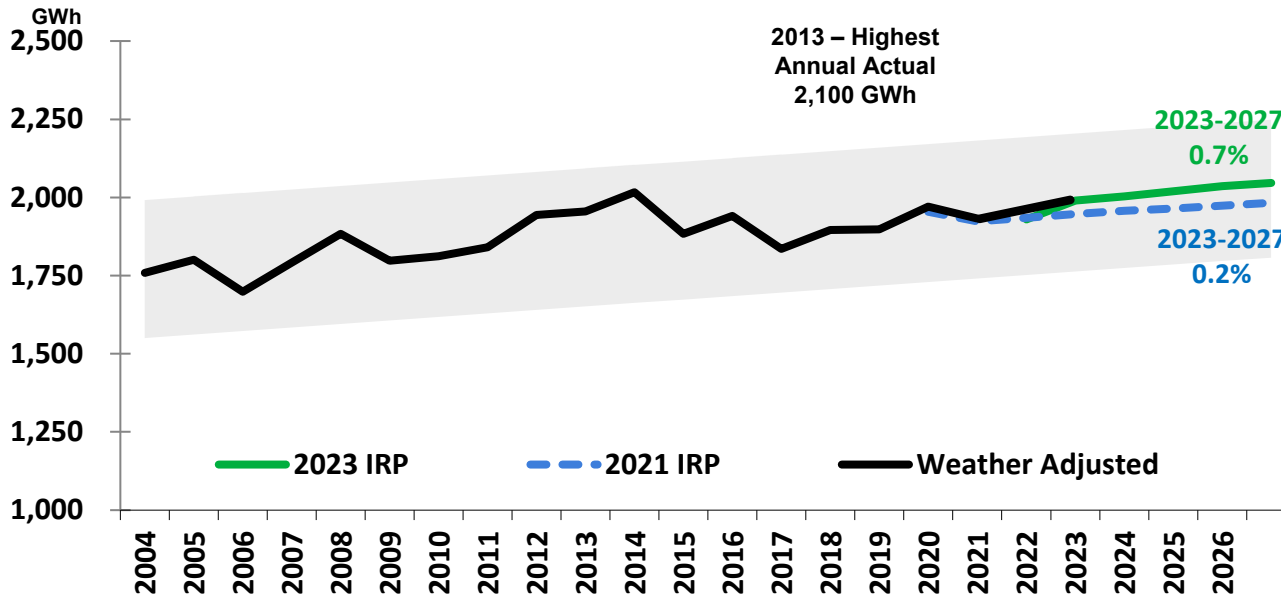


Irrigation Sales Forecast

03

Class-Level Results

Irrigation Sales Forecast (annual GWh)

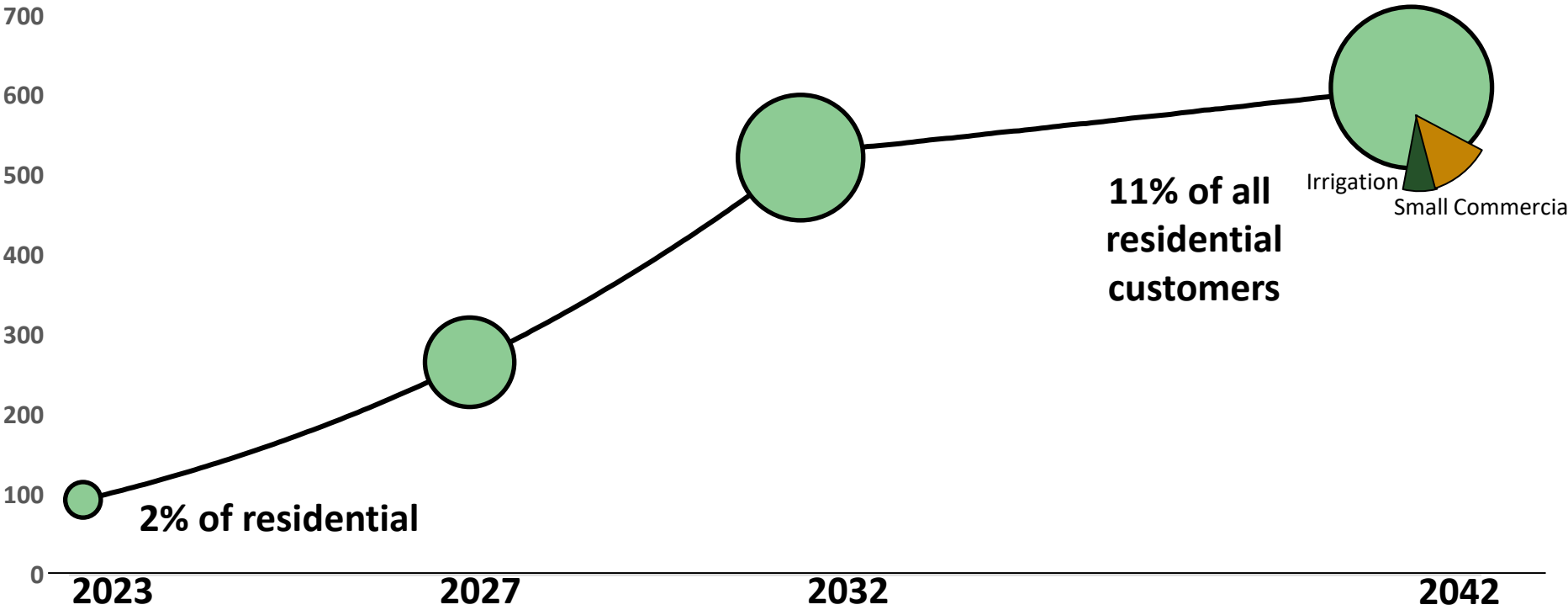


Forecast Notes

- **Weather Sensitive:** Sales can be higher or lower by 225 GWh primarily due to weather
- Main drivers include temperatures and **precipitation, crop prices, agricultural output, and crop cycle water intensity** (alfalfa and corn)
- **Below 20-year trend:** As forecast places more weight on near-term results and impact from on-site generation

Net Metering (DER) Forecast

Net Metering

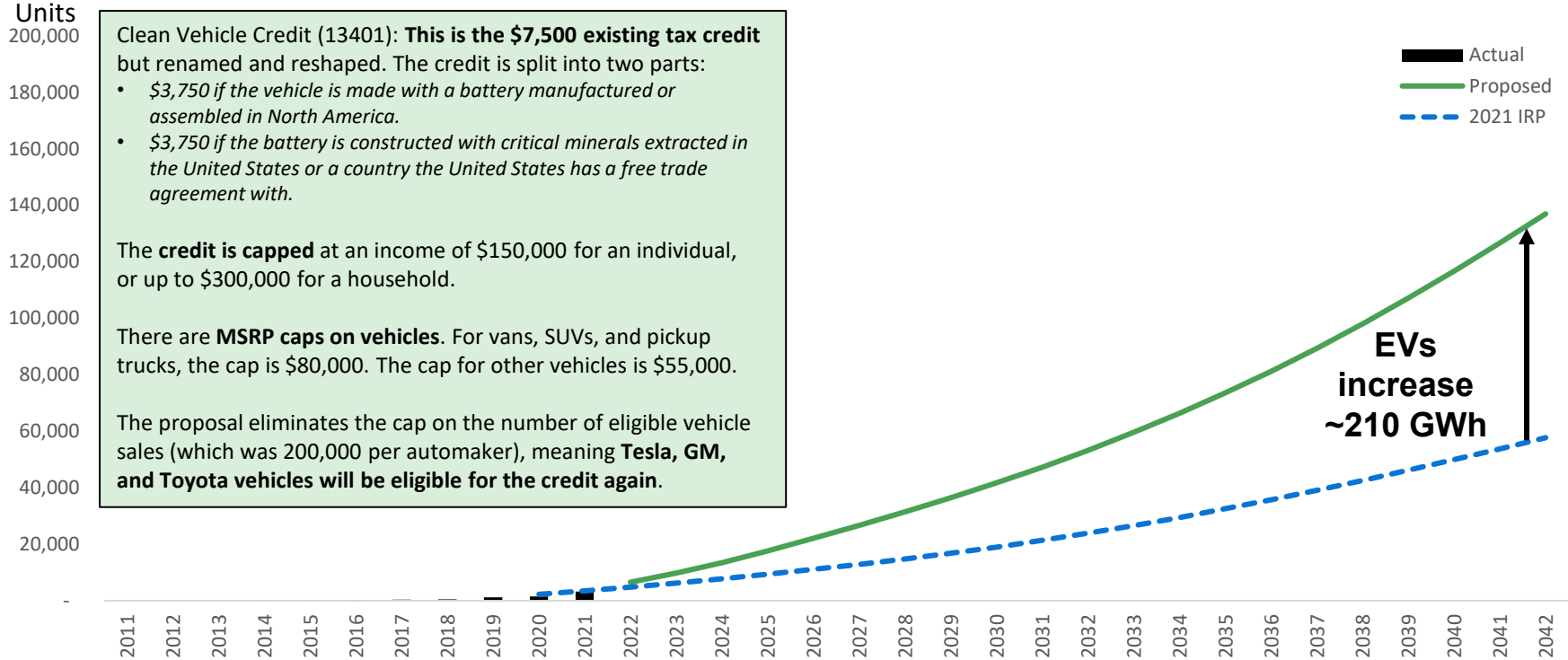


Electric Vehicle Forecasts

03

Class-Level Results

Idaho Power Electric Vehicle Forecast



Additional Considerations



Load Sensitivities

→ Electrification

To include building electrification (e.g., heat pumps and heat pump H₂O) and aggressive electric vehicle saturation (over ~150k baked into base)

→ Climate Change

More frequent and extreme multi-day heat and cold events, higher peaks

Recap

Regional Economics Matters

- Near-term recessionary risk muted
- Fundamentals (land and people) are still there
- Idaho **resilience**, regional industry diversity, and migration continues to look strong

Residential Use-Per-Customer (UPC)

- UPC near-term premium, returns to ~1.0% per year
- Stronger customer growth slows but expected

C/I cycles back, but some hit persists

- Potential longer hits to retail and commercial space
- Large load expansions in 2023+ manufacturing

Risks: “The Ds”

- Dynamic macroeconomic playing field
- Degrees and drought (or weather)
- DERs and efficiency