



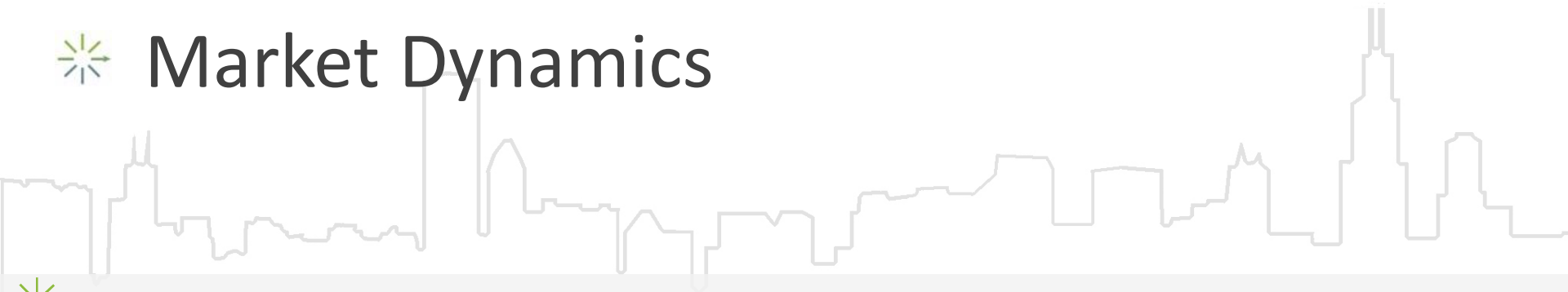
Energy Markets: Today, Tomorrow, and the Bottom Line Impacts

September 9, 2014



Overview

- ✧ Introduction
- ✧ General Market Overview
- ✧ Weather
- ✧ Market Dynamics



Introduction

Michael Chase

- ✧ 8+ years experience as an energy management consultant
- ✧ Extensive background in Demand Response and Capacity Markets
- ✧ Currently overseeing business and relationship development efforts across North America for Energy Advantage

Energy Advantage

- ✧ Corporate energy consulting and technology provider
- ✧ End-to-End integrated services and solutions
- ✧ Currently providing services and solutions across North America



Natural Gas



Market Overview – Natural Gas

330

Natural Gas Rigs

400

Underground Storage Facilities

305,000

Miles of Transmission Pipelines

25,700,000

Million Cubic Feet of Production

23,882,000

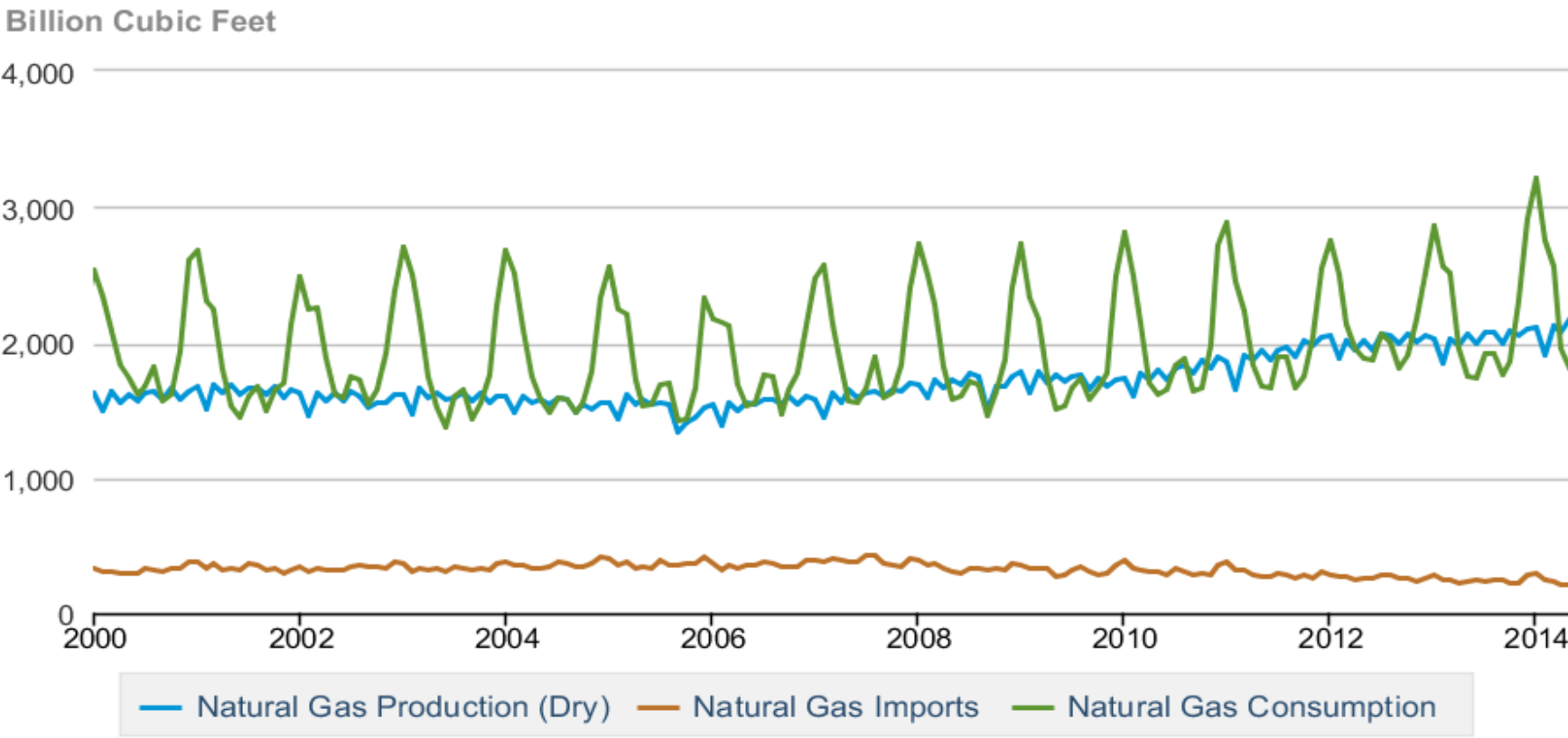
Million Cubic Feet Delivered to Consumers


73,100,000

Customers throughout United States

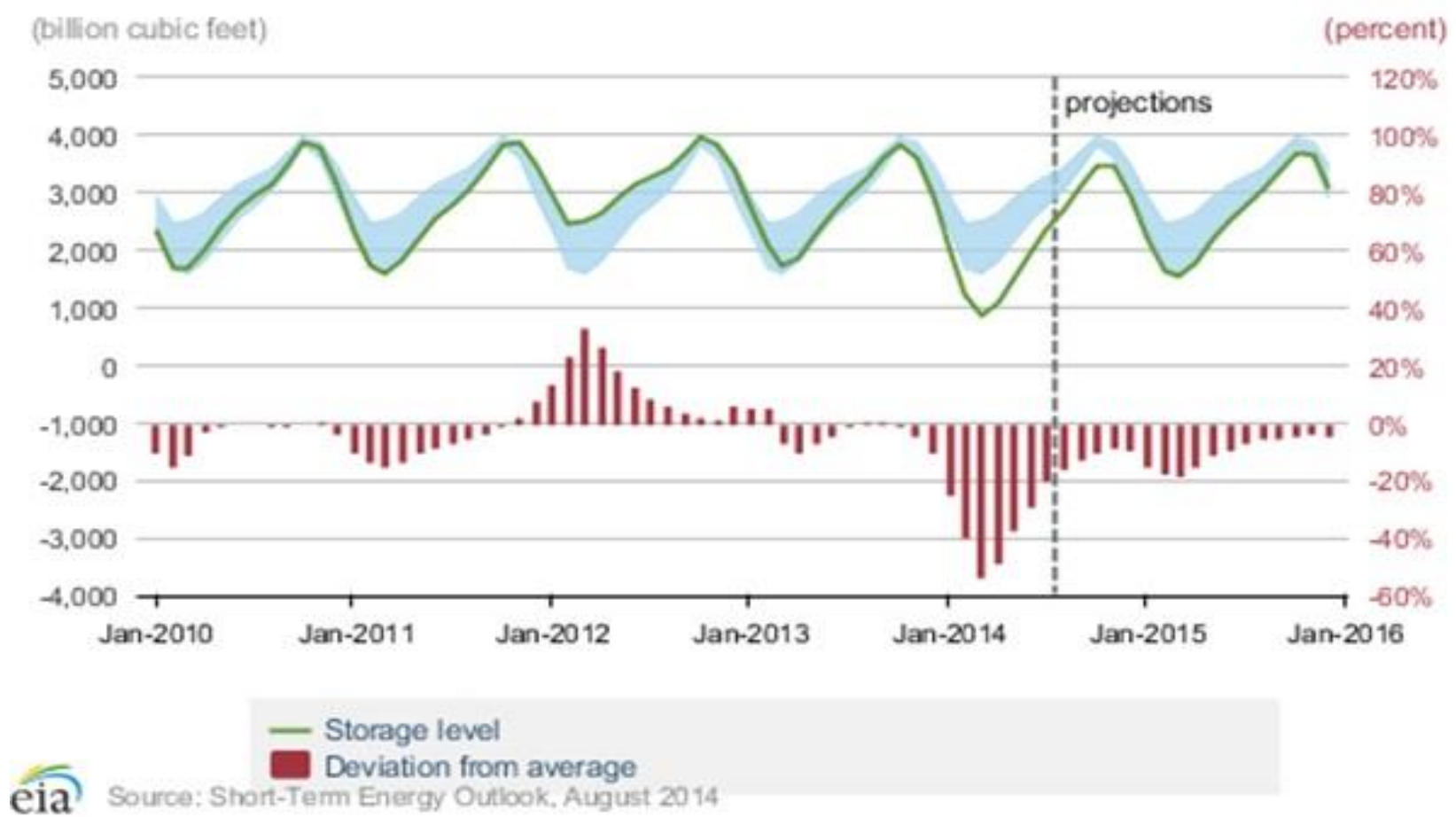
Market Overview – Natural Gas

Table 4.1 Natural Gas Overview



 Source: U.S. Energy Information Administration

Market Overview – Natural Gas

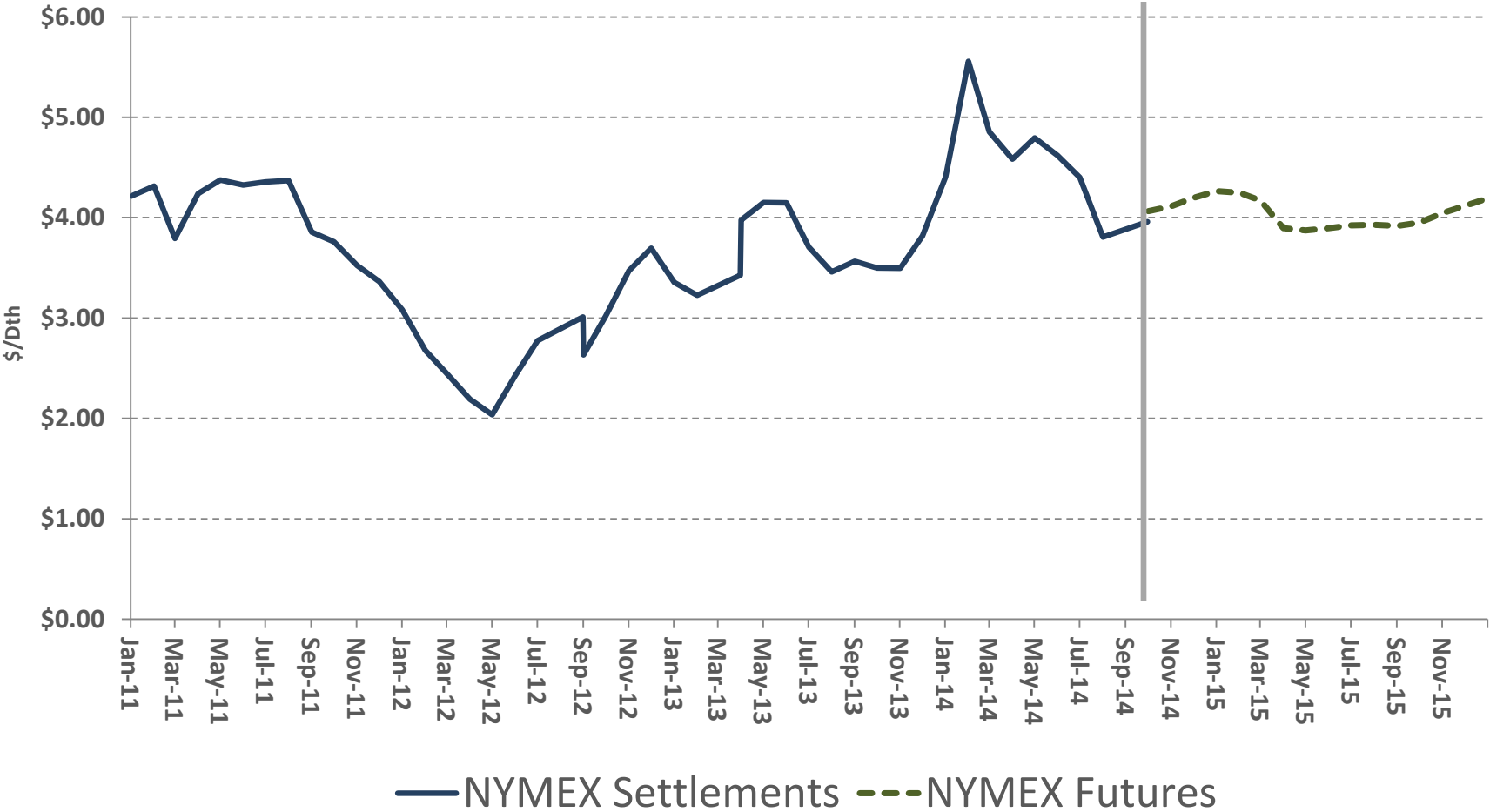


Note: Colored band around storage levels represents the range between the minimum and maximum from Jan. 2009 - Dec. 2013.

Market Overview...Natural Gas

NYMEX Settlements & Futures

2011-2015



Electricity



Market Overview - Electricity

7,000

Power Plants

46,200

Utility-Grade Wind Turbines

2,950,000

Miles of Power Lines

43,165,000

Utility Smart Meters

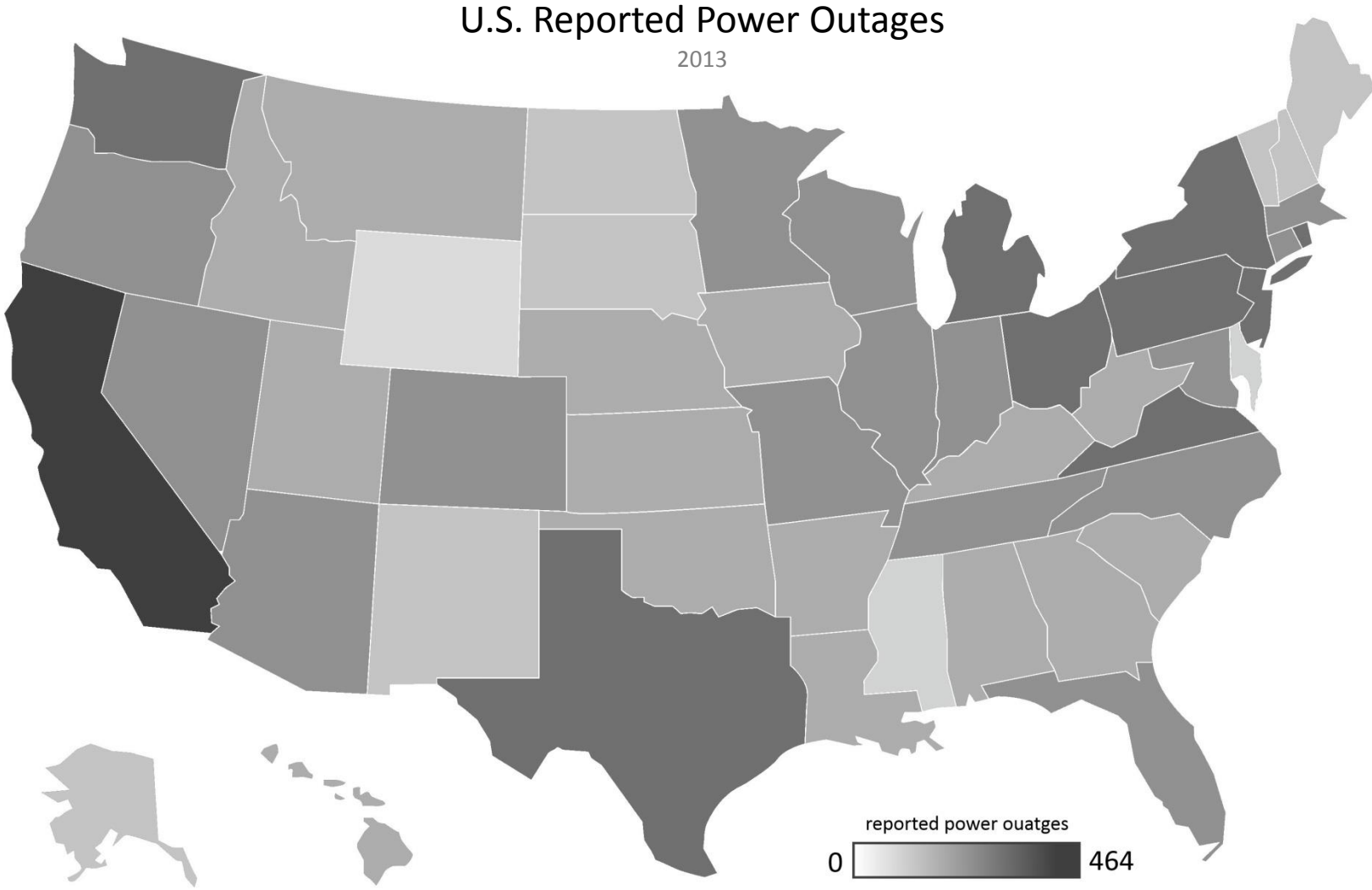
4,000,000,000

Data Points Generated Each Day

\$876,000,000,000

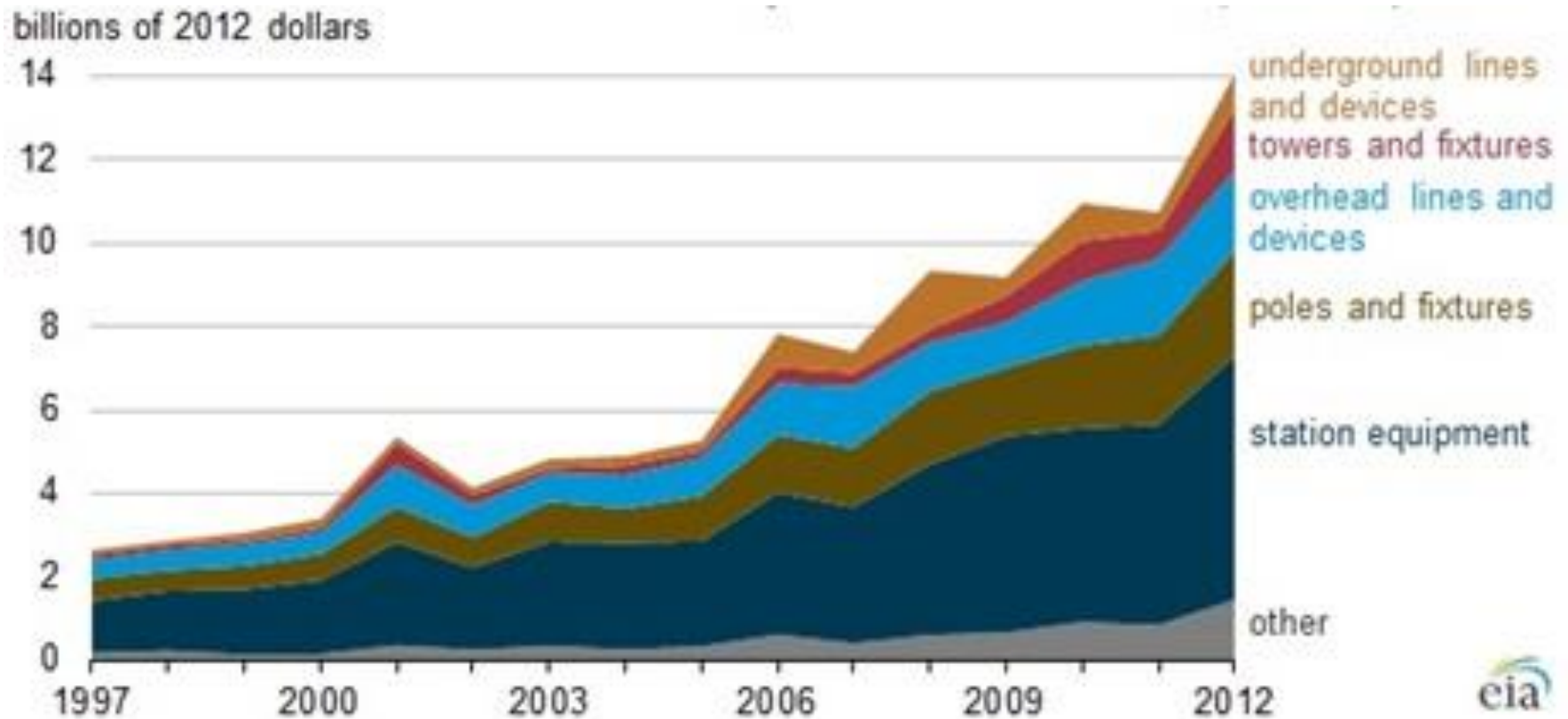
Estimated Value of Electric Grid

Market Overview - Electricity



1: Data from EATON

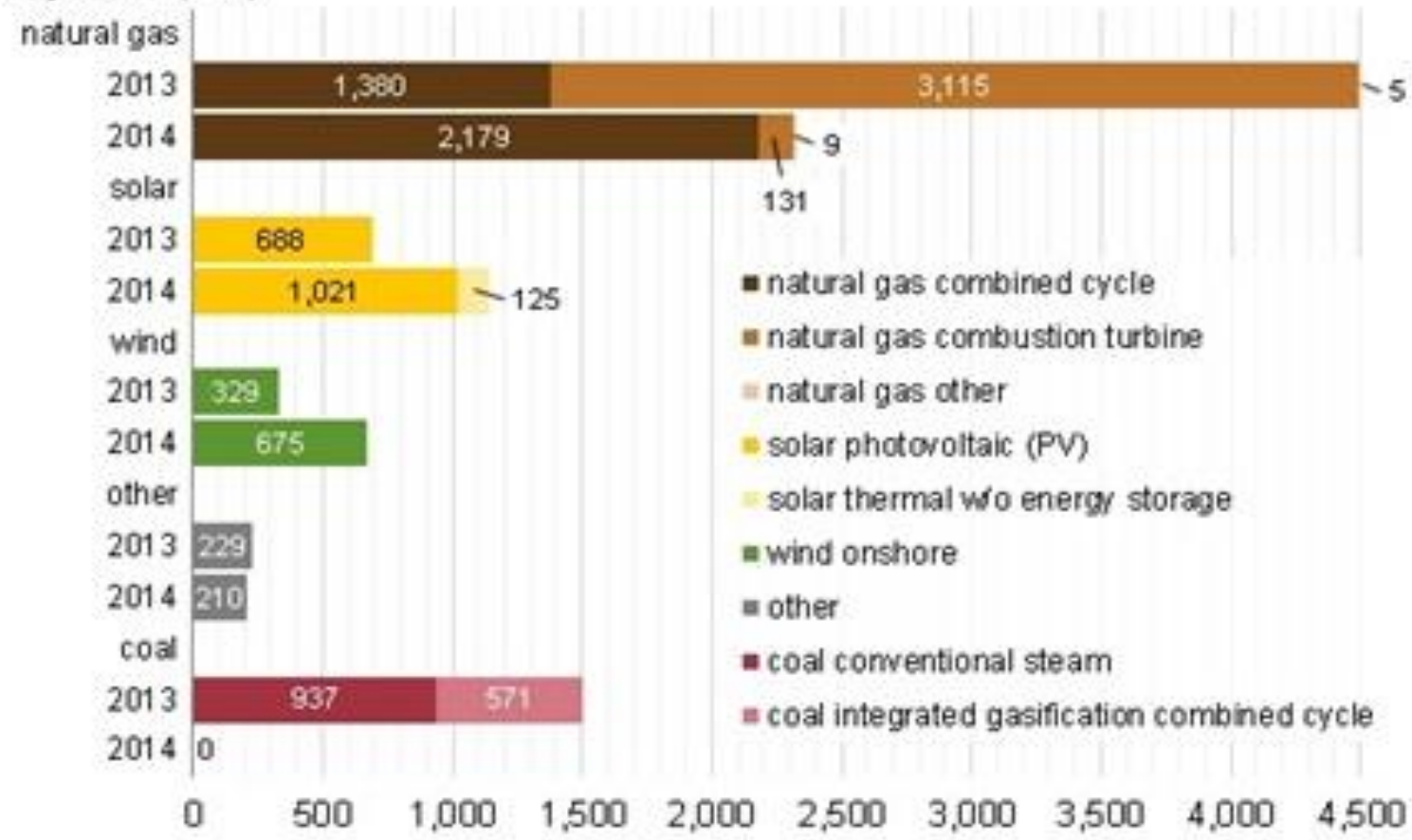
Market Overview - Electricity



1: U.S. Energy Information Administration.

Market Overview - Electricity

U.S. power plant capacity additions
Jan-Jun 2013 vs. Jan-Jun 2014
megawatts (MW)



1: U.S. Energy Information Administration.

Market Overview - Electricity

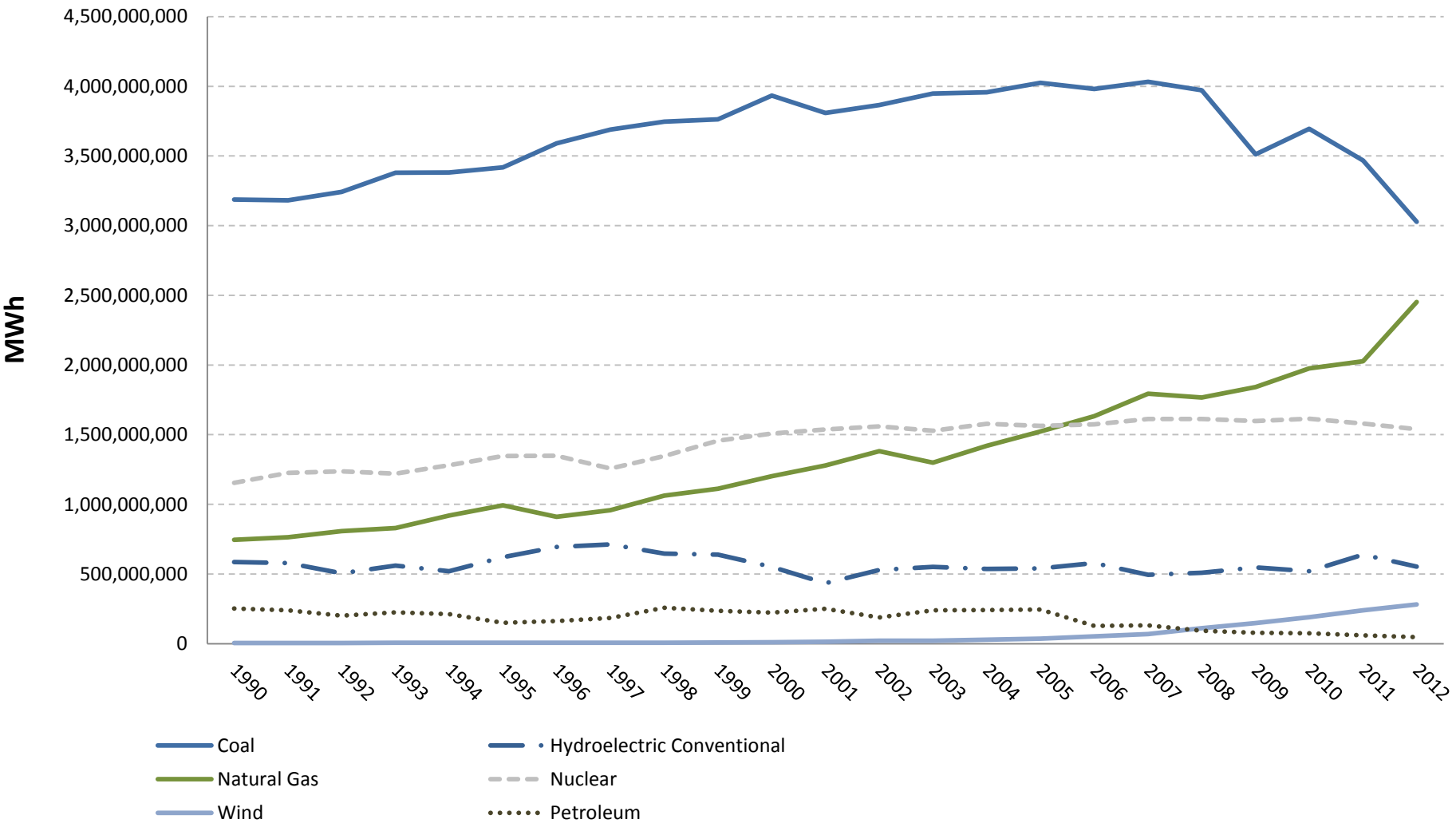
Coal-fired generating unit retirements

	existing coal-fired capacity (2012)	retirements		
		2010	2011	2012
total net summer capacity (MW)	309,519	1,418	2,456	10,214
number of units	1,308	29	31	85
average net summer capacity (MW)	239	49	Another 50,000 MW planned by 2030	
average age at retirement	N/A	58	63	51
average tested heat rate (Btu/kWh)	10,168	11,094	10,638	10,353
capacity factor	56%	36%	33%	35%

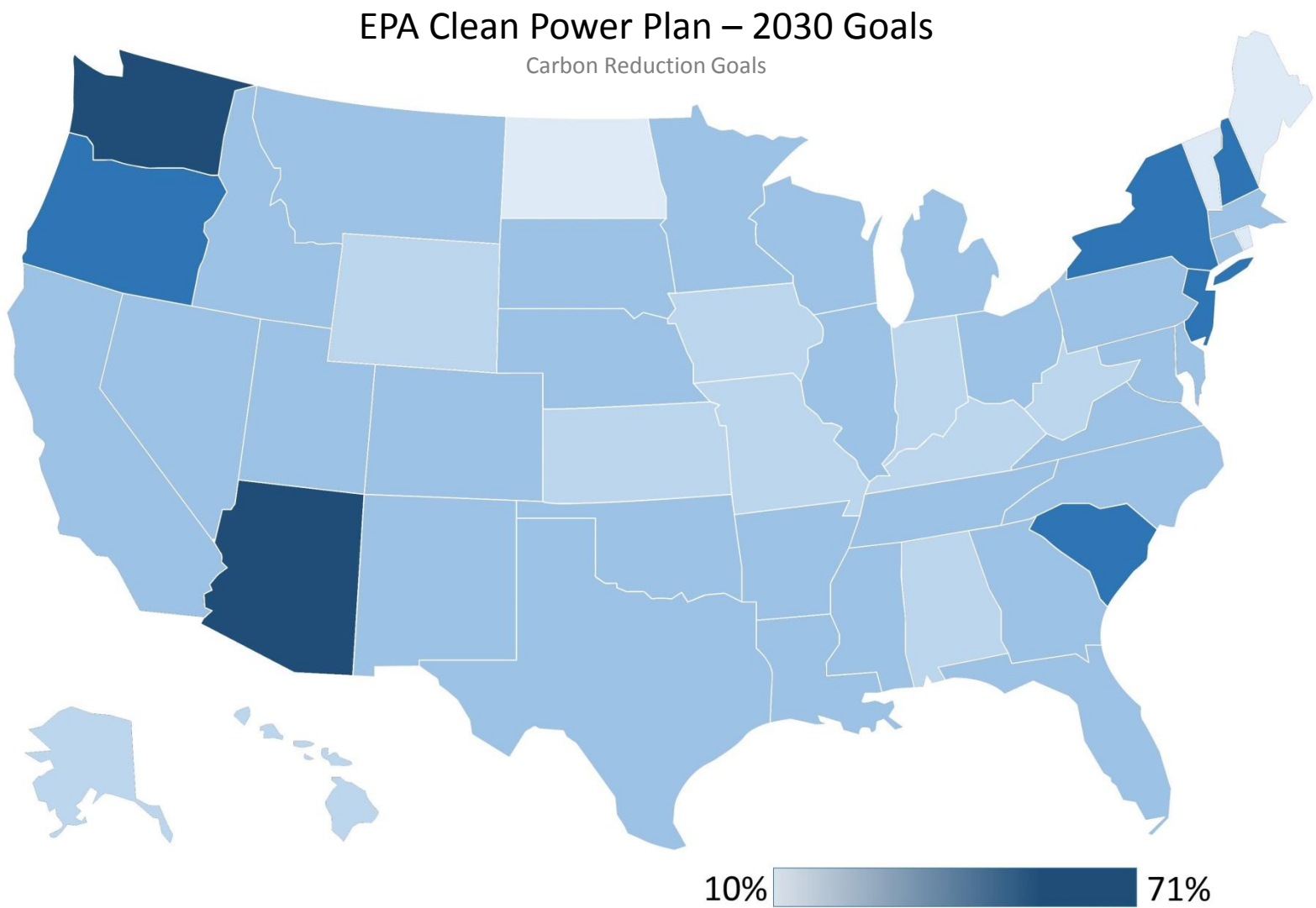
1: Data from U.S. Energy Information Administration.

Market Overview - Electricity

Electricity Generation Source - US Total
1994 - 2012, Major Sources



Market Overview - Electricity

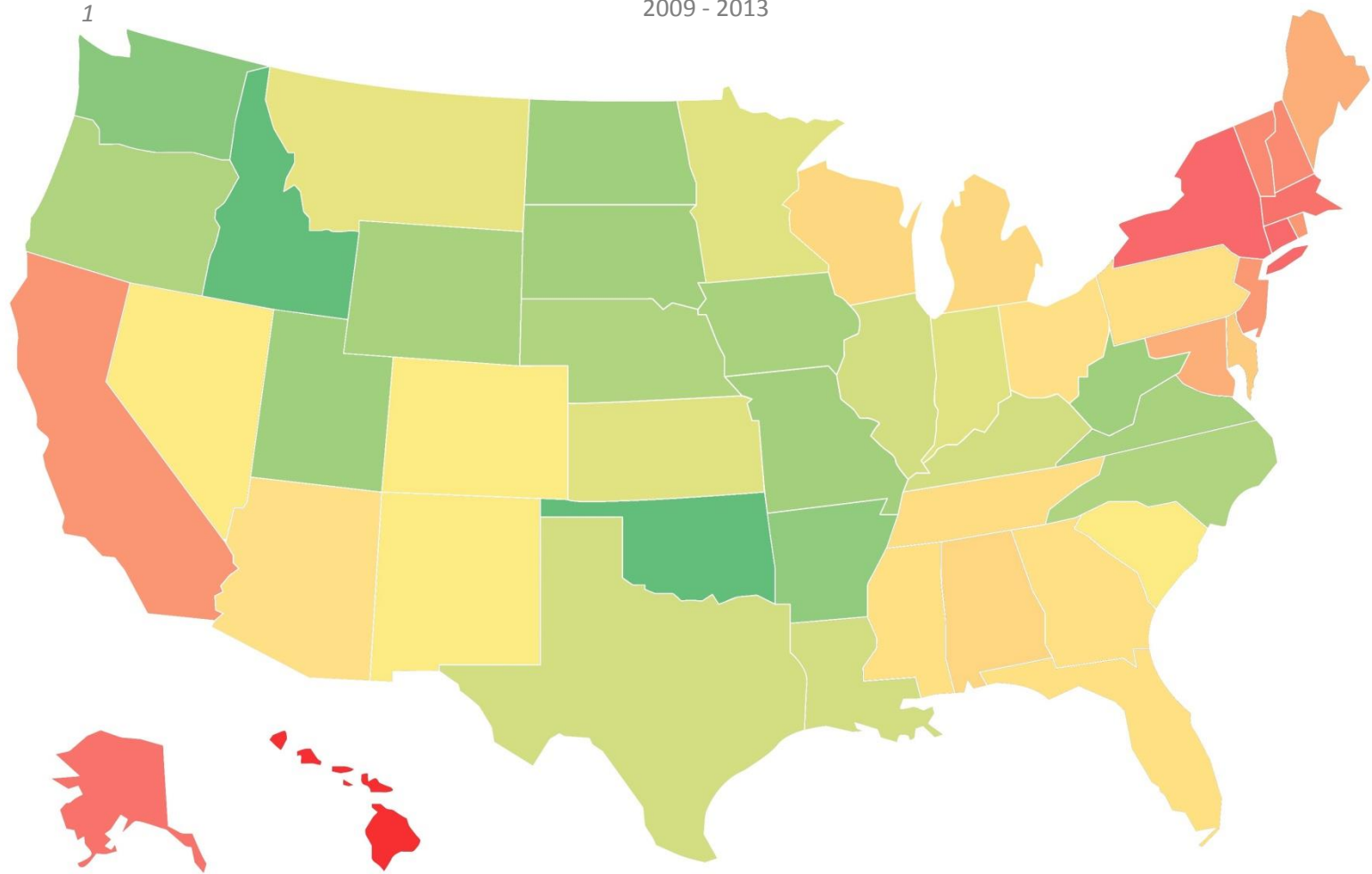


1: Data from U.S. Energy Information Administration.

Market Overview - Electricity

U.S. Five-Year-Average Commercial Retail Price of Electricity

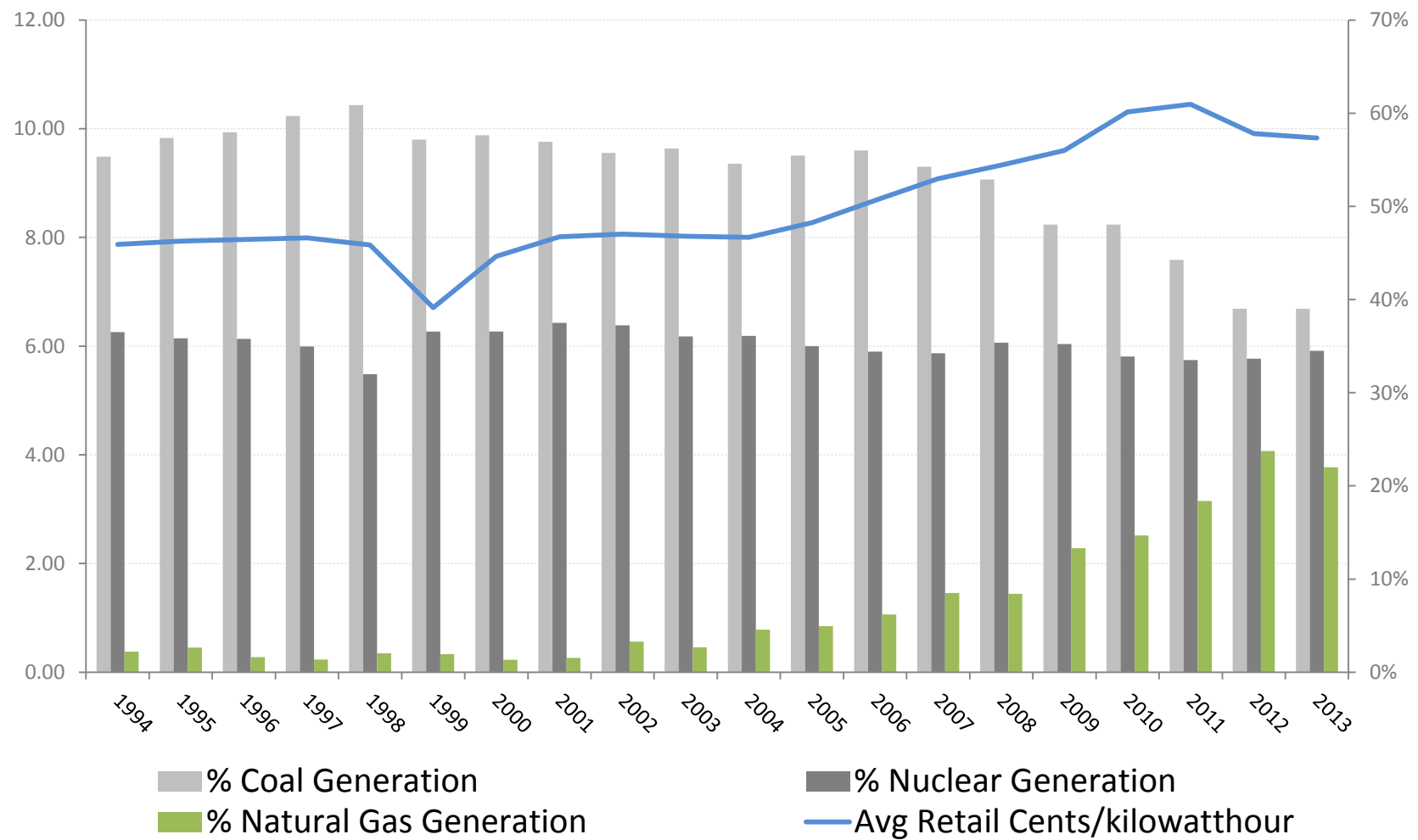
2009 - 2013



1: Data from U.S. Energy Information Administration.

Market Overview - Electricity

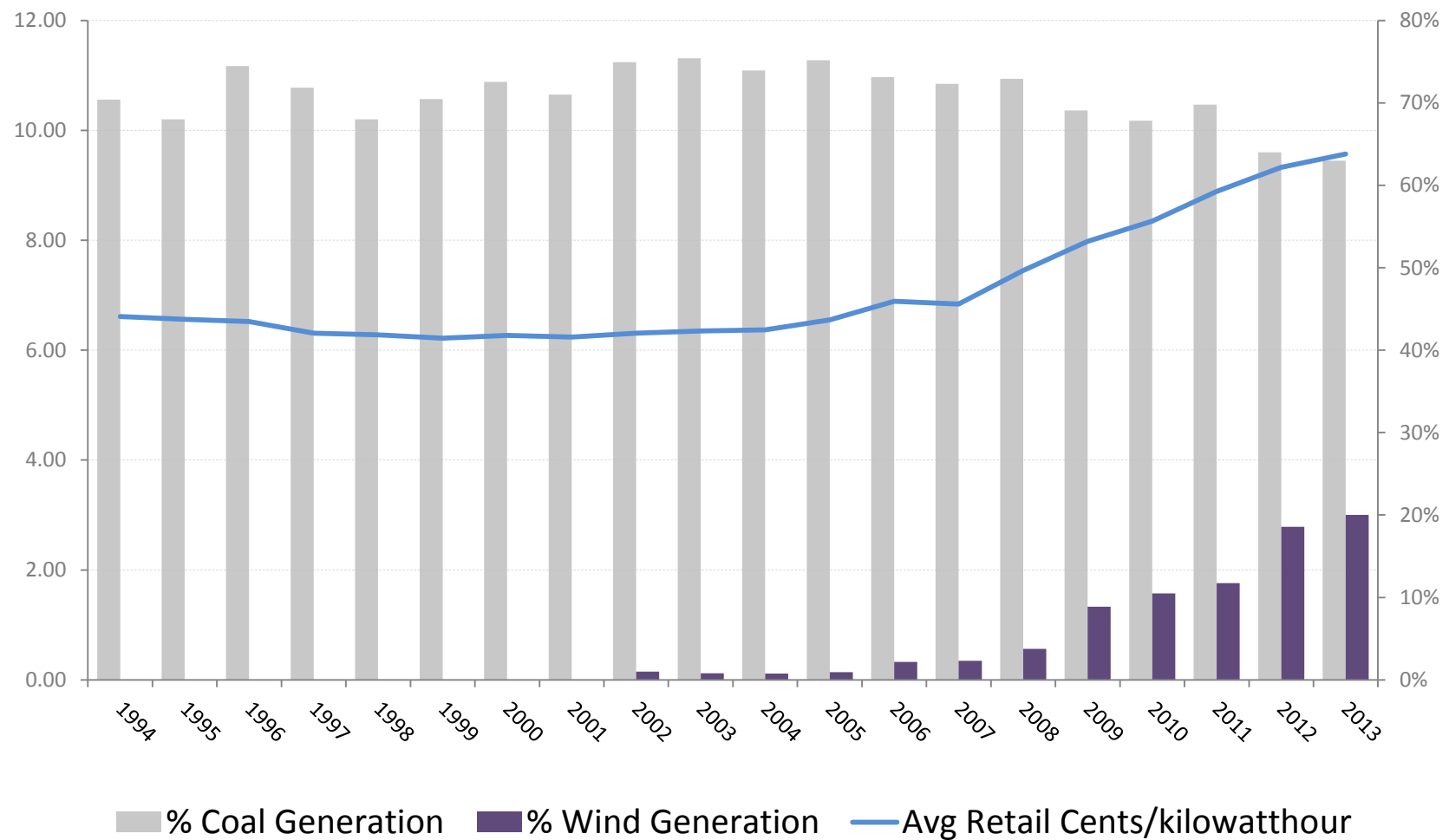
Pennsylvania
Average Retail Price of Electricity



Market Overview - Electricity

Kansas

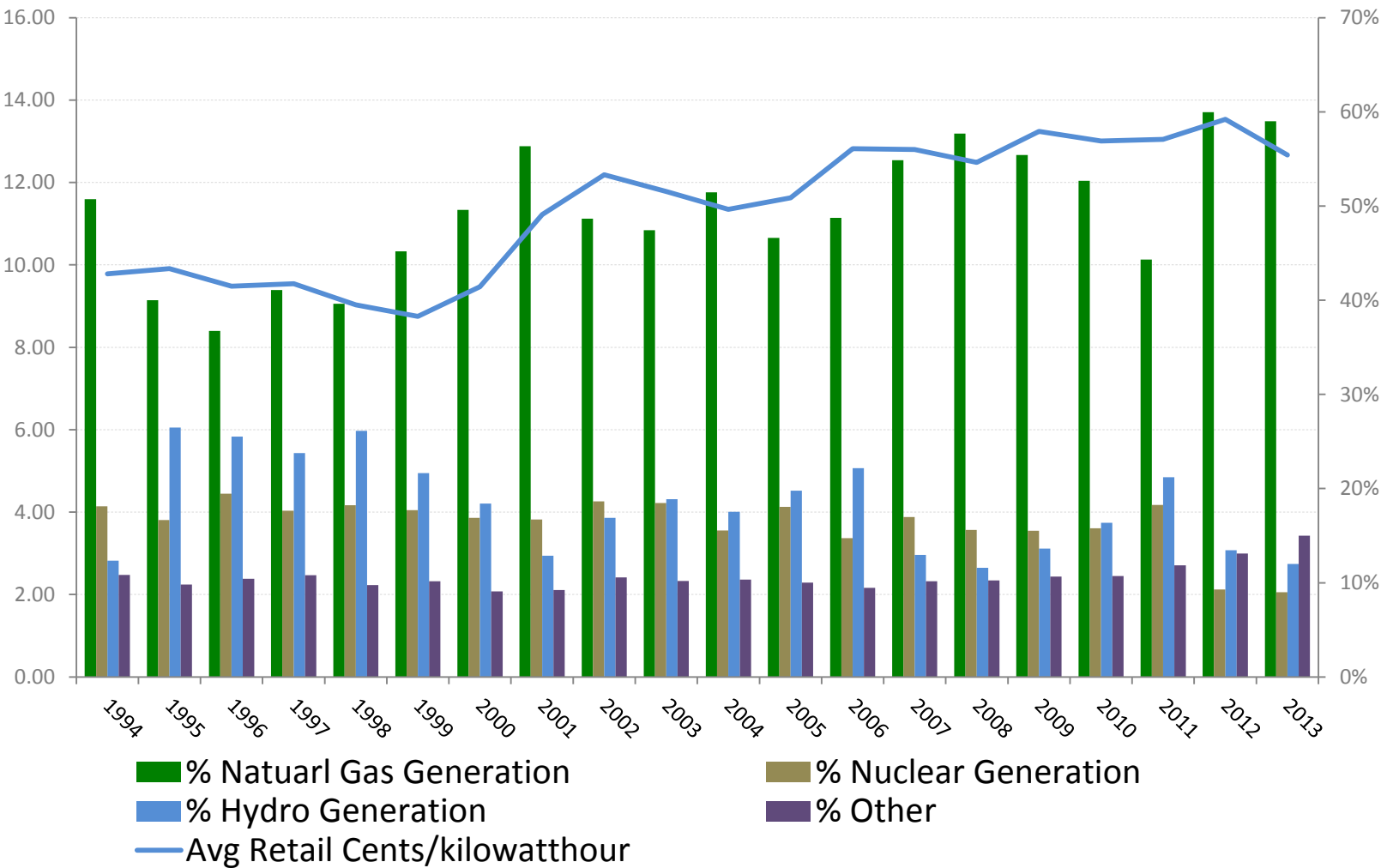
Average Retail Price of Electricity



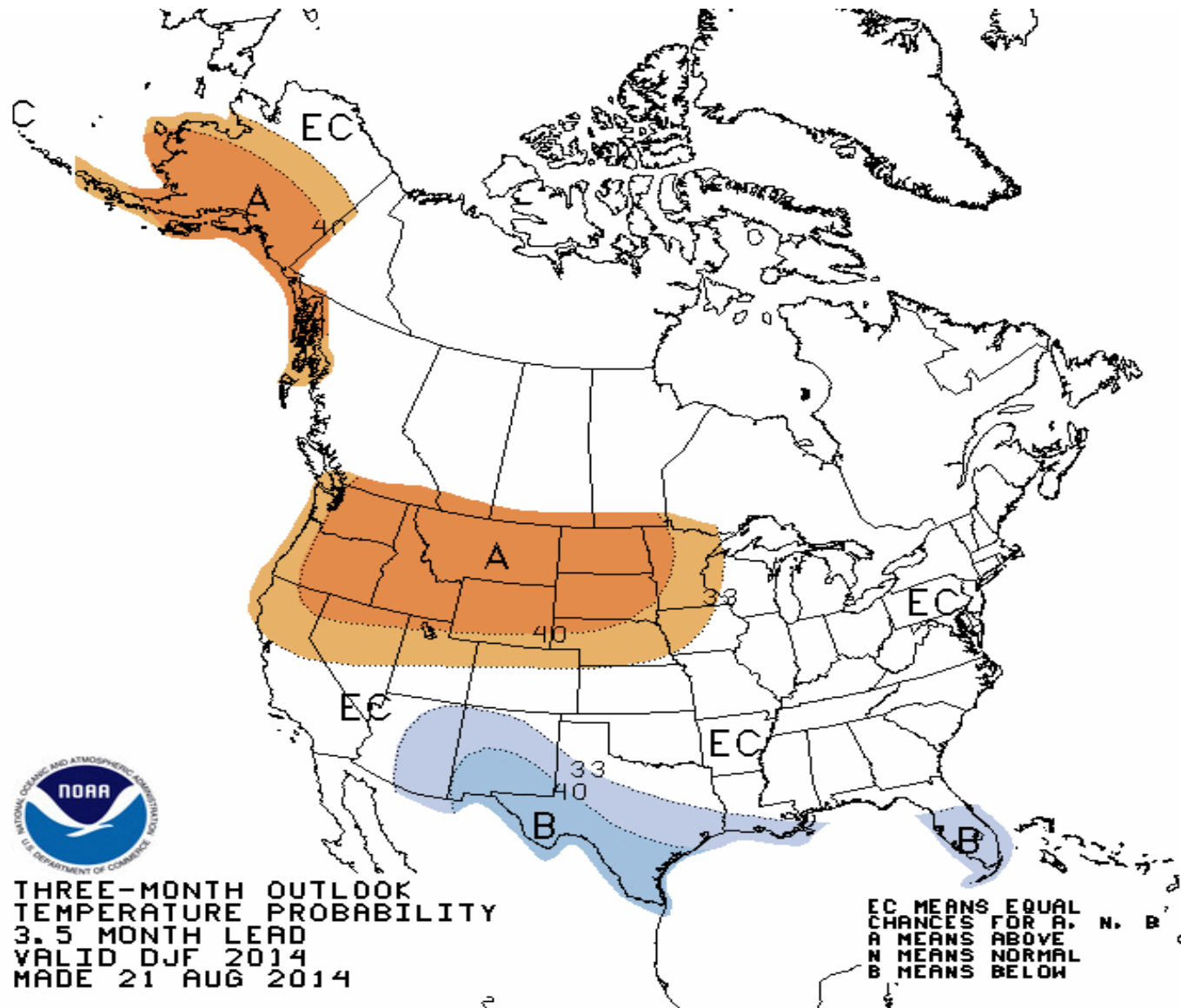
Market Overview - Electricity

California

Average Retail Price of Electricity

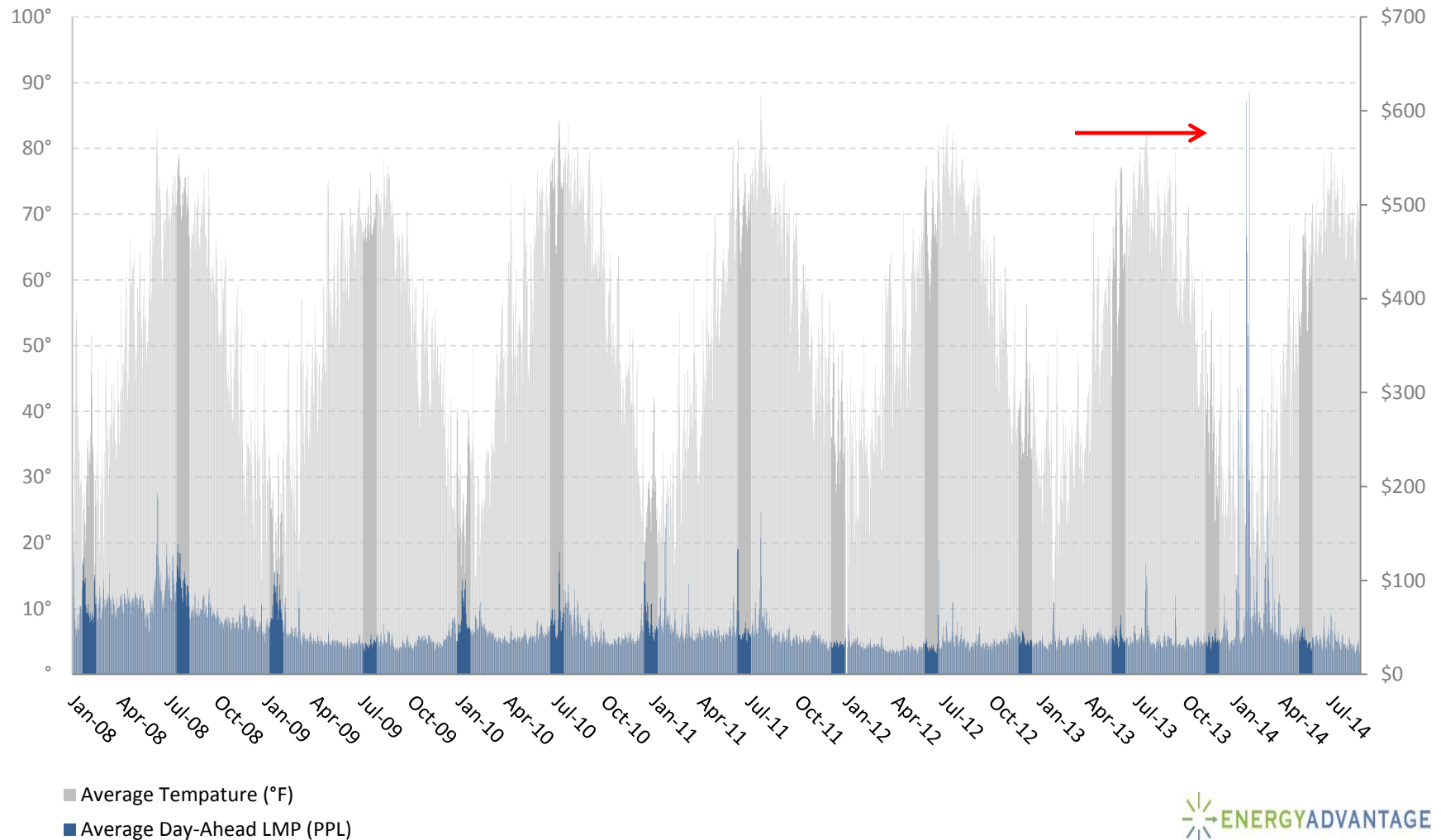


Weather



Weather - Electricity

2008 – 2014 - Pennsylvania
Average Temperature vs. Day-Ahead LMP



Why Do Markets Matter?

38% increase in average commercial retail price of electricity over the last 10 years

\$1 of energy savings = \$59 in sales

New State & Federal Regulations are constantly changing our grid

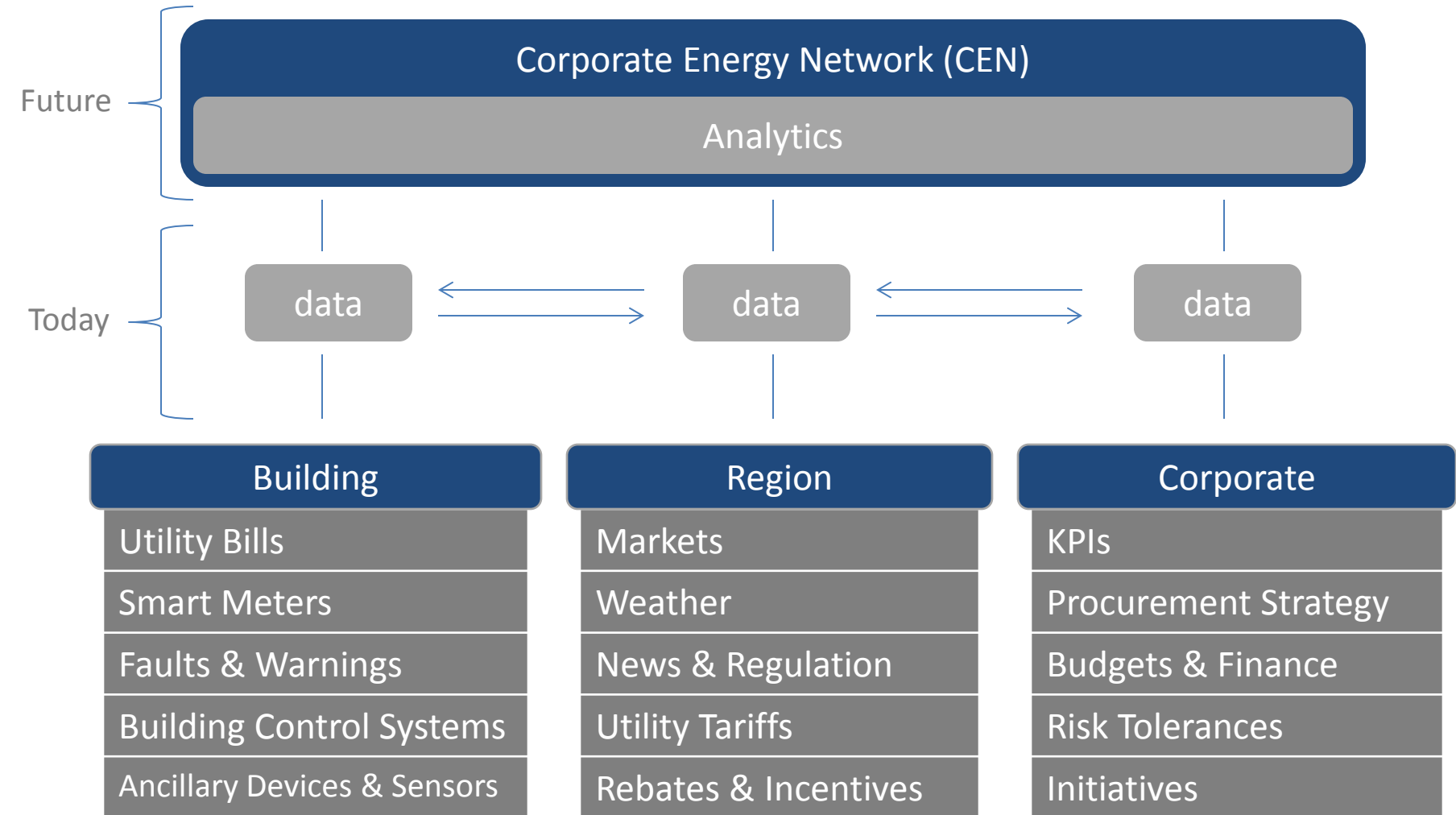


Today's Challenges

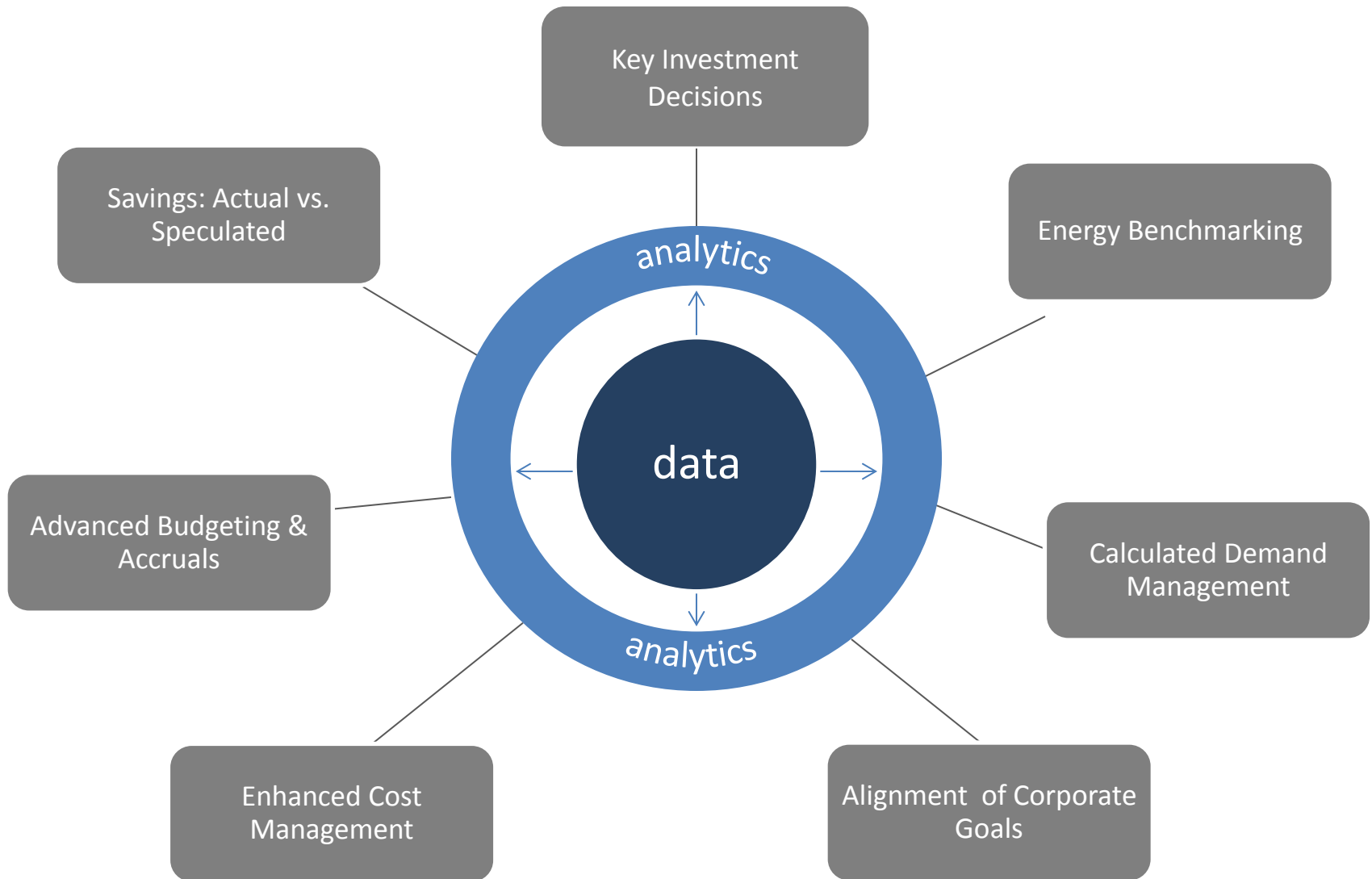
- ✧ Mountains of data but little analytics
- ✧ Energy Markets have become much more dynamic
- ✧ Multiple platforms and systems with weak cohesion across the enterprise
- ✧ Difficult ROI process
- ✧ The perceived product life cycle is shorting as new technology is developed



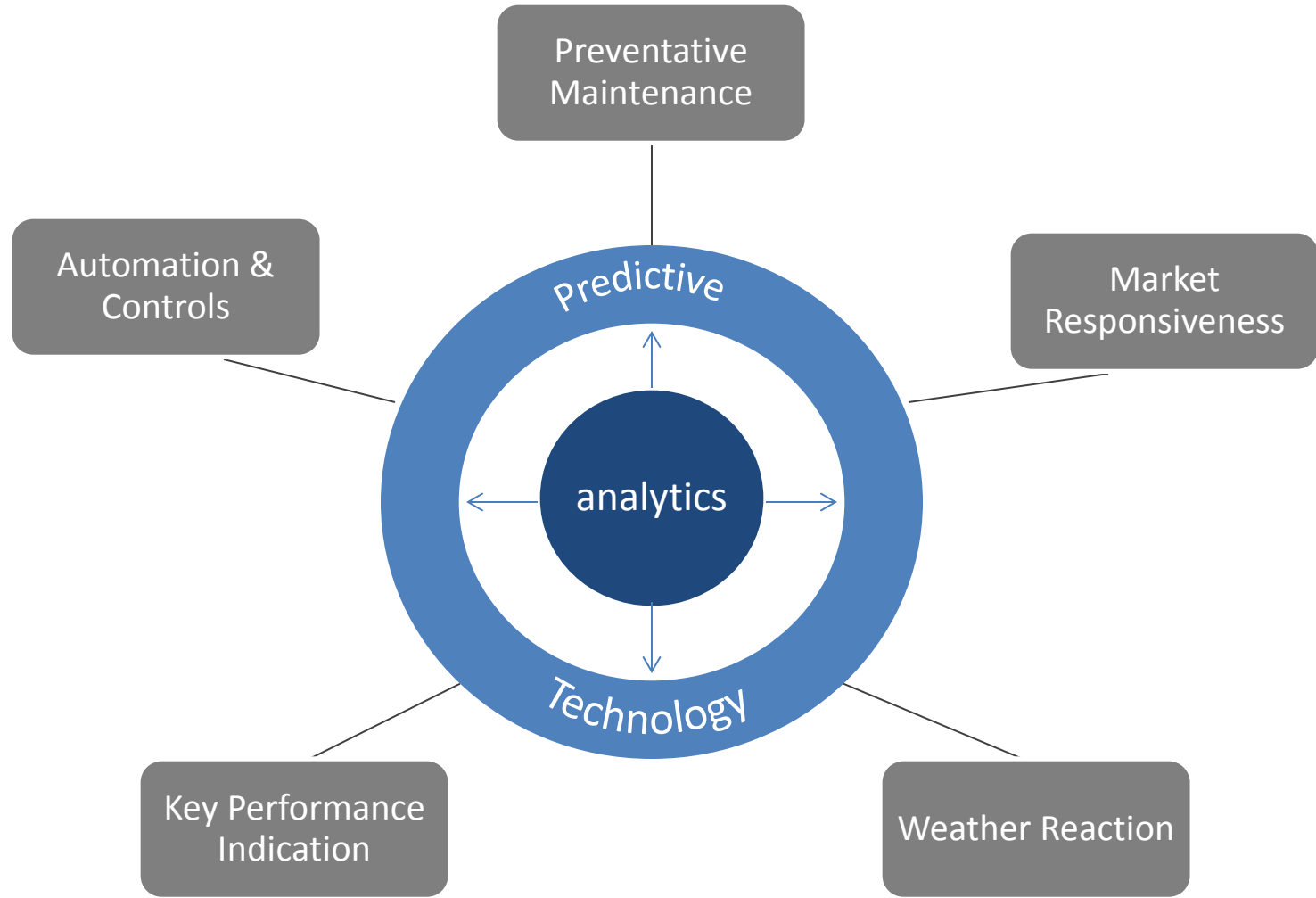
Technology



Technology



Technology



Strategic Corporate Initiatives



Strategic Corporate Initiatives

Cost Management

Energy Procurement

Utility Bill
Management

Risk
Management

Budgets &
Accruals

Rate Class
Optimization

Bill Auditing

Strategic Corporate Initiatives

Energy Procurement

Strategies

- Align procurement design directly with corporate goals

Risk Management

- The first step in designing a procurement strategy

Trends with Food Retailer

- Budget Certainty is a typical goal – deploy hedged positions

Strategic Corporate Initiatives

Demand Management

Load Management

Energy Efficiency

Demand
Response

Capacity Tag
Management

Renewables

Incentives &
Rebates

Strategic Corporate Initiatives

Demand Response

Future?

- Technology will be the ultimate driver in the future of DR

Pricing?

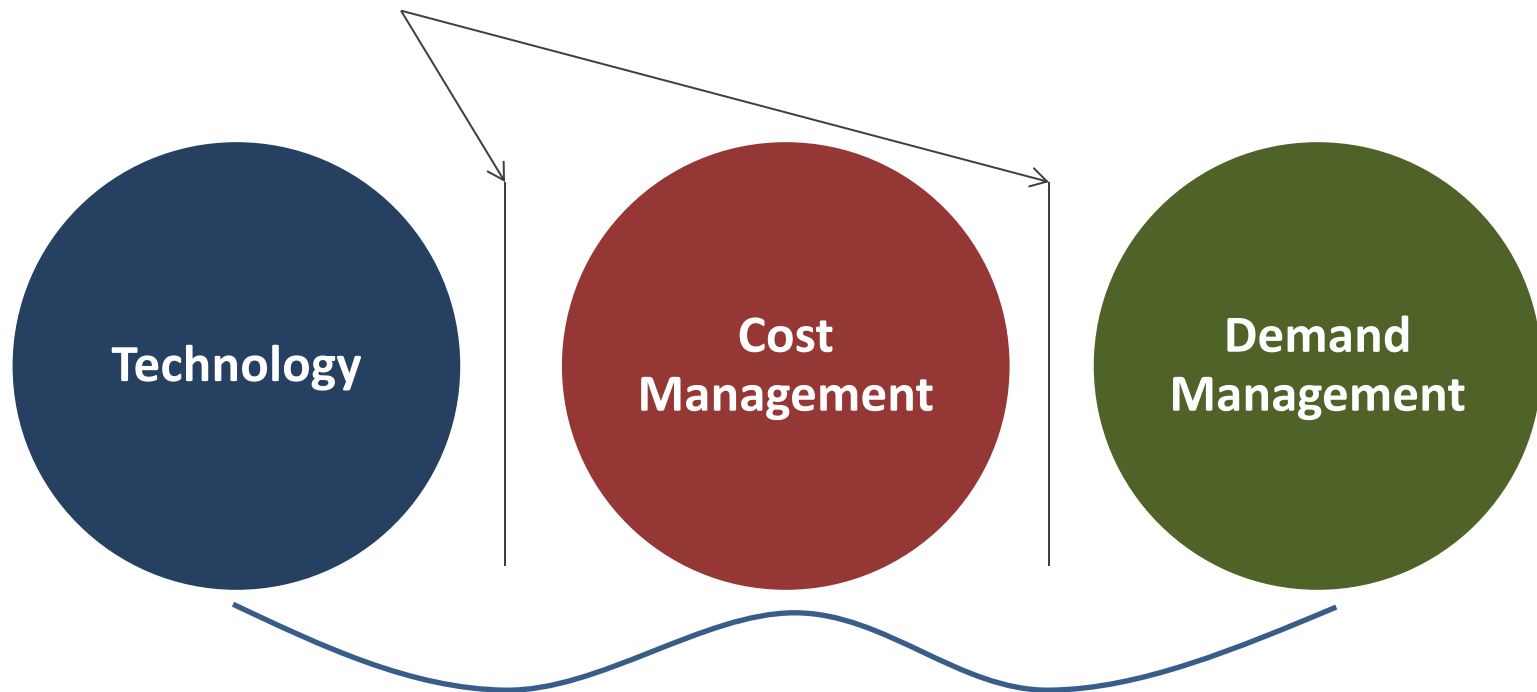
- Unstable Grid = Increase in Rates

Trends with Food Retailer

- Leverage refrigeration and participate in both economical and emergency based programs.

Strategic Corporate Initiatives

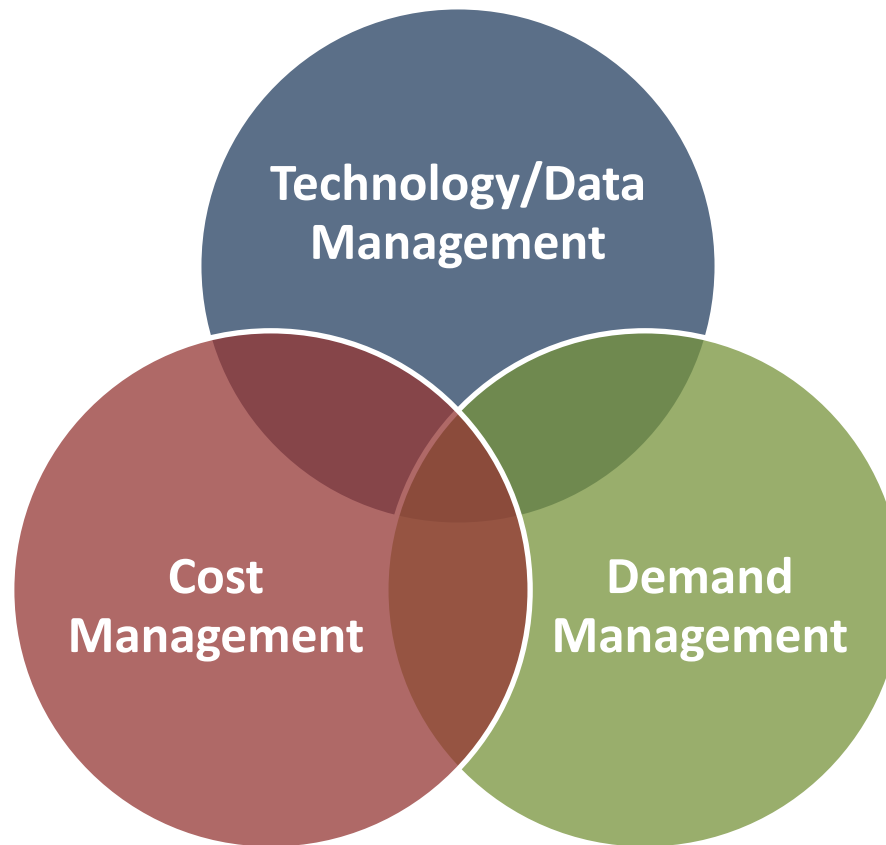
Very commonly act as barriers in many organizations



Lack of Alignment amongst initiatives

Strategic Corporate Initiatives

Corporate Energy Network



Connect With Us

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