Vero Beach Forecast

May 13, 2014

Agenda

- Forecast Process
- Vero Beach Forecast Results
- Vero Beach Forecasts & Normalized Actuals

Forecast Process

- Forecasts are developed for Vero Beach and OUC annually
- The Vero Beach forecast is prepared in December/January timeframe and submitted to Vero Beach in January for approval
- The OUC forecast is prepared after the Vero Beach forecast and adopted by the OUC board in August each year
  - OUC forecast model is currently under internal review
- Using the same forecast process with region specific inputs, monthly forecasts are developed for OUC and Vero Beach. These forecasts include:
  - Retail Customers by Customer Class
  - Retail Electric Sales by Customer Class (kWh)
  - System Net Energy for Load (NEL) and
  - Peak Demands (MW)

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Forecast Process

Retail Customers by Customer Class

- Customer forecasts start by determining historic long-term relationship between SMSA data and historic customer counts
- The SMSA data used are:
  - Residential: population
  - Commercial: employment
- Customer counts are then forecast using the historic relationships and the projected SMSA data

Standard Metropolitan Statistical Area ("SMSA"`)

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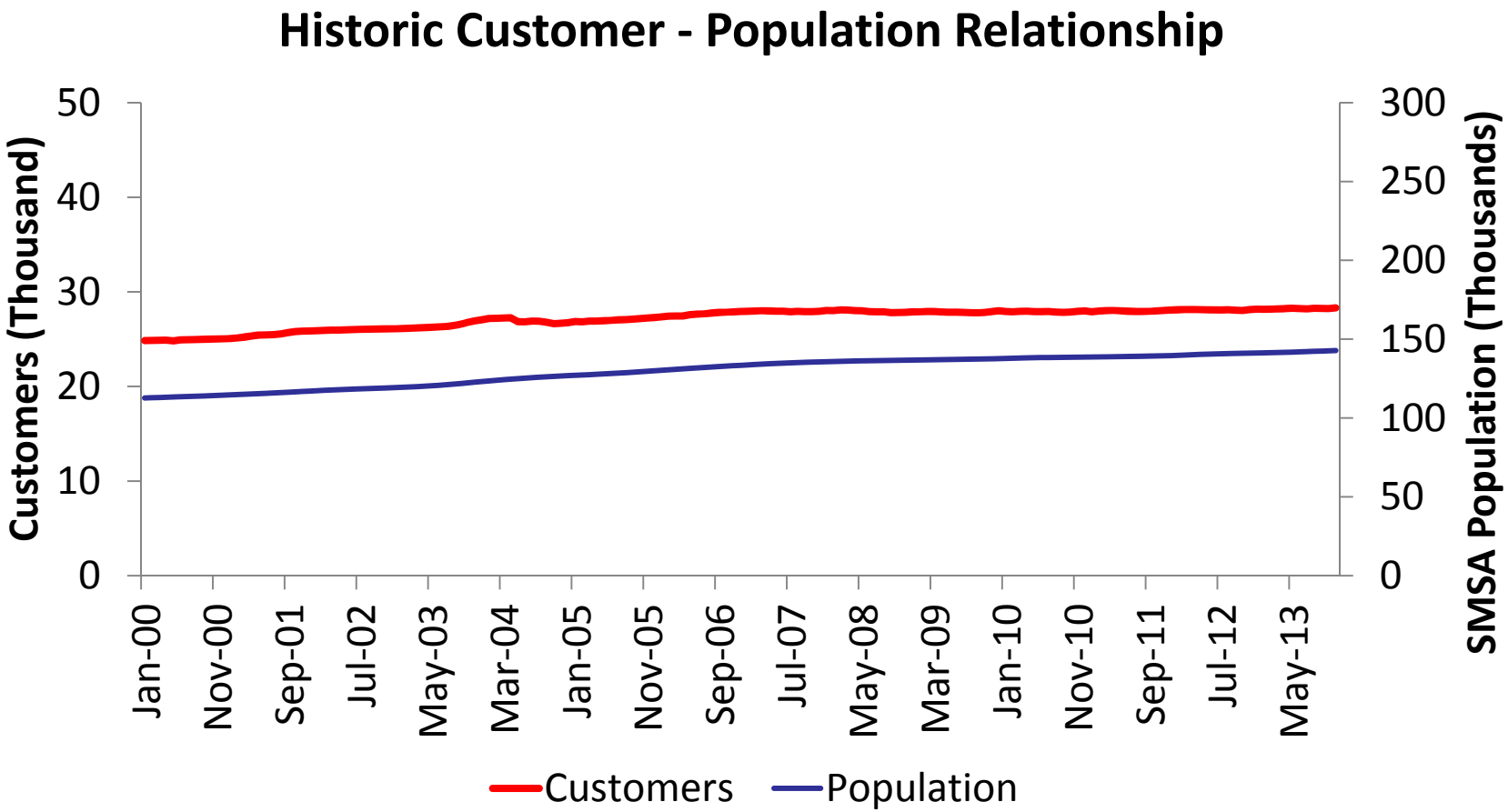
Forecast Process

Residential Customers



Forecast Process

10-Year SMSA Economic & Demographic Growth Projection

2013 - 2023	Population	Households	Employment	Gross Metro Product
Vero Sebastian SMSA	2.1%	2.5%	2.2%	1.2%

Economic Data Source: Moody's Analytics

Forecast Process

Retail Sales by Customer Class

- The retail sales forecasting process for each class (residential, commercial, industrial, and lighting) starts with historic and projected data
  - Customer counts
  - Historic sales
  - Actual weather with future weather assumed to be normal
  - Economic and demographic data provided by Moody's Analytics
  - Appliance efficiency /saturation data provided by Itron Analytics
  - Price of electricity
- This historic and projected data is used as the inputs for econometric models known as "Statistically Adjusted End-Use" (SAE) models
  - SAE models calculate the historic relationship between class sales and the input data
  - Using the relationships and projected data SAE models forecast future sales for heating, cooling and other loads

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Forecast Process

Retail Sales by Customer Class

- Residential
  - Sales are forecast on an average use basis
  - The economic and demographic data used in the forecast includes: household size, income and price of electricity
  - Forecast sales are equal to the product of customer and average use per customer
- Commercial
  - Sales are forecast independent of customer because the class is non-homogeneous.
  - SAE model is similar to residential with inputs specific for commercial
- Industrial & Lighting
  - Sales are forecast based on the trend of historic sales growth

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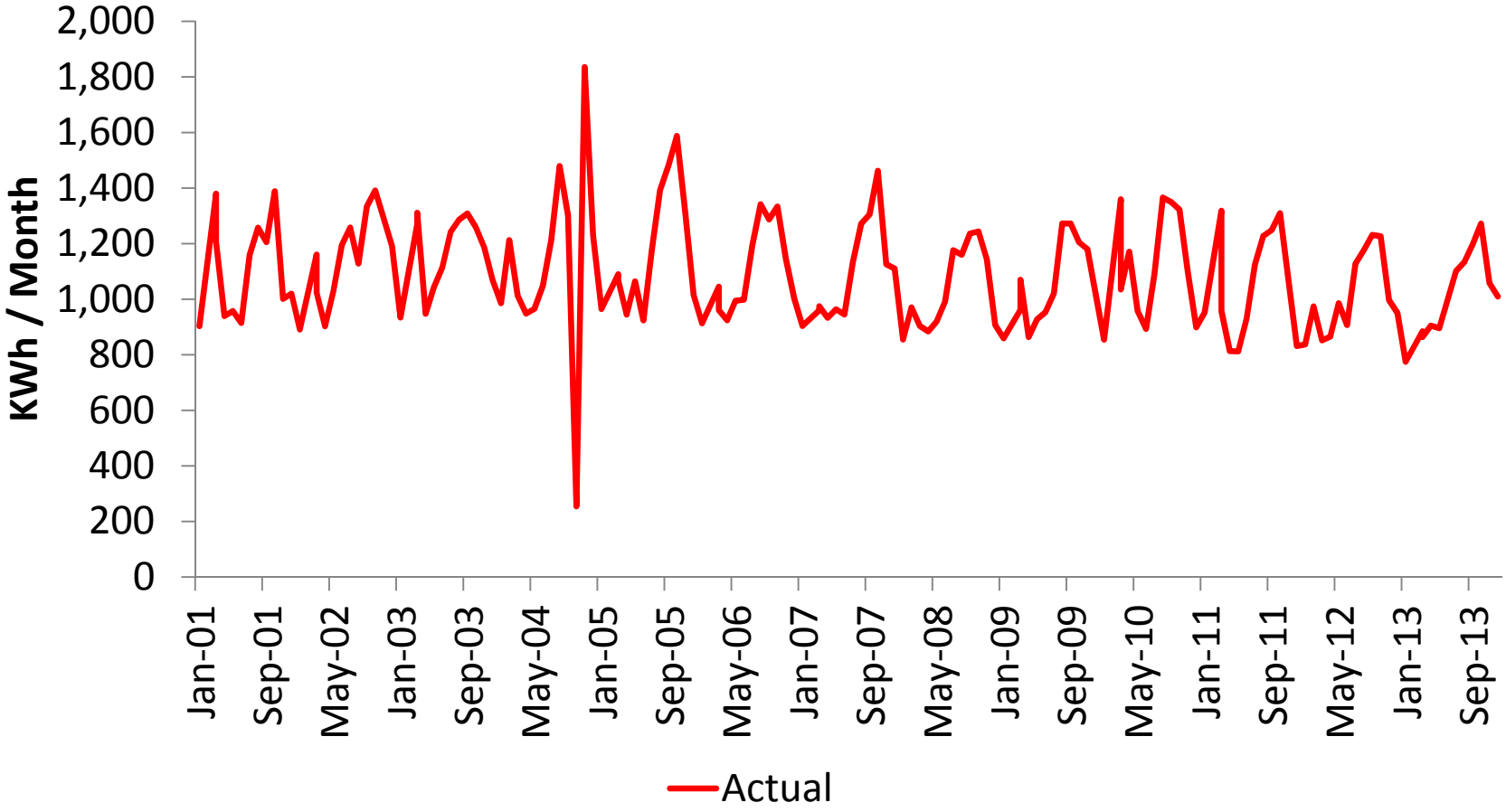
Forecast Process

Residential Average Use



Forecast Process

System Net Energy for Load (NEL)

- An NEL forecast is necessary for projecting the amount of electric generation needed to meet retail customer sales
- The NEL forecast is equal to the retail sales forecast plus estimated line losses between the generation sources and customers' meters

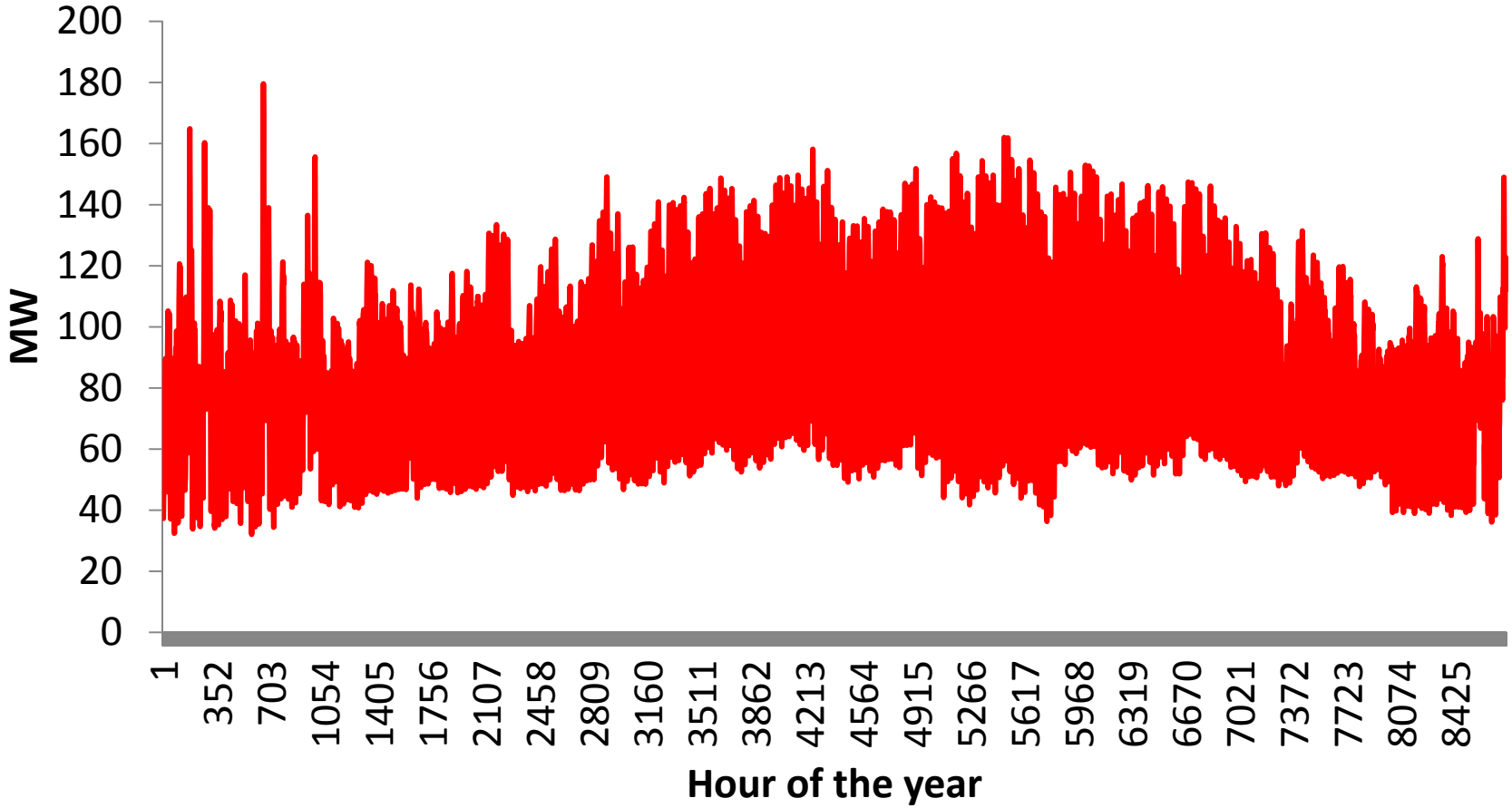
Forecast Process

Peak Demands (MW)

- The monthly NEL forecast is scaled to an hourly system load shape resulting in an hourly NEL forecast
  - The hourly load shape was developed by Itron Analytics from historical load shapes, adjusted to normal weather
- Monthly peaks are equal to the highest hourly NEL forecast for each month

Forecast Process

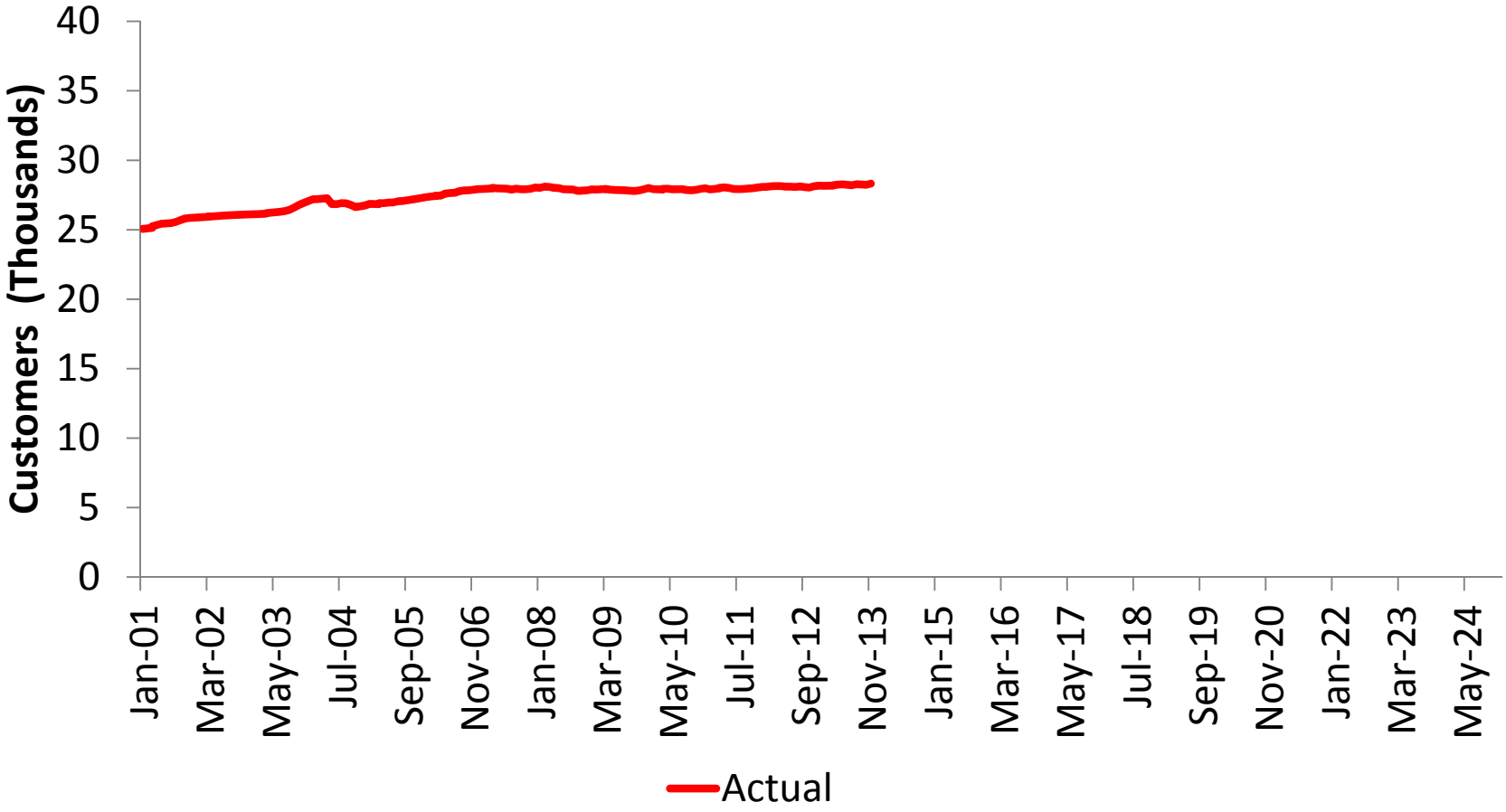
Hourly NEL



Forecast Results for City of Vero Beach

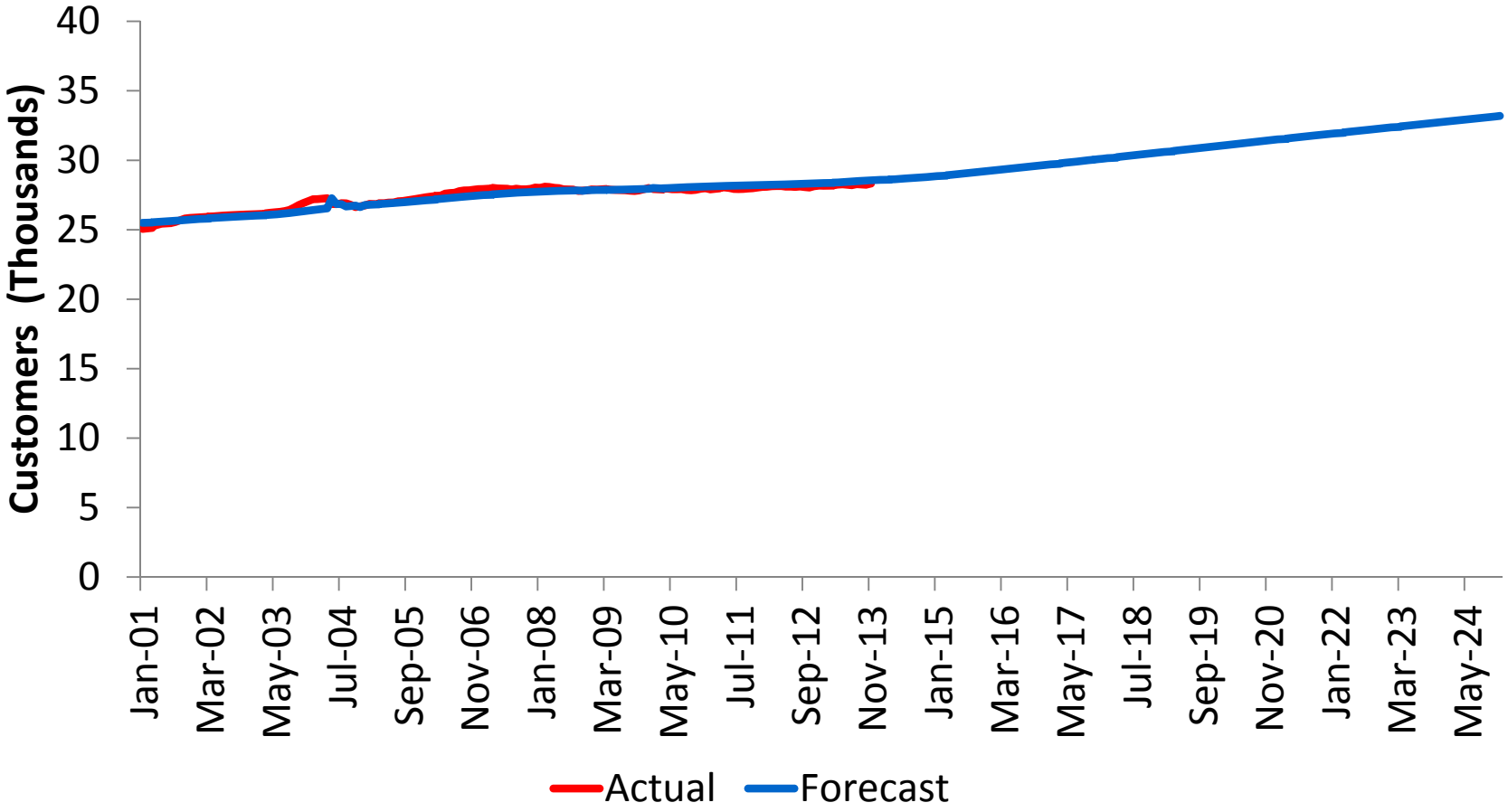
Vero Beach Forecast Results

Residential Customers – Historical Trend



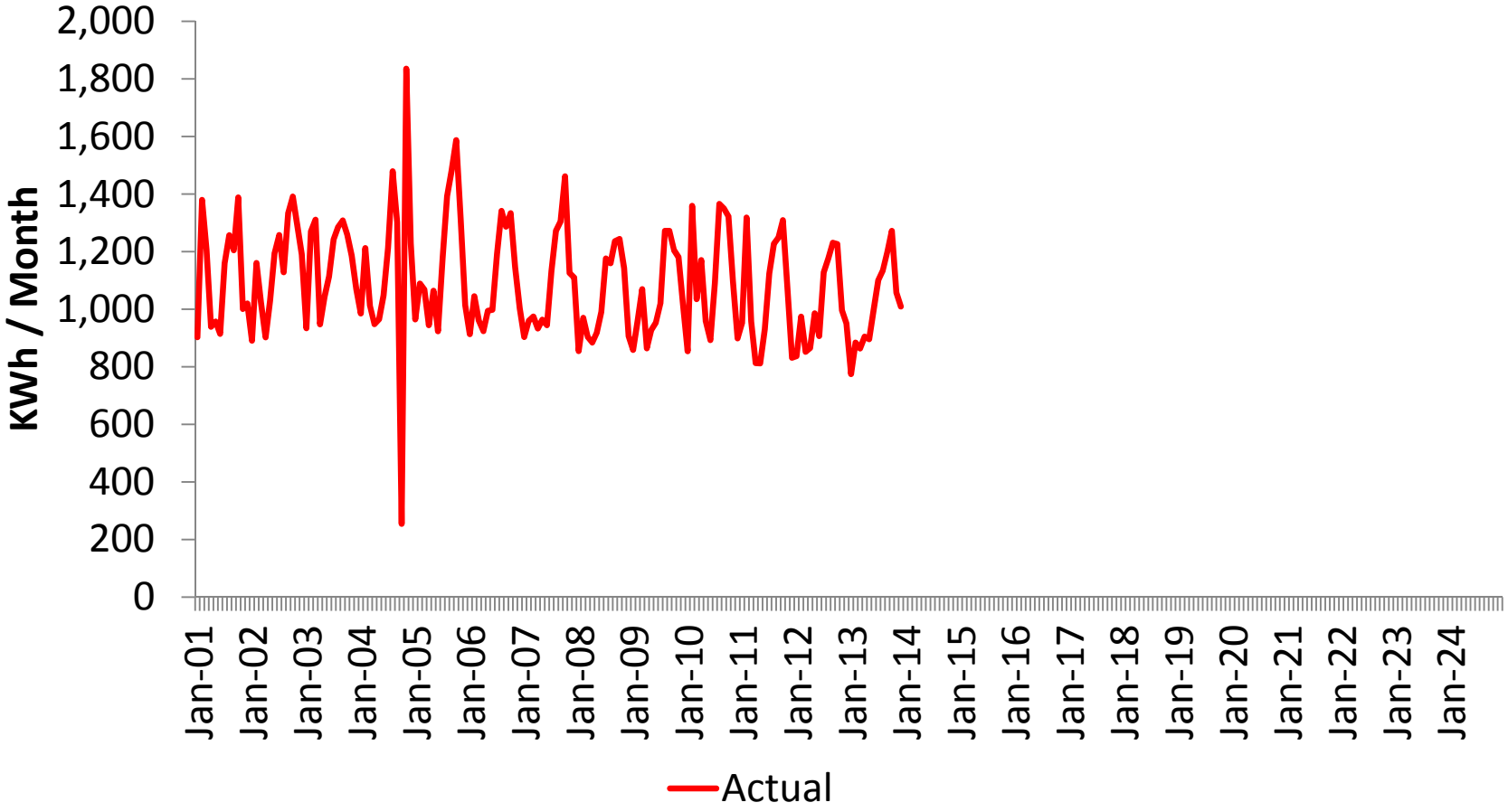
Vero Beach Forecast Results

Residential Customers – Projections



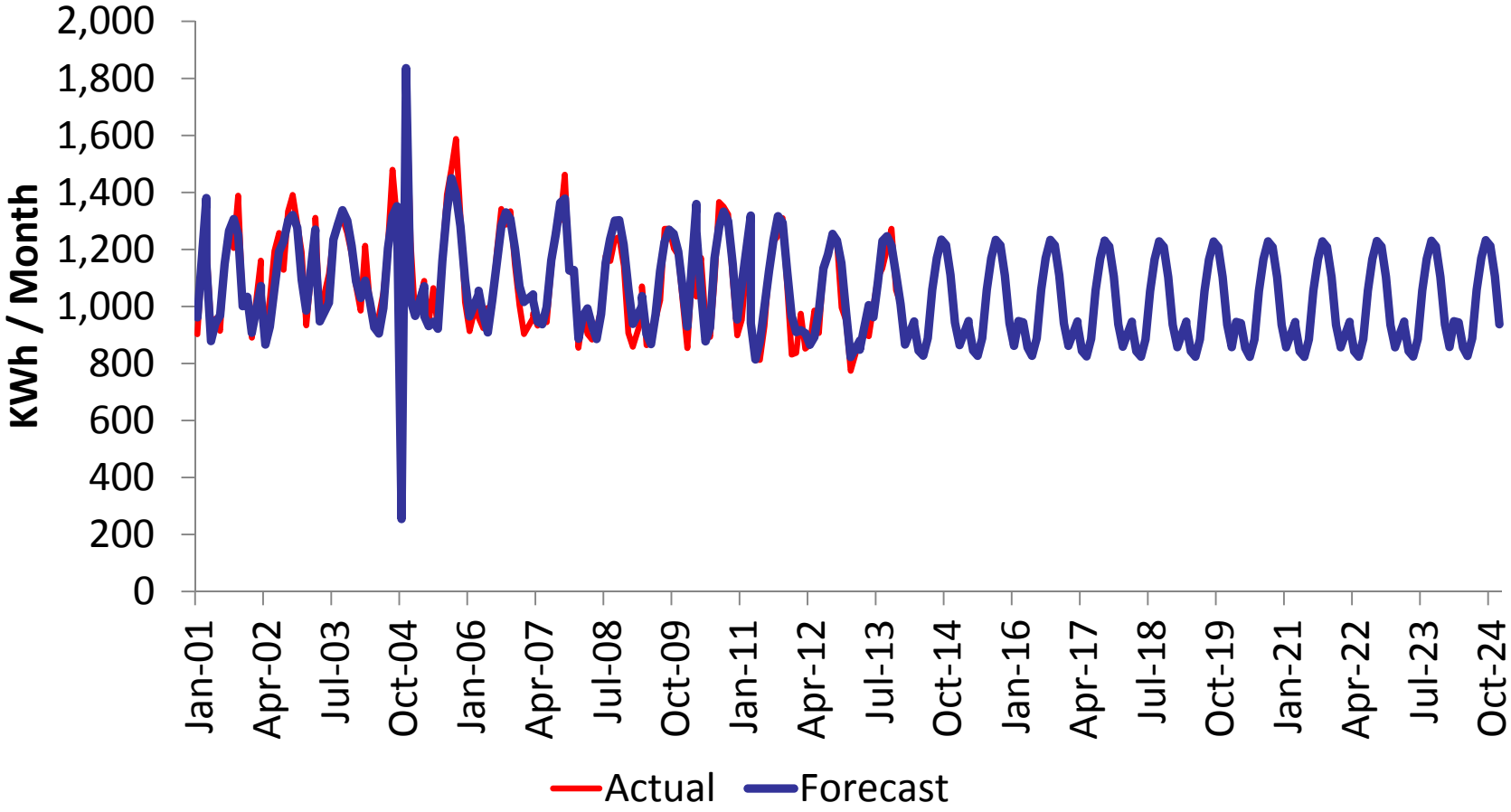
Vero Beach Forecast Results

Residential Average Use – Historical Trend



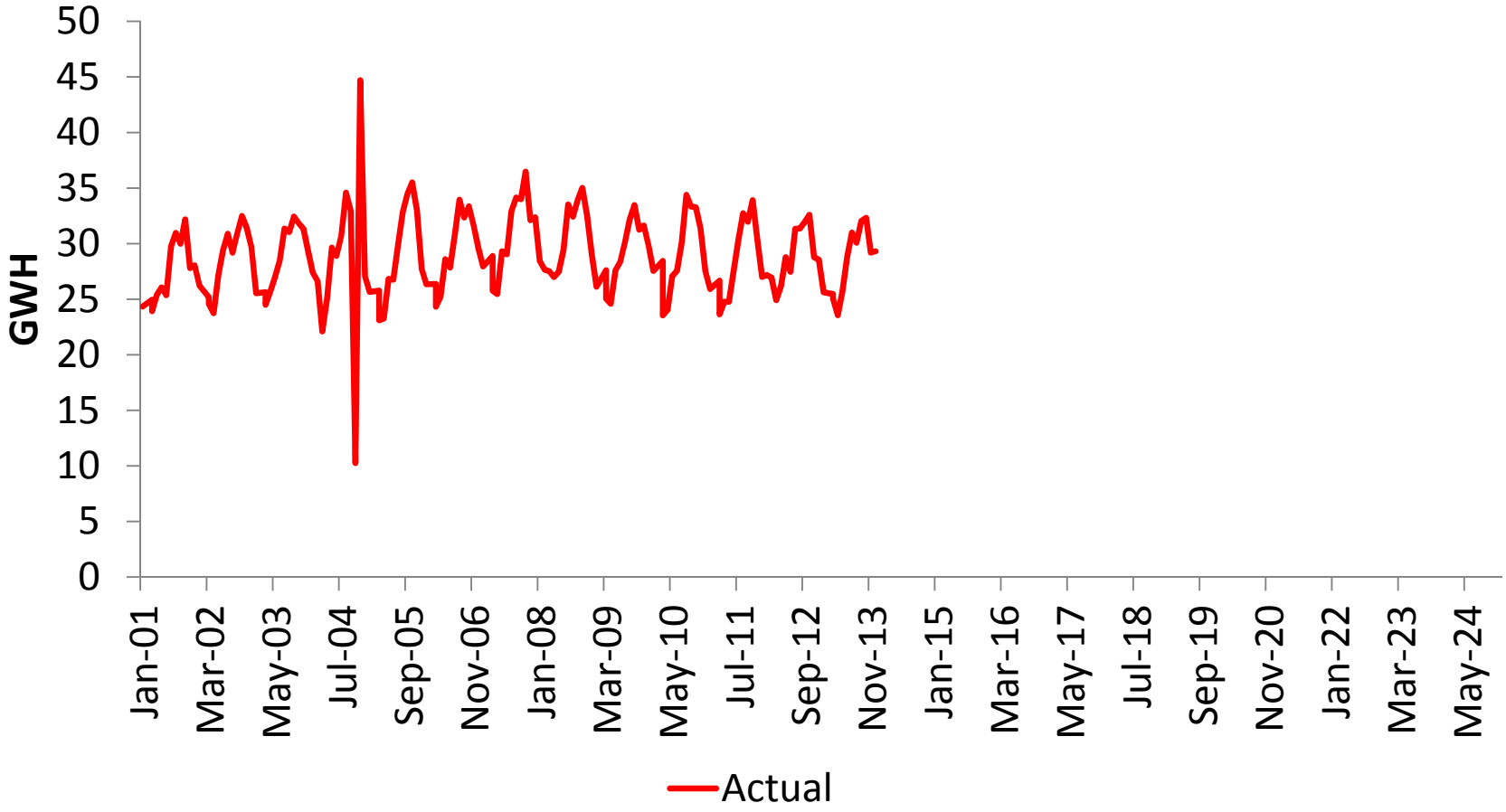
Vero Beach Forecast Results

Residential Average Use - Projections



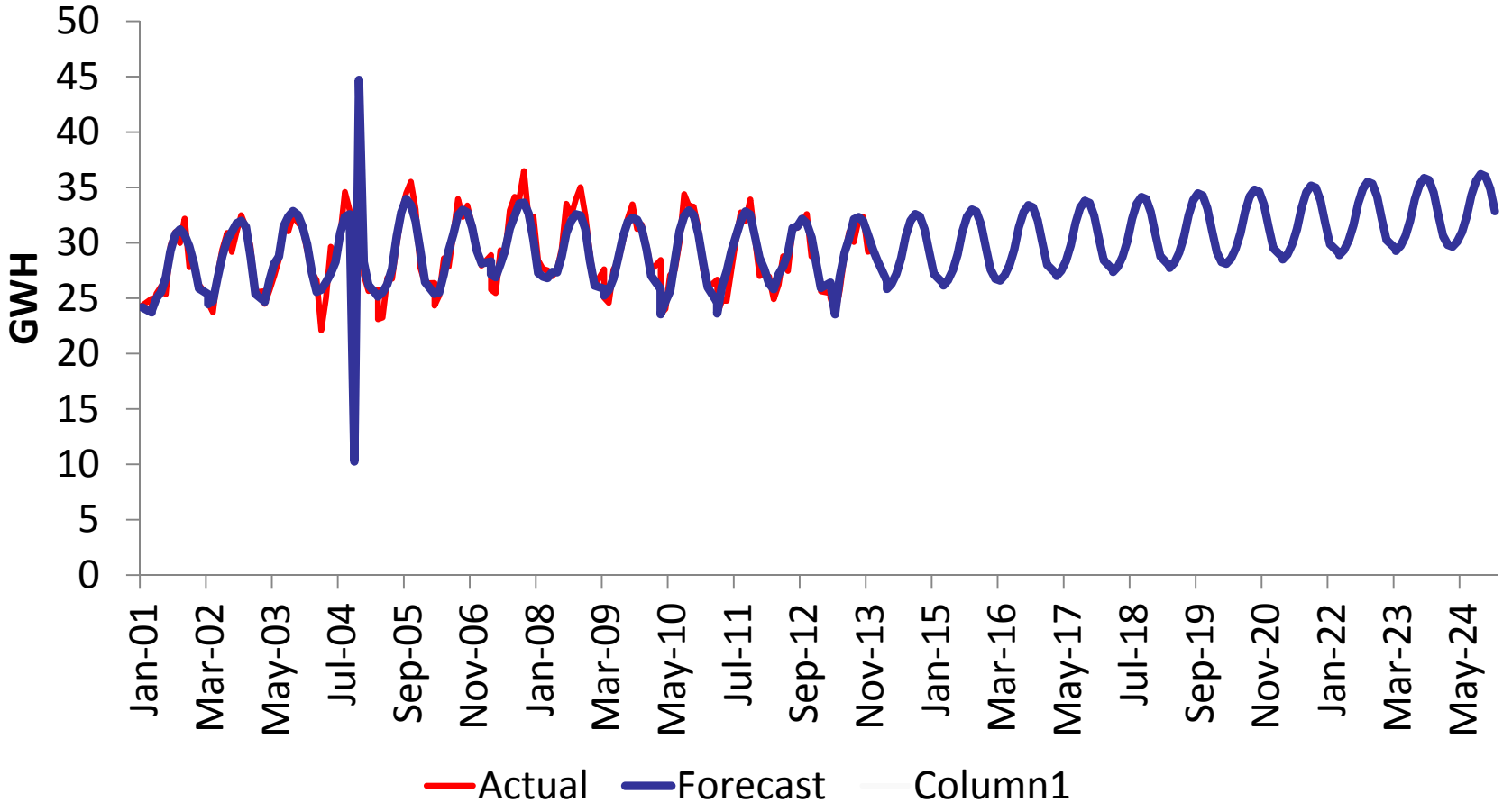
Vero Beach Forecast Results

Commercial Sales – Historical Trend



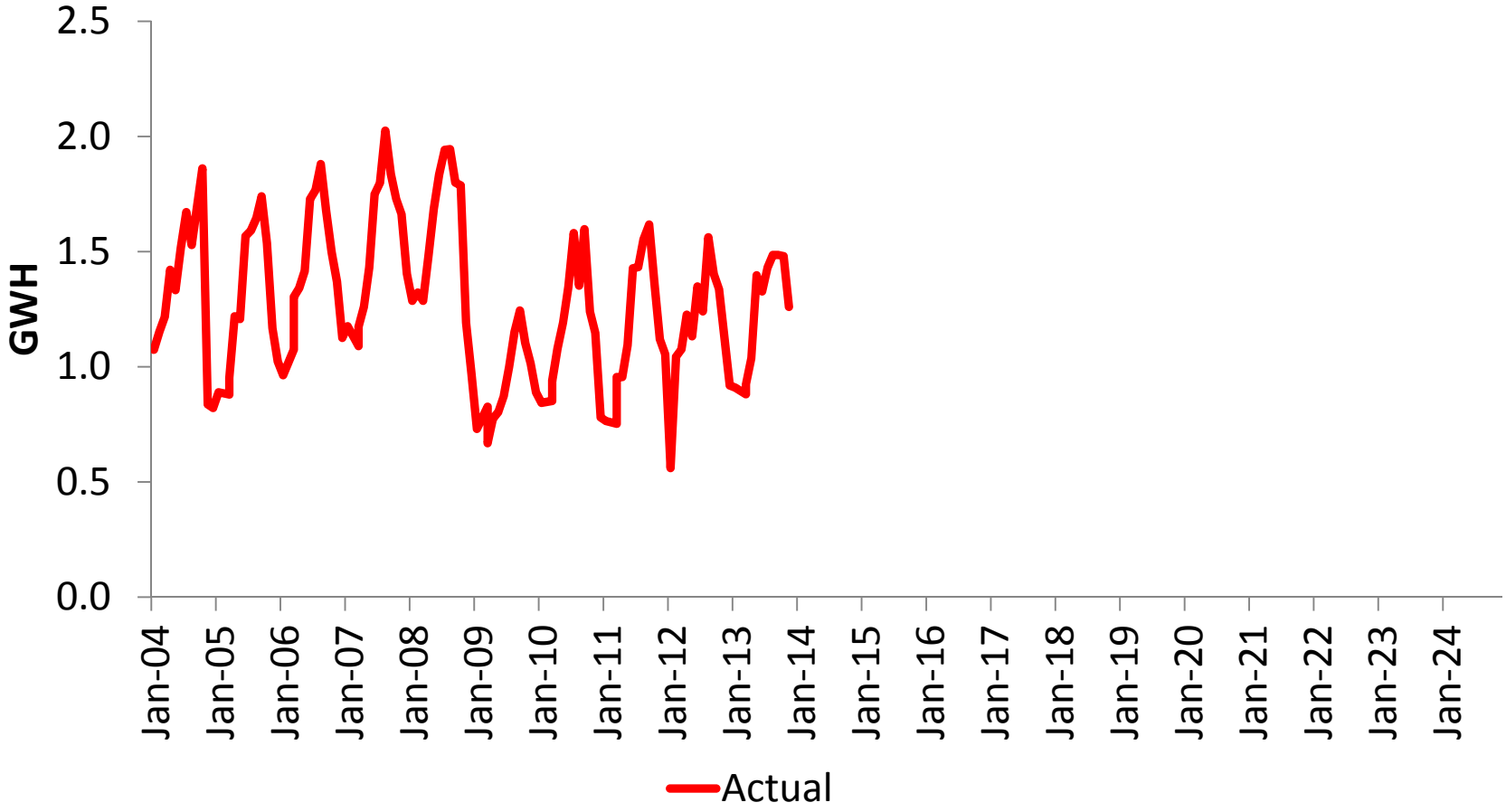
Vero Beach Forecast Results

Commercial Sales - Projections



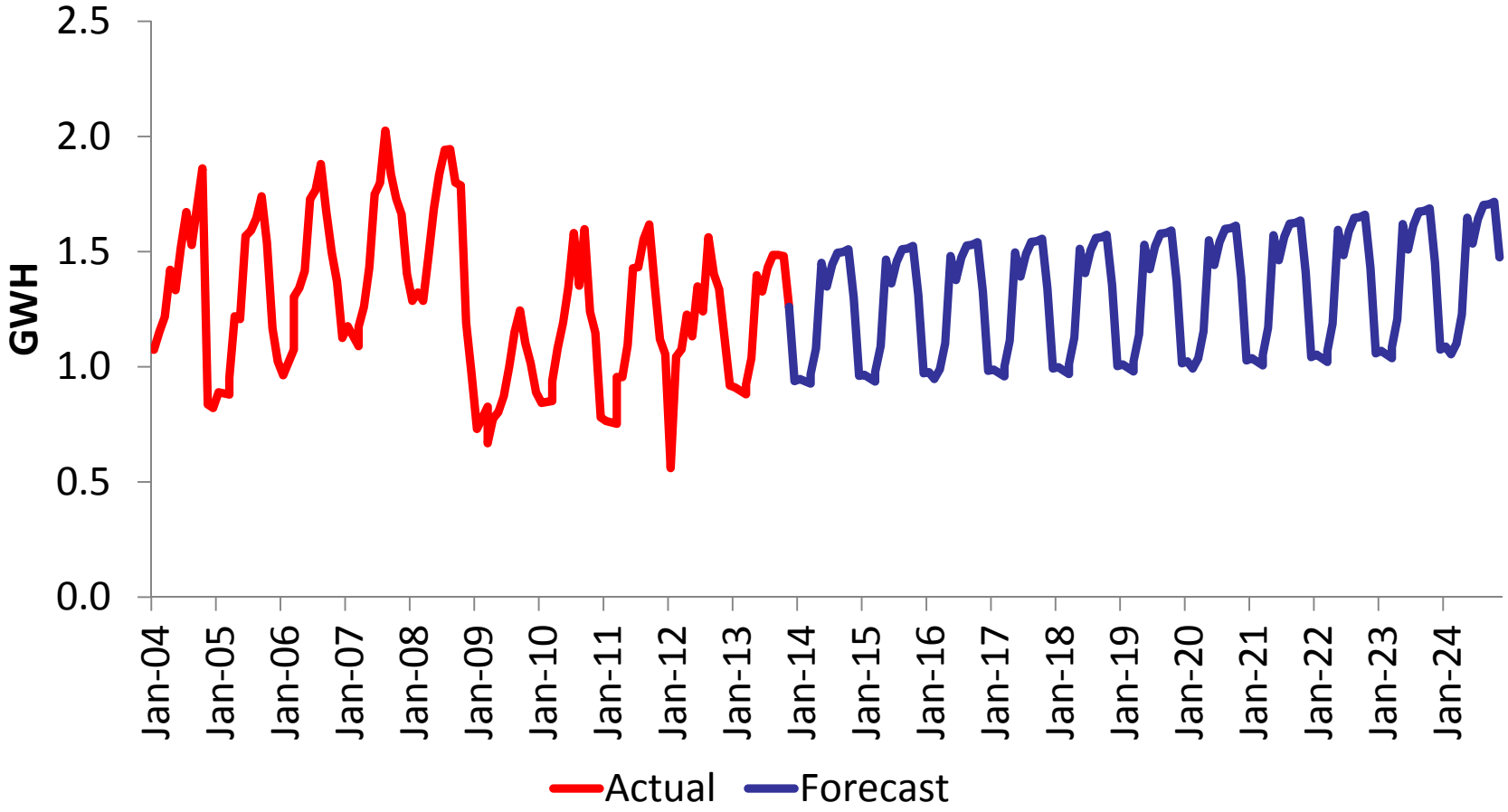
Vero Beach Forecast Results

Industrial Sales – Historical Trend



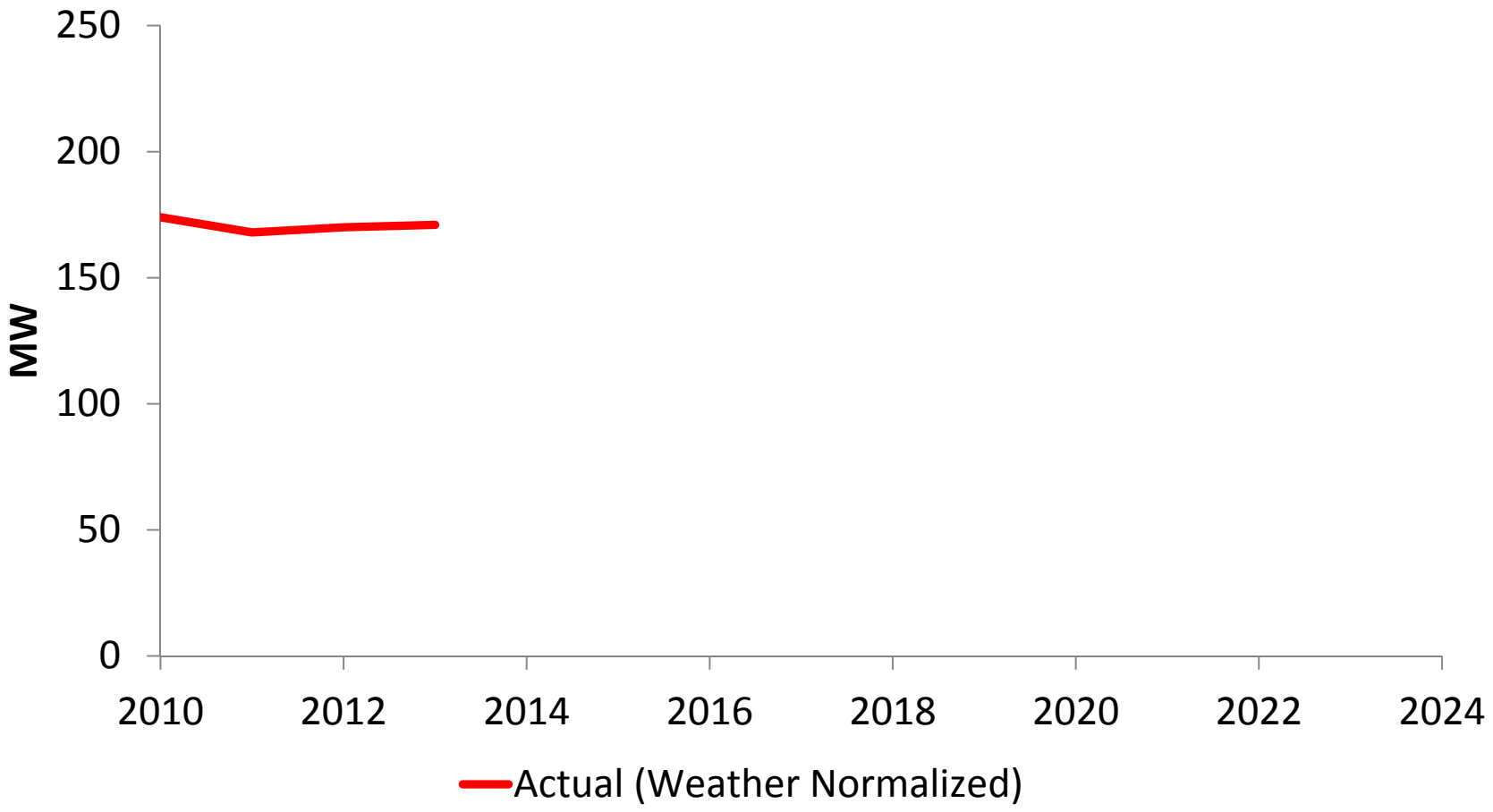
Vero Beach Forecast Results

Industrial Sales - Projections



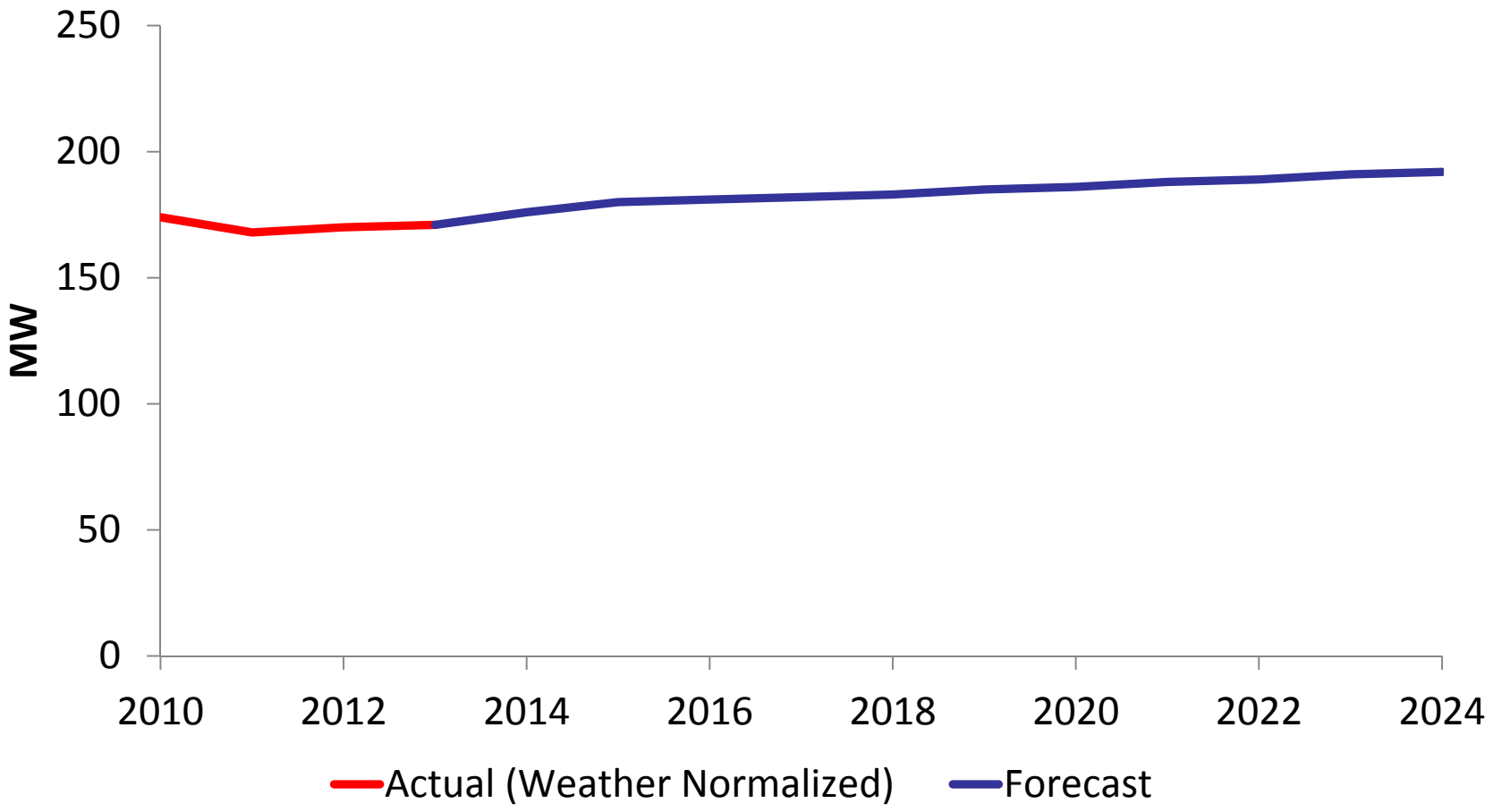
Vero Beach Forecast Results

Annual Peak – Historical Trend



Vero Beach Forecast Results

Annual Peak – Projections



Vero Beach Forecasts & Normalized Actuals

Annual Retail Sales (GWH)

Calendar Year	Forecast	Actual	Actual w/ Normal Weather	Variance		
				Total	Weather	Economy & Other
2010	714	741	699	27	42	-15
2011	727	708	682	-19	26	-45
2012	739	702	693	-37	9	-46
2013	722	701	690	-21	11	-32
4-yr Avg	725	713	691	-13	22	-35
% of Fsct				-1.7%	3.0%	-4.7%
2014	729					
2015	747					

Forecast sales projected in January of preceding calendar year

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Annual Peaks (MW)

Calendar Year	Forecast	Actual	Actual w/ Normal Weather	Variance		
				Total	Weather	Economy & Other
2010	172	209	174	37	35	2
2011	174	162	168	-12	-6	-6
2012	181	155	170	-26	-15	-11
2013	178	150	170	-28	-20	-8
4-yr Avg	176	169	171	-7	-2	-5
% of Fsct				-4.1%	-0.9%	-3.2%
2014	173					
2015	180					

Forecast peak projected January of preceding calendar year

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Annual Weather (Vero Beach Weather Station) Used in Preparing Forecasts

Heating Degree Days	Normal	Actual	Variance	
2010	431	1,063	632	147%
2011	431	305	-126	-29%
2012	431	303	-128	-30%
2013	431	314	-117	-27%

Cooling Degree Days	Normal	Actual	Variance	
2010	3,221	3,385	164	5%
2011	3,221	3,744	523	16%
2012	3,221	3,536	315	10%
2013	3,221	3,682	461	14%

Economic Drivers for Sebastian Vero SMSA Used in Preparing Forecasts

Forecast Year	Projected Growth	Population	Households	Employment	Gross Metro Product	Forecast Peak
2013	2011-2013	1.0%	1.2%	1.5%	1.4%	178
2014	2012-2014	0.8%	1.0%	1.2%	1.2%	173
2015	2013-2015	1.6%	2.0%	3.1%	1.7%	180

Economic Data Source: Moody's Analytics